

WATER and AIR MONITORING and REPORTING SECTION
WATER, AIR and CLIMATE CHANGE BRANCH
MINISTRY OF WATER, LAND AND AIR PROTECTION

Water Quality in British Columbia

Objectives Attainment in 2002

Prepared by:
Burke Phippen
BWP Consulting

November 2003

Canadian Cataloguing in Publication Data

Main entry under title:

Water quality in British Columbia : Objectives attainment
in ... -- 2002 --

Annual.

Continues: The Attainment of ambient water quality
objectives. ISSN 1194-515X

ISSN 1195-6550 = Water quality in British Columbia

1. Water quality - Standards - British Columbia -
Periodicals. I. BC Environment. Water Management Branch.

TD227.B7W37 363.73'942'0218711 C93-092392-8

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SUMMARY

The setting of water quality objectives in priority basins in British Columbia began in 1982. By the end of 2002, the Ministry of Water, Land and Air Protection had set water quality objectives in 51 areas or basins and updated them in two, both fresh and marine, throughout the Province. Annual monitoring to check the attainment of objectives started in 1987. This report presents the results of monitoring done to check the attainment of objectives in 23 basins in 2002.

The results are summarized in a series of tables. For all Ministry Regions the objectives were met 89.2 percent of the time in 2002. The findings in 2002 are almost identical to the 2001 results (88.6%), and similar to previous years when attainment ranged from 95 percent in 1998 to 77 percent in 1997.

There was not 100 percent attainment because objectives are set in areas where water quality problems may occur. Monitoring results therefore reflect the state of water quality in areas affected by human activity rather than in the Province as a whole.

Variables for which objectives were sometimes not met in three or more basins in the 2002 sampling program included fecal coliforms, *E. coli*, suspended solids, and dissolved oxygen.

ACKNOWLEDGEMENTS

The regional Environmental Protection staff carried out most of the monitoring, either directly or by using co-op students and contractors. The Environment Canada Pacific Environmental Science Centre and the PSC Analytical Laboratory analyzed the samples for most variables except for microbiological indicators measured by Cantest Labs, organic compounds by Axys Analytical Services, and biological communities measured by Fraser Environmental Services.

Additional data found in this report were also obtained from regional offices of B.C Ministry of Water, Land and Air Protection, the federal Department of Fisheries and Oceans (DFO), Environment Canada, and the Greater Vancouver Regional District.

INTRODUCTION

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

Water quality objectives are safe conditions or threshold levels of a substance that 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 is checked, as recommended by the Auditor General. They are also used to prepare Waste Management Permits or Plans and to measure their effectiveness. Water quality objectives are thus a basic tool for use in maintaining a healthy aquatic environment.

We began work on water quality objectives in 1982. The Ministry has now published objectives on bodies of water in 51 areas or basins and updated them in two. In addition, objective-setting and updating is proceeding in a number of other basins. In each basin considered, we expected some type of water quality problem due to human activity. We set objectives for lakes, rivers, creeks, and marine areas covering all seven Environment Regions of the Ministry.

This report for 2002 is the fourteenth in a series of reports that began in 1986. Since 1987, the Ministry has been monitoring ambient water specifically to check the attainment of objectives. As a result, we have obtained an annual picture of how well objectives are being met since 1987. Each report is a condensation of monitoring data for use by managers of the water resource. It indicates where conditions are acceptable and provides a warning of where further evaluation may be needed to solve water quality problems. To keep this report to a reasonable length, we assume some reader familiarity with the detailed background reports on water quality objectives for each basin. Copies of these background reports may be obtained from the web site of the Water, Air and Climate Change Branch of the Ministry in Victoria (<http://wlapwww.gov.bc.ca/wat/wq/wqhome.html>).

We usually choose the basins for setting water quality objectives on the basis 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. There are many bodies of water where water quality is relatively unaffected by humans and likely to remain so for the foreseeable future. Thus, reports in this series are a measure of the state of water quality in areas of British Columbia influenced by human activity.

To help the public and resource managers interpret the large amount of attainment data presented in this type of report, we developed a water quality index in 1995. This is a system of ranking which assigns a number and grade to a body of water to indicate its quality. The B.C. index is based on factors that measure the success of meeting water quality objectives. It thus compresses large quantities of data into a statement on the quality of water and its uses. A brochure describing this index is available from the Ministry, as is a more detailed report explaining how to calculate the index from the monitoring data on objectives attainment.

In 1995 the index was applied in 33 water basins plus five groundwater aquifers in the Province to produce a *B.C. Water Quality Status Report*. This report, the first of its kind, is intended to show the public in non-technical terms how suitable the water is, in specific areas, for a variety of uses. The *Status Report*, which is based on objectives attainment data collected between 1987 and 1993, was released in April 1996, and is available from the Ministry web site.

METHODS OF PRESENTING AND INTERPRETING THE DATA

Reports on Objectives

At the present time, the Ministry of Water, Land and Air Protection has completed 51 reports on water quality objectives. The complexity and size of the reports varies considerably, depending upon the body of water considered. These reports are distributed among the Environmental Regions of the Ministry as follows:

Vancouver Island	8
Skeena	5
Omineca-Peace	9
Cariboo	2
Southern Interior	14
Kootenay	5
Lower Mainland	8
Total	<u>51</u>

Work is in progress on a number of other water basins where objectives are either being set or updated.

Tables of Results

Tables 1 to 19 summarize the data collected in 2002, with a separate table for each of the water basins monitored. Due to funding limitations, fewer basins were monitored between 1995 and 2001 than had been previously monitored (see figure below); however, this trend has since reversed, with a gradual increase in the number of basins monitored province-wide. The level of monitoring effort for 2002 returned to about the same level as was used in the late 1980's when the program first began. It should be noted that the need for yearly monitoring in all water bodies is not practical or justified. For this reason, the Ministry has adopted a program of monitoring water bodies for three years following adoption of the water quality objectives. Thereafter, monitoring occurs about once in a five-year period except for exceptional water bodies.

In each table we list all the objectives that have been set, as they appear in the summary table of each report on objectives. We have updated a few of the objectives to reflect new

water quality guidelines 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 400/100 mL for fecal coliform values is used when high fecal coliform values were recorded at bathing beaches.

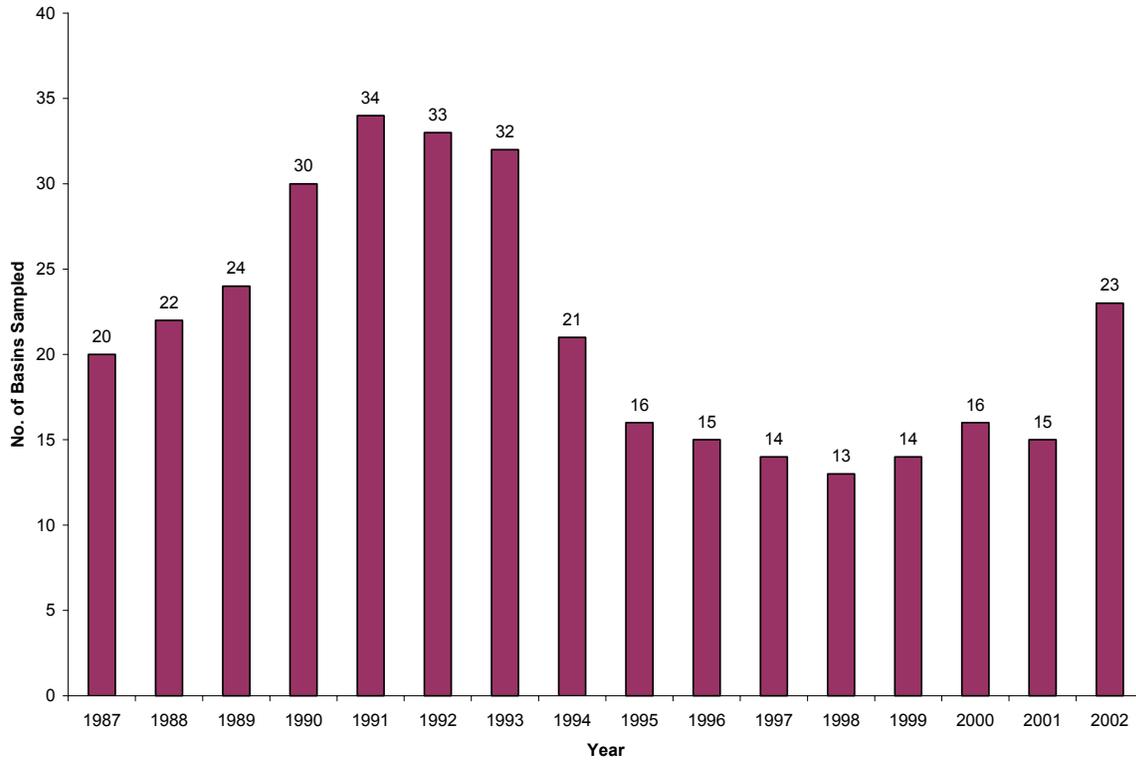


Figure 1. Summary of the number of basins sampled annually between 1987 and 2002.

Four different concluding statements are used in the data assessment: objective met, objective not met, indefinite result, and omitted 2002. We consider the objective to have been met if the monitoring result equaled or was within the objective limit. We report the result as indefinite if there were insufficient data to check the objective (a minimum of five samples collected within a 30-day period are necessary to calculate an average, median or ninetieth percentile value), the data were suspect, or the minimum detectable concentration was too high. We report the objective as omitted if, for some reason, planned data collection did not take place or was excluded because of low priority, taking into account

past results. These tables are the most important part of this report since they summarize where, when, and by how much objectives were met or exceeded in 2002.

Text

In the text section, we briefly explain the quality assurance program and its status in the 2002 monitoring year. We then give a provincial overview of the monitoring results. Finally, we describe briefly the tabulated data for each body of water, by Region, mentioning the highlights and sometimes drawing some general conclusions. At this stage, we avoid qualifying statements such as: "...the objectives were nearly met, slightly exceeded or probably met...". We consider these types of statements to be too speculative without the support of further evidence to explain them. Thus objectives not met by a wide margin are categorized equally with apparently borderline cases. Although a more detailed interpretation is desirable, this is not done here because it would require the presentation of much more data, beyond the scope of this attainment report.

For the same reason, we do not attempt to explain what may have caused the results or to comment on the effect of objectives not being met. Such assessments would entail consideration of river flows, effluent discharges, whether objectives are long-term or short-term, the degree to which objectives are exceeded, quality assurance, and other factors.

In addition to a brief description of the tabulated data, we present the 2002 water quality index and rank for the bodies of water in each basin - when there are sufficient data to do so. The calculation of the index and rank for 2002 helps highlight those variables that had a detrimental effect on water quality in a particular water body. The index formulation has been modified from the original index and now follows the index format endorsed by the Canadian Council of Ministers of the Environment (CCME).

The 2002 Attainment Report guides those involved in managing water quality by focusing 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 could be significant and

is worth a more detailed look. Further study could show whether objectives were not met because of natural phenomena or because there is a human cause to the problem.

Figures

A location map in Figure 2 shows the 51 basins where objectives have been set. Separate maps, Figures 3 to 22, illustrate the 19 water basins monitored in 2002 and show the sampling sites referred to in the tables.

Guide to Ranking Future Monitoring

Due to limited funds, we cannot monitor all basins where objectives have been set each year. We have therefore proposed the following scheme to rank monitoring:

- **1st priority:** any basin with less than three years of complete monitoring or any basin the Ministry considers provincially or internationally significant. Examples of significant basins are the Fraser River due to fisheries, the Okanagan Valley lakes due to recreation, the lower Columbia River due to trans-boundary effects, and Burrard Inlet due to a federal-provincial plan.
- **2nd priority:** any basin in which, after at least three years monitoring, a number of objectives are not regularly attained and there is either a local expression of concern or a plan for short-term action.
- **3rd priority:** any basin as for the 2nd priority above, but where there is no known concern or plan of action.
- **4th priority:** any basin in which, after at least three years monitoring, most objectives are either being met or the situation is fairly well documented with no change in status expected in the short term.

QUALITY ASSURANCE PROGRAM

Due to fiscal restraints, the Quality Assurance Program was suspended in 1996. Prior to this, the Quality Assurance Program ran over a five-year period from 1991 to 1995. This program described the accuracy and precision of the test results to assess the reliability of the results, and was specific to the variable and levels measured for objectives attainment. In its place the Ministry conducts a more general quality assurance program to ensure that contract laboratories are producing results that meet Ministry data quality standards. As well, regional offices incorporate some collection of replicate samples and submission of blanks as part of their normal sample collection activities.

PROVINCIAL OVERVIEW OF RESULTS

Presentation of Results

In the tables summarizing the monitoring data, there are four kinds of concluding statement. These are: objective met, objective not met, omitted 2002, and indefinite result.

To get an overview of performance for the Province, we totaled the number of occurrences of each conclusion 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 plus all average and percentile values being met or not met.

Table 1 shows the results of this compilation in 2002. For each Region we give the sum of occurrences for each kind of conclusion and then total them for the whole Province. We also express the occurrences as a percent of the total of all occurrences, both by Region and for the Province as a whole.

Discussion of Results

Although the results apply to specific occurrences, we assume for this analysis that they are representative of the whole year. This simplification is a conservative approach to describing the state of water quality since we usually attempt to collect data during worst-case conditions.

Table 1 shows that the objectives were met 85% of the time in the Province as a whole in 2002. This result varied according to Region from 51% to 94%. Objectives were not met from between 3% and 22% of the time, with an overall average of 10%.

The occurrence of objectives omitted and indefinite results in 2002 averaged 1% and 4%, respectively. If we subtract these instances from the total, the objectives were met 89% of the time and objectives not met 11% of the time. By subtracting the instances of no results, we speculate that if all objectives had yielded results, then the above trend would continue. We can therefore generalize that, in the Province as a whole, the objectives were met about 89% of the time in 2002.

Factors which can affect the overall outcome include the frequency at which particular objectives in any region are monitored, the completeness of monitoring in a basin, and the inclusion or omission of water basins with either serious or minor water quality problems.

When comparing the data from past years, the relatively low numbers seen in the mid-1990's have reversed somewhat (as seen in the table below), with the exception of a slight dip in 2000. However, it is speculated that a downward trend could resume, because new basins with known problems will be added and, as monitoring costs increase, there will be a tendency to cease monitoring in areas where objectives are being met to free-up funding for areas that may have persistent water quality concerns.

If we wish to use objectives attainment data to describe the general state of water quality in developed areas, we will need to maintain monitoring in all areas where objectives have been set. If monitoring resources are scarce, we will need to concentrate on areas where the worst water quality problems occur. This will produce an increasingly negative general result, although we would expect the situation to improve in subsequent years as corrective action is taken. The goal, of course, is for water quality objectives to be met 100% of the time in all areas. Monitoring in future years, followed by corrective action where required, will show how close we can get to this ideal situation.

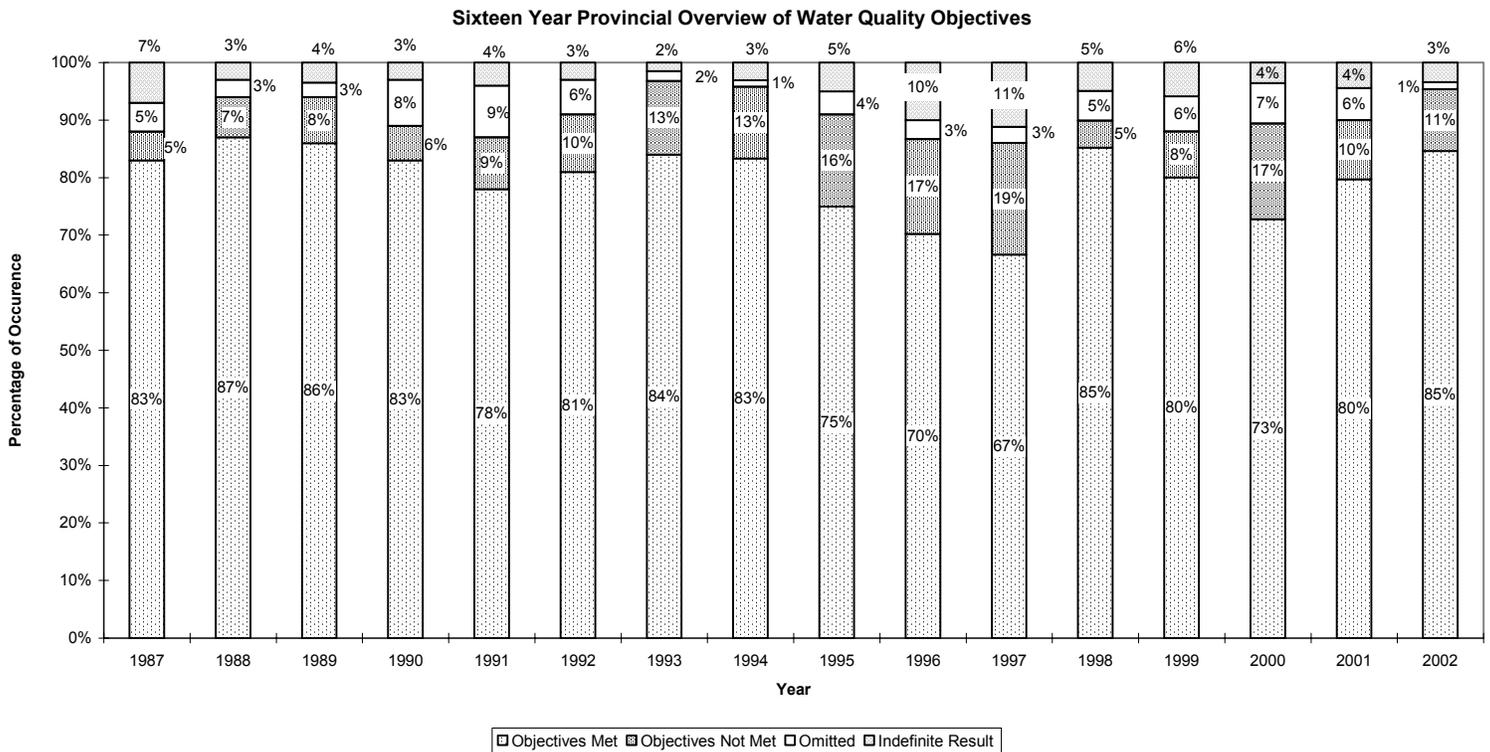
A comparison of objectives attainment (note: only attainment and exceedences were considered in calculations – data that was omitted or indefinite were not included).

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
% of the Time Objectives Were Met	94%	93%	91%	93%	90%	89%	87%	87%	82%	81%
Number of Basins Sampled	20	22	24	30	34	33	32	21	16	15

	1997	1998	1999	2000	2001	2002
% of the Time Objectives Were Met	77%	95%	91%	81%	89%	89%
Number of Basins Sampled	14	13	14	16	15	23

Sixteen-Year Water Quality Attainment Overview

This report marks the sixteenth year of the *Water Quality Objectives Attainment Report* series. Included below is a graph representing the findings from the past fifteen years of attainment reporting: this graph shows trends in each of the four concluding statements (objectives met, objectives not met, omitted, and indefinite results).



WATER QUALITY INDEX

The CCME (Canadian Council of Ministers of the Environment) water quality index has been calculated for the different water bodies. It should be noted that in prior years, the BC water quality index has been reported. We have now conformed our reporting to that developed within the CCME forum. It should be noted that the two can be compared but the CCME index is the reverse of the BC index. A BC value of 13 is approximately the same as a CCME index value of 87.

VANCOUVER ISLAND REGION

Cowichan-Koksilah Rivers

The Cowichan River is the most important river on Vancouver Island for recreational and commercial fisheries. The Koksilah River is a major tributary of the Cowichan River near its mouth. Possible sources of contamination include treated municipal sewage, agriculture, urban development, and effluents from a fish hatchery and abandoned metal mines.

Objectives were not checked from 1994 to 1997. Monitoring carried out from 1988 to 1993 gave fairly consistent results, with water quality ratings of fair for both rivers (Cowichan River index = 30 or CCME index of about 70; Koksilah River index = 36 or CCME index of about 74). It showed that objectives were not met for microbiological contaminants in both rivers and for algal growth in the lower part of the Cowichan River.

Table 2 lists results for 2002, and Figure 3 shows site locations. The CCME index values calculated for 2002 were 87 for the Cowichan River and 72 for the Koksilah River which equate to ranks of Good and Fair, respectively.

In 2002, objectives were met 94% of the time when sufficient data was collected to evaluate compliance. Fecal coliforms, *E. coli* and dissolved oxygen did not meet objectives on occasion.

Middle Quinsam Lake, and Quinsam River Basin

Middle Quinsam Lake drains via the Quinsam River into the Campbell River just upstream from the Campbell River estuary (Figures 4, 5). The Middle Quinsam Lake sub-basin is a valuable habitat for trout and salmon, but could be impacted by an open-pit coal mine operating in the area. It was noted as having excellent water quality (index = 3 or CCME index of about 97) based on measurements between 1989 and 1993 while the Quinsam River had good water quality (index = 8 or CCME index of about 92). Figures 4 and 5 show site locations.

Table 3 shows results for 2002. The CCME index value calculated for Long Lake in 2002 was 97, while the upper Quinsam River and Middle Quinsam Lake both had an index value of 100. This translates to a ranking of Excellent for all three waterbodies for 2002.

Water quality objectives were met 99% of the time in the Quinsam basin. The sole objective that was not met was for suspended solids in Long Lake.

Oyster River

The Oyster River flows from the Forbidden Plateau area into the Strait of Georgia, south from Campbell River (Figure 6). The river and its tributaries are important habitat for several species of trout and salmon. The main threats to water quality are logging, agriculture, and mine exploration. We expect the latter to lead to active mining in the future, especially for coal.

Between 1990 and 1993, the objectives were usually always met, with a water quality rating of good (index = 16 or CCME index of about 84). Since the situation is stable, we did not monitor from 1994 to 1997. A few samples were collected between 1998 and 2001.

Table 4 shows results for 2002. The CCME index value calculated for the Oyster River, the Little Oyster River and Woodhus Lake in 2002 was 100. This translates to a ranking of Excellent for all three waterbodies for 2002.

Water quality objectives were met 100% of the time in the Oyster River basin.

Elk and Beaver Lakes

Located near Victoria, these are the most important recreational fisheries lakes on southern Vancouver Island. Water-contact recreation is also very important in the lakes. Residential and agricultural development and the release of phosphorus from lake sediments are responsible for the present eutrophic state of the lakes.

Prior to this report, Elk and Beaver Lakes were monitored from 1993 to 1995. During the 1993 to 1995 study period, objectives for dissolved oxygen, chlorophyll-*a*, and the phytoplankton community were consistently not met, reflecting the eutrophic nature of the lakes. The water quality ratings were borderline, (index =54 or CCME index of about 46), for Elk Lake and poor, (index =72 or CCME index of about 28), for Beaver Lake.

Monitoring in the future will be a lower priority until action is taken to improve water quality conditions.

Tsolum River

The Tsolum River flows from Mount Washington to the Puntledge River at Comox on Georgia Strait (Figure 7). Acid-mine drainage from a closed copper mine in the headwaters creates high copper levels which are deleterious to fish. The river has the potential to support significant populations of salmonids.

Table 5 lists results for 2002. The Tsolum River had a CCME index value of 40 for 2002, which equates to a ranking of Poor.

Objectives for the Tsolum River were checked for the first time in 1994 in the river just downstream from the mine site. Since then, the objectives for dissolved copper were often not met.

Dissolved copper concentrations continued to exceed the maximum objective in 2002. Sampling frequencies were insufficient to determine if the mean copper objective was met (calculations for mean values require a minimum of five samples collected within a 30-day period).

We recommend continued objectives monitoring to track the progress of reclamation work at the mine.

Holland Creek and Stocking Lake

The Holland Creek and Stocking Lake watersheds, located near Ladysmith (Figure 8), are used mainly as a source of drinking water with some use for recreation and fisheries. Water quality objectives were prepared and approved recently as part of a watershed management plan for the area. Logging and road building are the main influences on water quality.

Monitoring to check the attainment of water quality objectives was carried out for the first time in 2002. The CCME WQI value for Stocking Lake was 84, while the value for Holland Creek was 73. These values translate to rankings of Good and Fair, respectively. Table 6 summarizes water quality data.

Objectives were met 91% of the time in Holland Creek and Stocking Lake. Objectives that were occasionally not met included fecal coliforms in Holland Creek, and average total organic carbon in both Holland Creek and Stocking Lake.

Quatse Lake

Quatse Lake is located on the north-eastern end of Vancouver Island, approximately three kilometres north from Coal Harbour. In addition to a source of drinking water for Coal Harbour, Quatse Lake is also an important aquatic habitat for both fish and wildlife. A substantial portion of the watershed has been logged, which in turn has raised concerns that water quality may be affected.

Monitoring to check the attainment of water quality objectives has not yet been carried out, and is not planned in the immediate future.

SKEENA REGION

Bulkley River

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 main influences on water quality are treated municipal effluent from Houston and Smithers, agriculture, urban runoff, and possible contamination in the headwaters from mining.

We have monitored the attainment of objectives from 1988 to 1992 and obtained consistent data, with a water quality rating of good, (index = 15 or CCME index of about 85). Given these results, we have not monitored the Bulkley River since 1992. We recommend monitoring to validate the rating should be carried out in 2004.

Kathlyn, Seymour, Round, and Tyhee Lakes

These four small lakes, in the Smithers area, are used for recreation, domestic water supply, and irrigation (Figure 9). The main influences on water quality are agriculture and residential development around the lakes.

Monitoring between 1987 and 1993 showed objectives for turbidity, colour, and phosphorus not being met due to the eutrophic nature of the lakes. No objectives monitoring took place between 1993 and 2001. Water quality was reported as fair for Kathlyn, (index = 34 or CCME index of about 66), and Tyhee, (index = 21 or CCME index of about 79), lakes in the 1996 water quality status report.

The CCME WQI values calculated for 2002 were 80 for Kathlyn Lake, 38 for Seymour Lake, 24 for Round Lake and 90 for Tyhee Lake. These values translate to rankings of Fair, Poor, Poor, and Good, respectively.

Table 7 summarizes the 2002 water quality data for these four lakes. Objectives as a whole were met 77% of the time in these lakes. Objectives that were not met included fecal coliforms, turbidity and colour.

Lower Kitimat River and Arm

The river and arm are an important migration route for salmonids, and the water is also used for recreation and for industrial and municipal supplies. A kraft pulp mill and a municipal treatment plant discharge to the river and an aluminum smelter and methanol plant discharge at the head of the arm.

We recommend continued monitoring as the Ministry works with dischargers to upgrade effluent treatment facilities.

Lakelse Lake

Lakelse Lake drains into the Skeena River (Figure 10) and is important for salmon spawning and rearing and for recreation. It is also used as a domestic water supply. The only threats to water quality are septic tanks around the shoreline, agriculture, and logging in watersheds that drain into the lake.

The objectives were last checked in 1992 and all were met, with a water quality rating of good (index = 9 or CCME index of about 91). No monitoring was conducted between 1992 and 2001.

The CCME WQI for Lakelse Lake was 79 in 2002, which equates to a ranking of Fair. Table 8 summarizes the 2002 water quality data for Lakelse Lake. Objectives were met 90% of the time, with average and maximum turbidity the only objective occasionally exceeded.

Yakoun River

The Yakoun River is on Graham Island in the Queen Charlotte Islands. It flows north from the Queen Charlotte Ranges into Masset Inlet. An open pit gold mine within the drainage has been proposed and water quality objectives have been set accordingly. The river has valuable fish resources, contributing all five species of salmon. It is also important for wildlife and recreation.

The development of the gold mine is in abeyance. We recommend monitoring to check the attainment of water quality objectives when the project proceeds.

OMINECA-PEACE REGION

Charlie Lake

Charlie Lake is used as a backup drinking water supply for the city of Fort St. John (the Peace River is the primary source) and for recreation. Agriculture, residential development around the lake, and nutrients from lake sediments are factors affecting water quality.

Monitoring from 1987 to 1993 showed the main problem to be high phosphorus levels causing eutrophic conditions, with a water quality rating of borderline (index = 46 or CCME index of about 64). Studies are underway to determine how to reduce nutrient input. The Charlie Lake Technical Advisory Committee is currently overseeing a watershed land-use/impact source survey to identify potential mitigation sites. Routine monitoring to check objectives should resume when corrective measures are undertaken.

Bullmoose Creek

Bullmoose Creek and its tributaries (West and South Bullmoose creeks) are important recreational fish habitat. The creeks are adjacent to an open pit coal mine.

The attainment of water quality objectives was documented by monitoring between 1987 and 1993 and there were no serious impacts, with a water quality ratings of fair for both Bullmoose Creek (index = 22 or CCME index of about 78), and West Bullmoose Creek (index = 23 or CCME index of about 77), and good for South Bullmoose Creek (index = 10 or CCME index of about 90). Further monitoring is a low priority at this time.

Nechako River

The Nechako River, a major tributary to the Fraser River at Prince George, has its flow controlled by dams for power generation for the Alcan aluminum smelting plant (Figure 11). The river is an important route for migrating salmon. Water quality can be affected by treated municipal sewage and diffuse sources such as forestry and agriculture. Water

temperature is influenced by the flow of water released from the dams and by the manner in which it is released.

In past years, the fecal coliform objectives were met in the Nechako River except immediately downstream from Vanderhoof. The temperature objectives immediately downstream from Cheslatta Falls were often not met in the summer. We have obtained similar results since 1987. For the period, 1987 to 1993, water quality was considered as fair (index = 22 or CCME index of about 78). Temperature objectives might be met if a cold-water release structure, proposed for the Kenney Dam upstream from Cheslatta Falls, is installed. The attainment of the temperature objectives further downstream on the Nechako at Vanderhoof and upstream from the Stuart River has improved due to water temperature management by the Nechako Fisheries Conservation Program.

Table 9 shows water quality data for 2002. The Nechako River had a CCME index value of 81 for 2002, which equates to a ranking of Good.

Water quality objectives for the Nechako River were met 95% of the time that an assessment could be made. However, there were no temperature data available for 2002, and there were likely some exceedences of the temperature water quality objective. The only parameter for which data are available that failed to consistently meet its objective was pH.

The Nechako Watershed Council and the Village of Vanderhoof have been advised of concerns associated with exceedence of coliform objectives downstream of Vanderhoof. Potential solutions include further treatment of the discharge or rerouting of the discharge to irrigation or wetlands to reduce nutrient concentrations. Alcan continues to monitor Nechako River water quality. Until action is taken by the Village of Vanderhoof it is not anticipated that water quality will change significantly, and therefore no further monitoring is recommended until that time or until 2007, whichever comes first.

Pine River

The Pine River, a tributary to the Peace River, supplies water to Chetwynd and supports significant sport fish populations. The water quality is considered to be mostly in a natural state with the major influence coming from forestry and from treated sewage from the Village of Chetwynd. On August 1, 2000 an oil pipeline ruptured, spilling almost 1 million litres of BC light crude oil to ground adjacent to the upper Pine River. Roughly half of this (or 500,000 litres) was believed to enter the Pine River. After an extensive cleanup, an estimated 80,000 L of in-river oil remained unaccounted for. This oil was likely dissolved in water, trapped in backwaters and deposited into and onto river sediment and river bottom substrates. Monitoring is ongoing, with continued spill response on an as-needed basis. Impact studies to determine potential short and long-term impacts from the spill are being reviewed by the Ministry at this time.

With regard to the other objectives currently in place for the Pine River, we presently consider monitoring to be a low priority for this basin and none was carried out after 1992. Past results show all objectives being met fairly consistently, with a water quality rating of good (index = 5 or CCME index of about 95). We recommend monitoring in 2004.

Pouce Coupe River and Dawson Creek

The Pouce Coupe River enters the Peace River inside the Alberta Border. Dawson Creek is its major tributary. The waters are impacted mainly by municipal discharges and agriculture.

The exact causes for objectives not being met need to be found. Water quality ratings were fair for the Pouce Coupe River (index = 33 or CCME index of about 67; period of record: 1987 to 1990), and borderline for Dawson Creek (index = 56 or CCME index of about 44; period of record: 1987 to 1989). Since objectives were consistently not met up to 1992, we will not resume monitoring to check their attainment until measures are taken to correct the problem. We recommend monitoring in 2004.

The City of Dawson Creek is monitoring both Dawson Creek and the Pouce Coupe River during spring freshet, as well as summer and winter low flows. We recommend that this work continue, and that data collected in the future be analyzed with respect to the existing water quality objectives for these water bodies.

Peace River

We have set objectives 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, forestry, agriculture, a gas plant, and a pulp mill built in 1988 after the objectives were set. We first checked the objectives in 1988. Water quality for the Peace River was judged as fair (index = 22 or CCME index of about 78), for the period of record from 1988 to 1993.

Objectives not met at times in 1994 included those for turbidity, suspended solids, temperature, and chromium. A limited amount of monitoring was conducted in 2002 at the joint Federal-Provincial monitoring site near Alces. The CCME WQI for the Peace River was 100 in 2002, which equates to a ranking of Excellent. Table 10 summarizes the 2002 water quality data for the Peace River, and Figure 12 shows site locations. Objectives were met 100% of the time that there was sufficient data to make a determination.

Considering Alberta's interest in the quality of the water crossing the provincial border, we recommend that objectives monitoring of the Peace River continue.

Upper Finlay River Sub-Basin

The Finlay River, located in the north east part of the Province, drains into the north end of Williston Lake. This river is broken into two sub-basins, the upper and the lower Finlay.

The drainage area of the upper Finlay sub-basin includes portions of the Skeena Mountains, Spatsizi Plateau, Omineca Mountains, and the Rocky Mountains. The upper Finlay was the site of a gold and silver mine and mill (the Baker Mine), now closed. The upper Finlay

system is an important aquatic habitat for sports fishery species such as Dolly Varden (*Salvelinus malma*), and Rainbow Trout (*Oncorhynchus mykiss*). In addition, other water uses include recreational uses and as a source of drinking water for the community of Ware. Objectives apply to Jock and Galen creeks, which eventually flow into the upper Finlay River.

The objectives were checked in 1987. The potential acid rock drainage situation at the Baker Mine is monitored annually in the spring and indicates that water quality in Galen Creek is acceptable. The Ministry will be negotiating a spring sampling program with the Baker Mine site owner. The large Kemess Mine, located in the Attichika Creek drainage above Thutade Lake, could potentially impact water quality, and monitoring of that site by the mining company is extensive. These data need to be added to the Ministry EMS database so that they can be used for reporting as appropriate. The need for monitoring in 2004 should reflect the data collected by the mines.

Lower Finlay River Sub-Basin

The lower Finlay sub-basin drains a portion of the Rocky Mountains, and the Finlay Range about 8000 km² in size. Even though the lower Finlay is an important fish habitat, other water use is minimal due to low development and population in the area. Water quality concerns stem from logging and potential mineral extraction in the region.

We recommend water quality monitoring in 2004 for one year. As development increases an assessment may show that monitoring is needed in the future.

Fraser River from the Source to Hope

This is the most important river in the Province in terms of fisheries values. Most of the contamination to the river between Moose Lake (the source of the river) and Hope is from pulp and paper mills and municipal treatment plants at Prince George and places downstream. Water quality objectives have been prepared to protect aquatic life, wildlife, irrigation, livestock watering, and drinking water supplies.

Table 11 lists 2002 water quality data, and Figure 13 shows site locations. A CCME index value was calculated for three sites on the Upper Fraser River in 2002: the Fraser River near Prince George, Fraser River near Quesnel and Fraser River at Hope. Index values were 65 near Hope (a ranking of Fair), 76 near Quesnel (a ranking of Fair), and 100 near Prince George (a ranking of Excellent).

Objectives were met in 92% of instances for the upper Fraser River. Parameters that did not consistently meet their objectives include dissolved oxygen and colour.

We recommend continued monitoring to check objectives in this section of the Fraser River, as well as increasing sampling frequency for fecal coliforms and *E. coli* sufficiently to be able to evaluate objective compliance.

CARIBOO REGION

Williams Lake

Williams Lake drains to the Fraser River and is important for drinking water, recreation, and aquatic life (Figure 14). The water quality is affected by phosphorus that comes from lake sediments and traditional farming practices in the San Jose River drainage, the main inlet to the lake, and to a lesser extent from residential septic systems around the lake. For the period from 1987 to 1993, the water quality was rated as borderline (index = 55 or CCME index of about 45). However, cores of the lake bottom have recently been sampled, and preliminary findings indicate that Williams Lake has historically been more eutrophic (productive) than originally thought. Therefore, the algal blooms and other indicators of high phosphorus concentrations may be endemic rather than linked to anthropogenic activities. Pending the final results of this investigation, the water quality objectives for Williams Lake may be changed to reflect this new information.

Total dissolved phosphorus concentrations measured between 1987 and the present show annual fluctuations that reflect changes in the amount of annual runoff each year, with no clear increasing or decreasing trend. However, water clarity appears to be steadily

improving, with increasing mean Secchi disk depths from 1977 to the present. Phosphorus concentrations and Secchi depths were the only parameters measured in both 2000 and 2001 for which objectives exist.

Table 12 lists water quality results and Figure 6 shows site locations. The CCME index value for Williams Lake in 2002 was 39, which equates to a ranking of Poor.

Water quality objectives not consistently met in Williams Lake include total phosphorus, total and average turbidity, and water clarity. Objectives were met 79% of the time.

There are continued concerns with land use in the Williams Lake basin, and ranchers have made numerous changes to reduce their impact. As such, they are generally in compliance with the Code of Agricultural Practice for Waste Management as specified in the Agricultural Waste Control Regulation. The South Lakeside area is now connected to the Williams Lake sewer system, which should help maintain water quality. Further potential impacts from upstream land uses have to be minimized to maintain and improve water quality. We recommend continued monitoring of objectives to track the progress of corrective measures being undertaken in the watershed, and for the water quality objectives for Williams Lake to be updated to reflect new knowledge.

San Jose River

The San Jose River originates at Lac La Hache and is the main inlet to Williams Lake. It is used mainly for irrigation, livestock watering, and water storage. Ranching is the activity with the most influence on water quality.

The Ministry set only one objective for the San Jose River, namely the total annual loading of dissolved phosphorus entering Williams Lake. The Region has measured this loading since the 1970's.

The annual load was based on a calendar year. It was derived by adding daily stream flows in Borland Creek and the San Jose River just upstream, multiplying the total daily flow by

the dissolved phosphorus daily concentrations measured in the San Jose downstream from Borland, plotting these daily loads against time, and measuring the area under the curve to obtain annual load. Sampling was suspended in 1997, and is not expected to continue until the objectives for Williams Lake have been updated.

SOUTHERN INTERIOR REGION

Bonaparte River

The Bonaparte River is a tributary to the Thompson River. It is an important trout habitat and is affected by agricultural operations and municipal discharges. Its main tributaries are Clinton Creek and Loon Creek.

The water quality objectives were last checked in 1994. Objectives not met at times included those for fecal coliforms, suspended solids, turbidity, chlorophyll-*a*, and the objective for dissolved oxygen in Loon Lake. The water quality rating for the time period 1987 to 1993 was Fair.

There are plans to improve water quality and correct problems. Routine monitoring to check attainment of objectives should resume in 2004 and after improvements are made.

Okanagan Valley Lakes

To date, objectives have only been set in the five main lakes for phosphorus, which is the major factor controlling the trophic state of the lakes (Figure 15). The lakes are highly valued for recreation, fisheries, and as a source of drinking and irrigation water. The major anthropogenic inputs of phosphorus are from treated municipal sewage and from diffuse sources that include septic tanks, agriculture, and forestry. However, the vast majority of phosphorus loading to the lakes is due to natural sources within the watershed (*e.g.* erosion). Phosphorus release from sediments also occurs in Wood Lake and Osoyoos Lake.

Table 13 lists results for 2002. CCME index rankings for Kalamalka, Osoyoos and Wood lakes in 2002 were in the Poor range, with index values ranging from 10 in Wood Lake to 39 in Osoyoos Lake. Skaha and Okanagan lakes were both rated as Excellent, with index values of 100. It should be noted that the rankings for any one year vary widely from year-to-year due to the influence of measuring only one variable.

Average spring turnover phosphorus objectives for the Okanagan Valley Lakes were met in 78% of instances where an assessment of data could be made. Objectives were consistently met in both Okanagan and Skaha lakes, consistently not met in Wood Lake, and occasionally met in Kalamalka and Osoyoos lakes.

Because there is only the single water quality objective for each lake (*i.e.*, spring overturn phosphorus), the index gives only a rough idea of the state of water quality. Better estimates will be provided when a few more pertinent objectives have been established and monitored.

Given the environmental and recreational importance of these lakes, we recommend continued monitoring of phosphorus at spring overturn, and the preparation of a more complete set of water quality objectives.

Similkameen River

The Similkameen River flows from Manning Park, east through the south Okanagan, then south across the U.S. border (Figure 16). It is important for fisheries, drinking water, and irrigation. Water quality could potentially be affected by mining and municipal discharges to ground and surface waters. We updated the water quality objectives in 1990 because of an increase in mining activity in the Hedley Creek area.

Monitoring between 1987 and 1993 has given consistent results with water quality ranked as good (index = 14 or CCME index of about 86), and was suspended in 1994 as low priority. The main problem has been with fecal coliforms, possibly from agricultural operations, which did not always meet the drinking water objective required for water that is treated by disinfection only. Limited data was collected in 1996 and 1997. All objectives were met in 1996, and all objectives except for total lead in Hedley Creek were met in 1997.

Table 14 lists results in 2002. CCME index rankings calculated for Hedley Creek and the Similkameen River for 2002 were 96 and 68, respectively. These values equate to ratings of Excellent and Fair for the two systems, respectively.

Objectives were met in 97% of all instances where there were sufficient data to determine compliance. Objectives that were exceeded on occasion in the Similkameen River include fecal coliforms, suspended solids, total copper, and total iron, total manganese, and turbidity. In Hedley Creek, the only objective that was not met consistently was that for strong acid dissociable cyanide (SAD-CN) + thiocyanate.

Cahill Creek

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 (Figure 17). Fish from the Similkameen River use the creek near its mouth and the water is also used for irrigation. This watershed is the site of a gold mine and mill that began operating in 1987, and closed in 1996. Monitoring to check objectives began in 1987, with water quality for 1987 to 1993 being rated as good (index =13 or CCME index of about 87). Objectives not met in 2000 and 2001 included turbidity, sulphate and total arsenic. In 2002, water quality data collected by the permittee was analyzed for objectives attainment, resulting in almost daily measurements for some parameters. This gives a much clearer picture of what is happening in Cahill Creek and its tributaries over the entire year than we have been able to ascertain in the past.

Table 15 provides a summary of the 2002 data. CCME index ratings for each of the creeks in 2002 (and their respective rankings) are as follows: Cahill Creek: 83 (Good); Hedley Creek: 100 (Excellent); Nickel Plate Mine Creek: 54 (Marginal); Red Top Gulch Creek: 64 (Marginal); Sunset Creek: 100 (Excellent).

Monitoring by the permittee will continue in order to document improving trends in nitrate, cyanide and sulphate in various surface waters draining the mine site.

Bessette Creek

Bessette Creek, which flows into the Shuswap River, is formed by the confluence of Harris and Duteau creeks near the town of Lumby. Lawson Creek, and its tributary Spider Creek,

flow into Duteau Creek. These creeks provide spawning habitat for trout and four species of salmon. Activities that can affect water quality include a telephone pole treatment plant near Harris Creek, a wood-waste landfill along Lawson Creek, seasonal discharge of municipal sewage effluent to Bessette Creek, and agricultural operations in the area generally. Based on data from 1990 to 1993, water quality was rated as fair for Bessette Creek (index = 33), Lawson Creek (index = 40 or CCME index of about 60), and Spider Creek (index = 40 or CCME index of about 60), but good in Harris Creek (index = 17 or CCME index of about 83).

Monitoring was suspended for 2002 but should resume in 2004.

Tributaries to Okanagan Lake near Westbank

We set objectives for Peachland, Trepanier, and Westbank creeks, which flow into Okanagan Lake in the Peachland-Westbank area. Peachland and Trepanier creeks support spawning populations of kokanee or trout, and all three creeks are used for irrigation and domestic water supplies. Effluent from a molybdenum mine (which closed in the early 1990's) had the potential to impact Peachland and Trepanier creeks, but seepage from this site is now captured and treated in order to meet the water quality objectives in Trepanier Creek. Westbank Creek is influenced by urban runoff and agricultural activities.

The objectives have been checked for three years with results showing generally good water quality, with water quality rating of Fair to Good. Further monitoring was considered a low priority and was discontinued in 1994.

Since that time, concerns have been raised about possible discharges from the closed Brenda Mines Operations. Hearings of the Environmental Appeal Board have resulted in the region re-assessing current objectives for Trepanier Creek. Monitoring should resume in 2004.

Tributaries to Okanagan Lake near Kelowna

Mission, Kelowna, and Brandt's creeks are tributaries to Okanagan Lake on its east shore near Kelowna. Mission and Kelowna creeks support salmonids and the water is also used for irrigation and domestic supply. Brandt's Creek is used mainly for irrigation. The creeks can be affected by urban storm-water runoff in their lower reaches and by logging or agriculture further upstream. Treated wastewater is discharged to Brandt's Creek.

The objectives were last checked in 1994. At that time, as in previous years, the objectives for bacteriological indicators (fecal coliforms, *E. coli*, and enterococci) were generally not met. Continued monitoring will depend on action taken in the future to control storm-water and other diffuse sources of contamination. Monitoring should resume in 2004.

Tributaries to Okanagan Lake near Vernon

Lower Vernon Creek and Deep Creek are tributaries to Okanagan Lake at its north end. The water is used for domestic and irrigation purposes and has some fisheries values, especially in lower Vernon Creek. Potential sources of contamination are urban storm-water runoff, a municipal sewage discharge, agricultural operations, and groundwater affected by spray irrigation of treated sewage.

Objectives were last checked in 1996, when objectives for suspended solids were not met in both creeks, and those for fecal coliforms and *E. coli* were not met on the Lower Vernon Creek. Monitoring should resume in 2004.

Hydraulic Creek

Hydraulic Creek flows into Okanagan Lake via Mission Creek about 10 km upstream from the lake. Hydraulic Creek is an important source of drinking water relying on disinfection only. The creek also supports a recreational fishery and is used for irrigation. Commercial logging in the watershed can affect these water uses.

Monitoring between 1991 and 1993 to check objectives showed that fecal coliform contamination was the main problem, with a water quality rating of fair (index =35 or CCME index of about 65). Monitoring was discontinued in 1994, as results were fairly predictable. Monitoring should resume in 2004.

Christina Lake

Christina Lake, located in south central B.C., drains into the Kettle River which joins the Columbia River in Washington State (Figure 18). The lake is important for recreation, domestic water supply and sport fish. The potential sources of contamination are residential development, agriculture, and logging.

Objectives were checked for the first time in 1994 and those not met included objectives for phytoplankton distribution, periphyton distribution, dissolved oxygen, and periphyton chlorophyll-*a*.

Table 16 shows 2002 attainment. The CCME index value for Christina Lake was 88 in 2002, which equates to a ranking Good.

Objectives were met 89% of the time that attainment could be determined. The only variable that occasionally did not meet its respective objective was seasonal water clarity as measured by Secchi depth.

We recommend resuming sampling until objectives have been checked for at least two more years to obtain a reasonable database.

Thompson River

We set objectives in 1992 for the South Thompson which drains Little Shuswap Lake, the North Thompson which joins the South Thompson at Kamloops, Kamloops Lake, and the lower Thompson which is a major tributary to the Fraser River (Figure 19). This river

system is very important for fish, especially salmon and trout. It is used extensively for recreation and is also a source of water for drinking, irrigation, and industrial use.

Between the North Thompson River and Kamloops Lake, the river receives treated effluents from a bleached kraft pulp mill and from the City of Kamloops. There are also diffuse discharges from agriculture and forestry. All these discharges can affect Kamloops Lake and the Thompson River downstream.

Table 17 lists results in 2002 and Figure 19 shows site locations. The CCME index value for the Lower Thompson was 58 (equivalent to a ranking of Marginal), while the index value for Kamloops Lake was 100 (equivalent to a ranking of Excellent).

Objectives were met 90% of the time in the Thompson River system. Objectives that were occasionally not met include fecal coliforms and chlorophyll-*a* in the Lower Thompson River.

We recommend continued monitoring to check Thompson River objectives.

Keremeos Creek

Water quality objectives were set for Keremeos Creek and its main tributaries (South Keremeos Creek, Cedar Creek and Olalla Creek) in 2000. Keremeos Creek provides important fish-rearing habitat, and is a source of water for domestic and irrigation use. A ski resort in the headwaters of Keremeos Creek, as well as agriculture, forestry and road maintenance operations, all influence the water quality of these creeks to varying degrees.

2002 represents the first year that objectives attainment was monitored for Keremeos Creek. Table 18 lists results in 2002 and Figure 20 shows site locations. The CCME index value for Keremeos Creek was 87 (equivalent to a ranking of Good), the index value for Cedar Creek was 100 (equivalent to a ranking of Excellent) and the value for Olalla Creek was 95 (equivalent to a ranking of Excellent).

Objectives were met 97% of the time in the Keremeos Creek system. Objectives that were occasionally not met include fecal coliforms, turbidity and suspended solids.

We recommend continued monitoring to check Keremeos Creek objectives.

KOOTENAY REGION

Columbia and Windermere Lakes

These two lakes are important for fisheries, recreation, and as a source of drinking water. Residential development around the lakes is the main potential influence on water quality.

Attainment monitoring for water quality objectives was conducted in Columbia and Windermere lakes between 1987 and 1992. Since the objectives were met fairly consistently over this time period, with a water quality rating of good (index = 5 or CCME index of about 95 for Columbia Lake and 4 or CCME index of about 96 for Windermere Lake), attainment monitoring was discontinued in 1993.

A limited monitoring program was undertaken for Windermere Lake in 2002 to determine if shoreline development was impacting water quality. There are presently eighteen water intakes drawing water from Windermere Lake. Three of these intakes were incorporated in the program. The study was designed to determine if the combination of heavy development on silt soils and the increased reliance on septic systems for domestic waste water disposal was affecting the productivity of the lake. Results from this study will be available in 2004/2005 and will be used to determine whether further monitoring is required in this area.

Toby Creek and Upper Columbia River

Toby Creek enters the Upper Columbia River just downstream from Windermere Lake. Both watercourses are important for aquatic life and recreation. Potential sources of contamination in Toby Creek include indirect discharges of domestic sewage and by drainage from an abandoned mine. The Upper Columbia River receives an indirect discharge of treated sewage from Fairmont and Radium Hot Springs. In addition, Edgewater directly discharges treated sewage effluent into the Upper Columbia twice a year.

All objectives were generally met except occasional exceedences for fecal coliforms. We did not monitor after 1989 in Toby Creek and 1992 in the Upper Columbia River, as monitoring was considered a low priority at this time.

Limited monitoring was conducted in 2002 in both Toby Creek and the Upper Columbia River. The impact from the abandoned mine site on Toby Creek water quality was assessed to determine if the existing mine tailings were entering the creek and impacting water quality. Monitoring was also conducted in the Upper Columbia River in 2002 to assess whether treated sewage effluent was impacting water quality. Results of these studies will be available in 2004/2005 and will be used to determine whether further monitoring is required in this area.

Columbia River from Keenleyside to Birchbank

The Columbia River is one of the major rivers in B.C. and Washington State. In B.C., this section of the river is important for aquatic life, sport fishing, recreation and, to a lesser extent, as a drinking water supply. In the U.S., it supports a food fishery, major salmon runs, and irrigation and drinking water supplies. Between the Hugh Keenleyside Dam and Birchbank, the main influence is a kraft pulp mill that expanded production and upgraded its effluent treatment to secondary between 1991 and 1993. There are also small discharges of secondary-treated municipal effluent and urban runoff.

An objectives report for this section of the Columbia River was completed in 1992. Objectives were monitored over a period of three years. However, the monitoring program was significantly reduced in 1997 and was discontinued in 1998. Limited attainment monitoring was reintroduced in this section of the Columbia River in 2002. These results will be used to determine the frequency of further objectives monitoring in this area.

Water quality was rated as fair in the 1996 status report (index = 35 or CCME index of about 65), but appears to be improving based on data review from 1991 to 1993.

The CCME WQI for the upper Columbia River was 75 in 2002, which equates to a ranking of Fair. Table 19 summarizes the 2002 water quality data for the upper Columbia River,

and Figure 21 shows site locations. Objectives were met 86% of the time, with objectives for dissolved oxygen and dioxins and furans in sediments occasionally not met. Considering the international significance of the river and its importance to aquatic life, continued monitoring to check the attainment of objectives is recommended.

Columbia River from Birchbank to the International Border

The Columbia River is one of the major rivers in both B.C. and Washington State. In B.C., this section of the river is important for aquatic life, sport fishing, recreation and, to a lesser extent, as a drinking water supply. In the U.S., the Columbia River supports a food fishery, major salmon runs, and irrigation and drinking water supplies. Between Birchbank and the international border, the main influence is a metal smelter and refinery at Trail. There are also small discharges of secondary-treated municipal effluent and urban runoff.

A draft objectives report for this section of the Columbia River was completed in 1997 (MacDonald Environmental, 1997), and updated objectives were formalized in 2000; (MWLAP 2000). Attainment monitoring has been conducted annually in this section of the river since 1998. In 2002, attainment monitoring included water, sediment and fish tissue sampling at several sites between Birchbank and the international border and water sampling bi-weekly at Birchbank and weekly at Waneta.

Table 20 lists results for 2002, and Figure 22 shows site locations. The CCME index value for the lower Columbia River was 78 in 2002, which equates to a ranking of Fair. The lower Columbia River was also rated as Fair in both 2000 and 2001.

Objectives were met 97% of the time in the lower Columbia River when there were sufficient data to assess attainment. Objectives that were occasionally not met included bacteriological indicators, pH, arsenic, cadmium, copper, lead, zinc and dioxins/furans in sediments, and lead, mercury and dioxins/furans in fish.

Considering the international significance of the river and its importance to aquatic life, continued monitoring to check the attainment of objectives is recommended.

Elk River

The Elk River and its main tributaries, the Fording River, Line Creek and Michel Creek, are located in the south-eastern part of the province. The Elk River is a tributary to Lake Koochanusa on the east side. We have set provisional objectives for suspended solids and substrate sedimentation to protect aquatic life against the potential effects of coal mining operations in the basin.

The objectives for suspended solids apply to base flow, or the non-freshet period, in the Elk River basin. They were generally met at all sites in 1993. Limited monitoring was conducted in 2002. The CCME WQI for the Elk River was 100 in 2002, which equates to a ranking of Excellent. Table 21 summarizes the 2002 water quality data for the Elk River. Objectives were met 100% of the time. We recommend monitoring in 2004.

LOWER MAINLAND REGION

Fraser River from Hope to Kanaka Creek

We have set objectives for the Fraser River between Hope and Kanaka Creek, for tributaries entering from the south, and for 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 major discharges to the Fraser River in this section are of treated municipal sewage.

Monitoring to check objectives was carried out in 1987, 1988, 1990, 1992, and 1993. The objectives were updated in 1998 and we recommend checking the revised objectives when they are finalized. Overall water quality was rated as good (index = 7 or CCME index of 93). We recommend monitoring in 2004.

Fraser River from Kanaka Creek to the Mouth

The river downstream from Kanaka Creek and the outer estuary (Figure 23) are very important for salmon migration and rearing. The water is used for irrigation and certain beaches are heavily used for recreation. Water quality can be affected by industry, treated sewage, and agriculture.

Water quality was rated as Good (index = 4 or CCME index of 96), in the Main Stem, Fair (index = 28 or CCME index of 72), in the Main Arm, and Fair (index = 18 or CCME index of 82), in the North Arm.

We have monitored to check objectives annually since 1987. Due to the provincial importance of this river and the threats to water quality that exist in this section, we recommend that such monitoring be continued annually. Updated objectives were released in 2000. Limited bacteriological data were collected by the Greater Vancouver Regional District (GVRD) in 2002. A CCME WQI value was calculated for two portions of the Fraser River between Kanaka Creek and the mouth: the Main Arm (ranking of 100, equivalent to Excellent) and Sturgeon Banks (ranking of 100, equivalent to Excellent).

Table 22 summarizes the 2002 water quality data for the Fraser River between Kanaka Creek and the mouth. Objectives were met 100% of the time. We recommend monitoring in 2004.

Boundary Bay

Boundary Bay sustains a crab and herring fishery and is important for recreation. The Little Campbell River, the Serpentine River, and the Nicomekl River are tributaries to Boundary Bay on the east side (Figure 24). They provide important habitat for trout and salmon and are used for irrigation. The main influences on water quality are from sewage pumping stations, storm-water, and septic tanks in Boundary Bay and from agriculture in the tributaries.

Objectives were checked from 1988 to 1993 giving consistent results, with a water quality rating of fair (index = 40 or CCME index of 60). Since the situation is stable and fairly well documented, further monitoring was considered a low priority except where required at bathing beaches for human health reasons. Sampling resumed in 1999, when four samples were collected at various sites and analyzed for a number of parameters. Three samples were also collected in 2000, and six samples were collected in 2002.

Table 23 presents results for Boundary Bay in 2002, and Figure 24 shows site locations. CCME rankings were calculated for the various creeks entering Boundary Bay for 2002, and values ranged from 51 for Little Campbell River (equivalent to Marginal) to 90 for Mahood Creek, Murray Creek and Latimer Creek (equivalent to Good). Other tributaries for which WQI values were calculated included the Serpentine River, the Nicomekl River, Anderson Creek and Hyland Creek.

Objectives were met in 84% of instances where a determination of attainment could be made. Parameters which occasionally failed to meet their objectives included dissolved oxygen and maximum and average nitrite levels.

Burrard Inlet

Burrard Inlet includes Port Moody Arm, Indian Arm, Vancouver Harbour, False Creek, and English Bay (Figure 25). The water is designated for aquatic life and wildlife in all areas and for primary-contact recreation in most areas, except in False Creek. There are several municipal and industrial discharges to Burrard Inlet that can affect water quality. These include primary-treated sewage, combined sewer overflows, storm-water, bulk-loading terminals, a sugar refinery, a sodium chlorate plant, a chlor-alkali plant, and oil depots. Water quality was ranked as Fair in Port Moody Arm (index = 40 or CCME index of 60), Indian Arm (index = 18 or CCME index of 82), Second Narrows to Roche Point (index = 31 or CCME index of 69), First to Second Narrows (index = 42 or CCME index of 58), and outer Burrard Inlet (index = 20 or CCME index of 80), but Borderline in False Creek (index = 44 or CCME index of 56). Samples were last collected in 1996 and 1997, but analyzed only for fecal coliforms. Objectives for fecal coliforms were occasionally not met at Deep Cover, Cates Park and Brockton Point.

In the past, objectives have not been met for a number of other variables, including metals in sediments, phenol in water, and PCBs and PAHs in sediments. Approximately five samples were collected at various sites in the inlet in 2002.

Table 24 presents results for Burrard Inlet in 2002. CCME rankings for the individual sub-basins for 2000 were: Outer Burrard, an index value of 98 (equivalent to a ranking of Excellent), False Creek, a value of 100 (equivalent to a ranking of Excellent); 1st Narrows to 2nd Narrows, an index value of 67 (equivalent to a ranking of Fair); 2nd Narrows to Roche Point, an index value of 98 (equivalent to a ranking of Excellent), and Port Moody and Indian Arms, both of which received a WQI value of 100 (equivalent to a ranking of Excellent).

Objectives for Burrard Inlet were in 86% of instances where there was sufficient data to make a determination in 2002. Parameters occasionally exceeding their objectives included fecal coliforms, suspended solids and maximum copper concentrations in water, and

cadmium, copper, lead, mercury, zinc, PCB and PAH concentrations in sediments. We recommend monitoring continue in Burrard Inlet in 2004.

Burrard Inlet Tributaries

We have set objectives for the following three tributaries to Burrard Inlet: School House Brook (which discharges to Port Moody Arm and could be influenced by a chemical polymer plant); Lynn Creek (which discharges to Vancouver Harbour and could be affected by a municipal landfill); and the Capilano River (which discharges to outer Burrard Inlet and may also be affected by a municipal landfill). The main uses of these tributaries are recreation, aquatic life, and wildlife.

The water quality objectives were last checked in 1994. At that time, objectives were not met at times for phenols, water temperature, chromium, iron, zinc, and chlorophenols in water. Water quality was ranked as fair in School House Brook (index = 38 or CCME index of 62), good in Lynn Creek (index = 12 or CCME index of 88), and good in the Capilano River (index = 16 or CCME index of 84).

Although we have data for four years, we recommend resuming monitoring in 2004 because the past record is rather incomplete.

North Shore Lower Fraser Tributaries

Objectives have been set for the following four tributaries to the north shore of the lower Fraser River in the Lower Mainland: Kanaka Creek, the Pitt River, the Coquitlam River, and the Brunette River. All these streams, and their tributary streams and lakes, support salmon and trout fisheries to varying degrees. Most are important for recreation and some are sources of drinking water requiring treatment. Discharges that can affect water quality include storm-water, agricultural runoff, treated sewage, landfill leachates, wastewaters from gravel operations, and a wood preservation plant.

Monitoring from 1990 to 1993 gave fairly consistent results, and we consider future monitoring to be a relatively low priority until some of the water quality problems, caused mainly by non-point sources, are addressed. Water quality was ranked as fair in Kanaka Creek (index = 41 or CCME index of 59), good in the Pitt River (index = 16 or CCME index of 84), and Pitt Lake (index = 4 or CCME index of 96), fair in the Alouette (index = 24 or CCME index of 76) and North Alouette (index = 22 or CCME index of 78) rivers, and excellent (index = 3 or CCME index of 97) in Alouette Lake. Coquitlam River water quality was ranked as fair (index = 34 or CCME index of 66), while the Brunette River was good (index = 14 or CCME index of 86). We recommend monitoring resume in 2004.

Pender Harbour

Pender Harbour, a small coastal inlet on the Sechelt Peninsula, is important for recreational boating and fishing. It also supports commercial fishing and some commercial shellfish harvesting. The main influences on water quality are from diffuse sources such as septic tanks, some agriculture, and sewage discharges from boats.

In 1994, the third year of monitoring, objectives were often not met for copper, lead, and zinc in both water and sediments and for iron in water. Objectives for tri-butyl tin in water and PAHs in sediments were also not met. These results were similar to those of past years. Since the situation is stable and reasonably well defined, monitoring is a lower priority in the immediate future. We recommend monitoring in 2004.

Sechelt Inlet

Sechelt Inlet is located on the mainland coast about 80 km northwest of Vancouver. It is important for fisheries, especially fish farming, and recreation and has potential for shellfish harvesting. Potential sources of contamination include residential development, marinas, logging and minor discharges from gravel washing, a fish hatchery, and mariculture.

Monitoring for the second time in 1994 showed that objectives for suspended solids, copper, lead, and zinc were not met at times, mostly near a dock in Porpoise Bay at the south end of the inlet.

We recommend continuing the program for at least one more year to obtain a reasonable database.

Table 1. Provincial Overview of Water Quality Objectives – 2002

Region	Number of Occurrences				Totals
	Objectives Met	Objectives Not Met	Indefinite Results	Omitted 2002	
Vancouver Island	942 79.1%	31 2.6%	197 16.5%	21 1.8%	1191 100.0%
Lower Mainland	1033 76.8%	145 10.8%	117 8.7%	50 3.7%	1345 100.0%
Southern Interior	8070 87.0%	1091 11.8%	77 0.8%	35 0.4%	9273 100.0%
Kootenays	1165 94.2%	53 4.3%	11 0.9%	8 0.6%	1237 100.0%
Cariboo	22 68.8%	6 18.8%	0 0.0%	4 12.5%	32 100.0%
Omineca - Peace	197 50.6%	11 2.8%	140 36.0%	41 10.5%	389 100.0%
Skeena	258 77.9%	71 21.5%	1 0.3%	1 0.3%	331 100.0%
All Regions	11687 84.7%	1408 10.2%	543 3.9%	160 1.2%	13798 100.0%
All Regions less occurrences with no result	11687 89.2%	1408 10.8%			13095 100.0%

Table 2. Cowichan - Koksilah Rivers Water Quality Objectives - 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliforms < 10 /100 mL 90th percentile (np)	Cowichan River: E206108	Aug 7 - Nov 24	10	< 1 - 230 CFU/100 mL	
	d/s Cowichan Lake	Oct 27 - Nov 24	1	np = 31.2 CFU/100 mL	Objective not met
	0120808 300m u/s L. Cowichan STP	Apr 9 - Nov 24	15	2 - 38 CFU/100 mL	
		Aug 6 - 25, Oct 27 - Nov 24	2	np = 21.8 - 32 CFU/100 mL	Objective not met
	E206107 400m d/s L. Cowichan STP	Apr 9 - Nov 24	15	4 - 86 CFU/100 mL	
		Aug 6 - 25, Oct 27 - Nov 24	2	np = 26 - 66 CFU/100 mL	Objective not met
	0120802 u/s Highway 1	Aug 7 - Nov 25	10	4 - 170 CFU/100 mL	
		Oct 27 - Nov 25	1	np = 146 CFU/100 mL	Objective not met
	Koksilah River: E207425	Aug 7 - Nov 24	10	< 1 - 285 CFU/100 mL	
	Pt. Renfrew Rd.	Oct 27 - Nov 24	1	np = 21.2 CFU/100 mL	Objective not met
	E206976 Koksilah Rd.	Aug 7 - Nov 24	10	1 - 630 CFU/100 mL	
		Oct 27 - Nov 24	1	np = 20.4 CFU/100 mL	Objective not met
	0123981 at Highway 1	Jan 3 - Dec 19	40	< 1 - 400 CFU/100 mL	
		Aug 7 - 21, Aug 25 - Sep 19, Oct 2 - 30, Nov 4 - 25	4	np = 48.8 - 213.2 CFU/100 mL	Objective not met
E207433 D/S Kelvin Creek	Aug 7 - Nov 24	10	1 - 49 CFU/100 mL		
	Oct 28 - Nov 24	1	np = 8.8 CFU/100 mL	Objective met	
<i>E. coli</i> < 10 /100 mL 90th percentile (np)	Cowichan River: E206108	Aug 7 - Nov 24	10	2 - 40 CFU/100 mL	
	d/s Cowichan Lake	Oct 27 - Nov 24	1	np = 21.8 CFU/100 mL	Objective not met
	0120808 300m u/s L. Cowichan STP	Aug 7 - Nov 24	10	2 - 40 CFU/100 mL	
		Oct 27 - Nov 24	1	np = 9.8 CFU/100 mL	Objective met
	E206107 400m d/s L. Cowichan STP	Aug 7 - Nov 24	10	< 1 - 49 CFU/100 mL	
		Oct 27 - Nov 24	1	np = 37.8 CFU/100 mL	Objective not met
	0120802 u/s Highway 1	Aug 7 - Nov 25	10	< 1 - 68 CFU/100 mL	
		Oct 27 - Nov 25	1	np = 59.6 CFU/100 mL	Objective not met
	Koksilah River: E207425	Aug 7 - Nov 24	10	< 1 - 221 CFU/100 mL	
	Pt. Renfrew Rd.	Oct 27 - Nov 24	1	np = 8 CFU/100 mL	Objective met
	E206976 Koksilah Rd.	Aug 7 - Nov 24	10	< 1 - 630 CFU/100 mL	
		Oct 27 - Nov 24	1	np = 8.2 CFU/100 mL	Objective met
	0123981 at Highway 1	Aug 7 - Nov 25	10	2 - 187 CFU/100 mL	
		Oct 27 - Nov 25	1	np = 57.6 CFU/100 mL	Objective not met
E207433 D/S Kelvin Creek	Aug 7 - Nov 24	10	1 - 36 CFU/100 mL		
	Oct 27 - Nov 24	1	np = 7.6 CFU/100 mL	Objective met	

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
<i>E. coli</i> < 385 /100 mL 90th percentile (np)	Cowichan River: E206106	Aug 7 - Nov 25	10	< 1 - 79 CFU/100 mL	Objective met
	1 km d/s Duncan STP	Oct 28 - Nov 25	1	np =65.8 CFU/100 mL	
<i>Enterococci</i> < 3 /100 mL 90th percentile (np)	Cowichan River Koksilah River	2002	0	no data collected	Omitted 2002
Turbidity max increase: 5 NTU or 10%	Cowichan River: E206108 d/s Cowichan Lake	Aug 7 - Nov 11	8	0.46 - 1.13 NTU	Control Site
	0120808 300m u/s L. Cowichan STP	Aug 7 - Nov 11	8	0.36 - 1.04 NTU	Objective met
			8	increase = 0 - 0.41 NTU	
	E206107 400m d/s L. Cowichan STP	Aug 7 - Nov 11	8	0.39 - 0.58 NTU	Objective met
			8	increase = 0 - 0.09 NTU	
	0120802 u/s Highway 1	Aug 7 - Nov 11	8	0.44 - 1.81 NTU	Objective met
			8	increase = 0 - 1.3 NTU	
	E206106 1 km d/s Duncan STP	Jan 3 - Nov 11	25	0.29 - 25 NTU	Objective met
		Aug 7 - Nov 11	8	increase = 0 - 2.06 NTU	
	Koksilah River: E207425 Pt. Renfrew Rd.	Aug 7 - Nov 11	8	0.18 - 1.17 NTU	Control Site
	E206976 Koksilah Rd.	Aug 7 - Nov 11	6	0.51 - 1.43 NTU	Objective met
			6	increase = 0.24 - 0.86 NTU	
	0123981 at Highway 1	Jan 3 - Nov 11	23	0.17 - 30.9 NTU	Objective met
		Aug 7 - Nov 11	5	increase = 0.09 - 1.95 NTU	
E207433 D/S Kelvin Creek	Aug 7 - Nov 11	6	0.57 - 1.67 CFU/100 mL	Objective met	
		6	increase = 0.12 - 1.31 NTU		
Suspended Solids max. increase 10 mg/L or 10%	Cowichan River: E206108 d/s Cowichan Lake	Aug 7 - Nov 11	8	< 1 - 16 mg/L	Control Site
	0120808 300m u/s L. Cowichan STP	Aug 7 - Nov 11	8	< 1 - 4 mg/L	Objective met
			8	increase = 0 - 1 mg/L	
	E206107 400m d/s L. Cowichan STP	Aug 7 - Nov 11 Aug 22	8 1	< 1 - 2 mg/L 46 mg/L	Objective met
		Aug 7 - Nov 11	8	increase = 0 mg/L	
	0120802 u/s Highway 1	Aug 7 - Nov 11	8	< 1 - 16 mg/L	Objective met
			8	increase = 0 - 1 mg/L	
	E206106 1 km d/s Duncan STP	Aug 7 - Nov 11	7	< 1 - 4 mg/L	Objective met
		5	increase = 0 - 1 mg/L		

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Suspended Solids max. increase 10 mg/L or 10%	Koksilah River: E207425 Pt. Renfrew Rd.	Aug 7 - Nov 11	8	< 1 - 4 mg/L	Control Site
	E206976 Koksilah Rd.	Aug 7 - Nov 11	6	< 1 - 3 mg/L	
			6	increase = 1 - 3 mg/L	Objective met
	0123981 at Highway 1	Aug 7 - Nov 11	6	< 1 - 12 mg/L	
			5	increase = 0 - 8 mg/L	Objective met
	E207433 D/S Kelvin Creek	Aug 7 - Nov 11	6	< 1 - 6 mg/L	
			6	increase = 0 - 2 mg/L	Objective met
	Ammonia-N < 1.30 mg/L av 6.75 mg/L max at pH = 7.9 temp = 15 C	Cowichan River: E206108 d/s Cowichan Lake	Aug 7 - Nov 11	6	< 0.005 - 0.007 mg/L
0120808 300m u/s L. Cowichan STP		Aug 7 - Sep 8	1	av. = 0.0062 mg/L	Objective met
		Apr 9 - Nov 11	13	< 0.003 - 0.041 mg/L	Max obj. met
E206107 400m d/s L. Cowichan STP		Aug 6 - 25	1	av. = 0.0098 mg/L	Av obj. met
		Apr 9 - Nov 11	14	< 0.003 - 0.059 mg/L	Max obj. met
0120802 u/s Highway 1		Aug 6 - 25	1	av. = 0.0154 mg/L	Av obj. met
		Aug 7 - Nov 11	8	< 0.005 - 0.113 mg/L	Max obj. met
E206106 1 km d/s Duncan STP		Aug 7 - Nov 11	7	< 0.005 - 0.012 mg/L	Max obj. met
			1	av. = 0.006 mg/L	Indefinite result
Chlorophyll-a 50 mg/m ² max		Cowichan River	2002	0	no data collected
Total Cl ₂ Res. 0.002 mg/L max	Cowichan River	2002	0	no data collected	Omitted 2002
Dissolved Oxygen 8.0 mg/L min Jun - Sep 11.2 mg/L min Oct - May	Cowichan River: E206106 1 km d/s Duncan STP	Jul 24 - Aug 7 Jul.10	4 1	8.0 - 9.2 mg/L 7.3 mg/L	Objective met Objective not met
	Koksilah River: 0123981 at Highway 1	Jul 10 - Sep 5	7	4.9 - 7.8 mg/L	Objective not met
Dissolved Cu <0.002 mg/L av 0.004 mg/L max or 20% increase	Cowichan River: E206108 d/s Cowichan Lake	Aug 7 - Nov 11	8	0.00012 - 0.00076 mg/L	Max obj. met
	0120808 300m u/s L. Cowichan STP	Aug 7 - Sep 8	1	av. = 0.00040 mg/L	Objective met
		Aug 7 - Nov 11	8	0.0002 - 0.00113 mg/L	Max obj. met
	E206107 400m d/s L. Cowichan STP	Aug 7 - Sep 8	1	av. = 0.00028 mg/L	Objective met
		Aug 7 - Nov 11	9	0.00017 - < 0.05 mg/L	Max obj. met
		Aug 7 - Sep 8	1	av. < 0.0102 mg/L	Indefinite result

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION	
	SITE	DATE	n	VALUE		
Dissolved Cu <0.002 mg/L av 0.004 mg/L max or 20% increase	0120802 u/s Highway 1	Aug 7 - Nov 11	8	0.00008 - 0.00137 mg/L	Max obj. met	
		Aug 7 - Sep 8	1	av. = 0.00030 mg/L	Objective met	
	E206106 1 km d/s Duncan STP	Aug 7 - Nov 11	7	0.00035 - 0.00129 mg/L	Max obj. met	
		Aug 7 - Sep 8	1	av. = 0.00042 mg/L	Objective met	
	Koksilah River: E207425 Pt. Renfrew Rd.	Aug 7 - Nov 11	8	0.00012 - 0.00093 mg/L	Max obj. met	
		Aug 7 - Sep 2	1	av. = 0.00047 mg/L	Objective met	
	E206976 Koksilah Rd.	Aug 7 - Nov 11	7	0.00033 - 0.00105 mg/L	Max obj. met	
		Aug 7 - Sep 8	1	av. = 0.00045 mg/L	Objective met	
	0123981 at Highway 1	Aug 7 - Nov 11	7	0.00013 - 0.00186 mg/L	Max obj. met	
		Aug 7 - Sep 8	1	av. = 0.00046 mg/L	Objective met	
	E207433 D/S Kelvin Creek	Aug 7 - Nov 11	7	0.00021 - 0.00086 mg/L	Max obj. met	
		Aug 7 - Sep 8	1	av. = 0.00051 mg/L	Objective met	
	Dissolved Pb <0.003 mg/L av 0.008 mg/L max or 20% increase	Cowichan River: E206108 d/s Cowichan Lake	Aug 7 - Nov 11	8	0.00009 - 0.00027 mg/L	Max obj. met
			Aug 7 - Sep 8	1	av. = 0.00019 mg/L	Objective met
0120808 300m u/s L. Cowichan STP		Aug 7 - Nov 11	8	0.0001 - 0.0017 mg/L	Max obj. met	
		Aug 7 - Sep 8	1	av. = 0.00014 mg/L	Objective met	
E206107 400m d/s L. Cowichan STP		Aug 7 - Nov 11	9	0.00006 - 0.00018 mg/L	Max obj. met	
		Aug 7 - Sep 8	1	av. = 0.00015 mg/L	Objective met	
0120802 u/s Highway 1		Aug 7 - Nov 11	8	0.00008 - 0.00018 mg/L	Max obj. met	
		Aug 7 - Sep 8	1	av. = 0.00012 mg/L	Objective met	
E206106 1 km d/s Duncan STP		Aug 7 - Nov 11	6	0.0001 - 0.0002 mg/L	Max obj. met	
		Sep.2 Aug 7 - Sep 8	1 1	< 0.01 mg/L av. < 0.002 mg/L	Indefinite result Objective met	
Koksilah River: E207425 Pt. Renfrew Rd.		Aug 7 - Nov 11	7	0.00009 - 0.00019 mg/L	Max obj. met	
		Sep.2 Aug 7 - Sep 2	1 1	< 0.01 mg/L av. < 0.0002 mg/L	Indefinite result Objective met	
E206976 Koksilah Rd.		Aug 7 - Nov 11	7	0.00009 - 0.00021 mg/L	Max obj. met	
		Aug 7 - Sep 8	1	av. = 0.000148 mg/L	Objective met	
0123981 at Highway 1	Aug 7 - Nov 11	7	0.0001 - 0.00043 mg/L	Max obj. met		
	Aug 7 - Sep 8	1	av. = 0.00013 mg/L	Objective met		
E207433 D/S Kelvin Creek	Aug 7 - Nov 11	7	0.00008 - 0.00016 mg/L	Max obj. met		
	Aug 7 - Sep 8	1	av. = 0.00014 mg/L	Objective met		

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Dissolved Zn <0.030 mg/L av 0.180 mg/L max or 20% increase	Cowichan River: E206108	Aug 7 - Nov 11	8	0.0007 - < 0.1 mg/L	Max obj. met
	d/s Cowichan Lake	Aug 7 - Sep 8	1	av. = 0.0010 mg/L	Objective met
	0120808 300m u/s L. Cowichan STP	Aug 7 - Nov 11	8	0.0005 - < 0.1 mg/L	Max obj. met
		Aug 7 - Sep 8	1	av. = 0.0008 mg/L	Objective met
	E206107 400m d/s L. Cowichan STP	Aug 7 - Nov 11	9	0.0003 - < 0.1 mg/L	Max obj. met
		Aug 7 - Sep 8	1	av. = 0.00068 mg/L	Objective met
	0120802 u/s Highway 1	Aug 7 - Nov 11	8	0.0001 - < 0.1 mg/L	Max obj. met
		Aug 7 - Sep 8	1	av. = 0.00048 mg/L	Objective met
	E206106 1 km d/s Duncan STP	Aug 7 - Nov 11	7	0.0005 - 0.0014 mg/L	Max obj. met
		Aug 7 - Sep 8	1	av. = 0.00078 mg/L	Objective met
	Koksilah River: E207425	Aug 7 - Nov 11	8	0.0003 - 0.0016 mg/L	Max obj. met
	Pt. Renfrew Rd.	Aug 7 - Sep 2	1	av. = 0.00072 mg/L	Objective met
	E206976 Koksilah Rd.	Aug 7 - Nov 11	7	0.0004 - 0.0022 mg/L	Max obj. met
		Aug 7 - Sep 8	1	av. = 0.00116 mg/L	Objective met
0123981 at Highway 1	Aug 7 - Nov 11	7	0.0007 - 0.0027 mg/L	Max obj. met	
	Aug 7 - Sep 8	1	av. = 0.0013 mg/L	Objective met	
E207433 D/S Kelvin Creek	Aug 7 - Nov 11	7	0.0001 - 0.0015 mg/L	Max obj. met	
	Aug 7 - Sep 8	1	av. = 0.0009 mg/L	Objective met	
Cu-8 Quinolinolate 0.0005 mg/L max	Cowichan River	2002	0	no data collected	Omitted 2002

Table 3. Middle Quinsam Lake Water Quality Objectives – 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Total-P < 0.007 mg/L av. (May - Sept.)	Long Lake: E219412 at outlet	Aug 14 - Nov 24	9	0.002 - 0.011 mg/L	Objective met
		Aug 14 - Sep 8	1	av. = 0.0054 mg/L	
Total-P < 0.006 mg/L av. (May - Sept.)	Middle Quinsam Lake: 0900504 at outlet	Aug 13 - Nov 24	10	< 0.002 - 0.005 mg/L	Objective met
		Aug 13 - Sep 8	1	av. = 0.0023 mg/L	
Chlorophyll-a < 50 mg/m ²	Quinsam River	2002	0	no data collected	Omitted 2002
Dissolved Oxygen 3 mg/L min. 1m above sed. (May - Sept.)	Long Lake Quinsam Lake	2002	0	no data collected	Omitted 2002
Turbidity < 1.0 NTU av. 5.0 NTU max.	0900504 Middle Quinsam Lake Outlet	Aug 13 - Nov 24	7	0.2 - 0.49 NTU	Max. obj. met
		Aug 13 - Sep 2	1	av. = 0.27 NTU	Av. obj. met
Nitrate-N < 40 mg/L av. 200 mg/L max.	Long Lake: E219412 at outlet	Aug 14 - Nov 24	9	0.007 - 0.069 mg/L	Max. obj. met
		Aug 14 - Sep 8	1	av. = 0.050 mg/L	Av. obj. met
	Middle Quinsam Lake: 0900504 at outlet	Aug 13 - Nov 24	10	< 0.002 - 0.054 mg/L	Max. obj. met
		Aug 13 - Sep 8	1	av. = 0.0056 mg/L	Av. obj. met
	Upper Quinsam River: 0126402 at Argonaut Road	Aug 13 - Oct 27	7	< 0.002 - 0.026 mg/L	Max. obj. met
		Aug 13 - Sep 2	1	av. = 0.0134 mg/L	Av. obj. met
Total Cobalt 0.05 mg/L max	Quinsam River D/S Quinsam Lake	2002	0	no data collected	Omitted 2002
Total Manganese 0.05 mg/L max	Quinsam River D/S Quinsam Lake	2002	0	no data collected	Omitted 2002
Suspended Solids < 5 mg/L av. 25 mg/L max. or 10 mg/L max. inc.	Long Lake: E219412 at outlet	Aug 14 - Nov 24	9	< 1 - 22 mg/L	Max. obj. met
		Aug 14 - Sep 8	1	av. = 8.2 mg/L	Av. obj. not met
	0900504 Middle Quinsam Lake Outlet	Aug 14 - Nov 24	9	all < 1 mg/L	Max. obj. met
		Aug 14 - Sep 8	1	av. = < 1 mg/L	Av. obj. met
	Upper Quinsam River: 0126402 at Argonaut Road	Aug 14 - Oct 27	6	< 1 - 1 mg/L	Max. obj. met
		Aug 14 - Sep 8	1	av. = 1 mg/L	Av. obj. met
Ammonia-N < 1.82 mg/L av. 12.5 mg/L max. at pH = 7.5 temp. = 12 °C	Long Lake: E219412 at outlet	Aug 14 - Nov 24	9	< 0.005 - 0.008 mg/L	Max. obj. met
		Aug 14 - Sep 8	1	av. = 0.005 mg/L	Av. obj. met
	0900504 Middle Quinsam Lake Outlet	Aug 13 - Nov 24	10	< 0.005 - 0.007 mg/L	Max. obj. met
		Aug 13 - Sep 2	1	av. = 0.0054 mg/L	Av. obj. met

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION	
	SITE	DATE	n	VALUE		
Ammonia-N < 1.82 mg/L av. 12.5 mg/L max.	Upper Quinsam River: 0126402 at Argonaut Road	Aug 13 - Oct 27	7	all < 0.005 mg/L	Max. obj. met	
		Aug 13 - Sep 2	1	av. = < 0.005 mg/L	Av. obj. met	
Nitrite-N < 0.02 mg/L av. 0.06 mg/L max.	Long Lake Middle Quinsam Lake Quinsam River	2002	0	no data collected	Omitted 2002	
pH > 6.5 90th percentile (np) > 6.9 median (med.)	Long Lake: E219412 at outlet	Aug 14 - Nov 24	9	7.2 - 8.0	Objective met Objective met	
		Aug 14 - Sep 8	1	med = 7.7		
		Aug 14 - Sep 8	1	np = 7.8		
	Middle Quinsam Lake Outlet	0900504	Aug 13 - Nov 24	10	7.4 - 7.8	Objective met Objective met
		Aug 13 - Sep 2	1	med = 7.7		
			1	np = 7.76		
Upper Quinsam River: 0126402 at Argonaut Road	Aug 13 - Oct 27	7	6.9 - 7.7	Objective met Objective met		
	Aug 13 - Sep 2	1	med = 7.7			
	Aug 13 - Sep 2	1	np = 7.7			
Dissolved Aluminum < 0.05 mg/L av 0.1 mg/L max.	Long Lake: E219412 at outlet	Aug 14 - Nov 24	9	0.0014 - 0.0375 mg/L	Max. obj. met	
		Aug 14 - Sep 8	1	av. = 0.0024 mg/L	Av. obj. met	
	0900504 Middle Quinsam Lake Outlet	Aug 14 - Nov 24	9	0.0039 - 0.0223 mg/L	Max. obj. met	
		Aug 14 - Sep 8	1	av. = 0.0137 mg/L	Av. obj. met	
	Upper Quinsam River: 0126402 at Argonaut Road	Aug 14 - Oct 27	6	0.0099 - 0.0187 mg/L	Max. obj. met	
		Aug 14 - Sep 8	1	av. = 0.0159 mg/L	Av. obj. met	
Total Arsenic < 0.05 mg/L max.	Long Lake: E219412 at outlet	Aug 14 - Nov 10	8	0.0004 - 0.0008 mg/L	Objective met	
		Aug 13 - Nov 10	8	0.0001 - 0.0002 mg/L	Objective met	
	Middle Quinsam Lake Outlet	Aug 14 - Oct 27	4	0.0001 - 0.0002 mg/L	Objective met	
		Aug 14 - Sep 8	1	av. = < 0.01 mg/L	Indefinite result	
Total Cadmium < 0.0002 mg/L av. 0.0003 mg/L max.	Long Lake: E219412 at outlet	Nov.3	1	0.00003 mg/L	Max. obj. met	
		Aug 14 - Nov 24	8	all < 0.01 mg/L	Indefinite result	
		Aug 14 - Sep 8	1	av. = < 0.01 mg/L	Indefinite result	
	0900504 Middle Quinsam Lake Outlet	Aug.13	1	0.00002 mg/L	Max. obj. met	
		Aug 14 - Nov 24	10	all < 0.01 mg/L	Indefinite result	
		Aug 14 - Sep 8	1	av. = 0.008 mg/L	Indefinite result	
Upper Quinsam River: 0126402 at Argonaut Road	Aug 14 - Oct 27	6	all < 0.01 mg/L	Indefinite result		
	Aug 14 - Sep 8	1	av. = < 0.01 mg/L	Indefinite result		
Total Copper < 0.002 mg/L av.	Long Lake: E219412 at outlet	Aug 14 - Nov 24	9	0.00019 - 0.00085 mg/L	Av. obj. met	
		Aug 14 - Sep 8	1	av. = 0.00047 mg/L		
	0900504 Middle Quinsam Lake Outlet	Aug 13 - Nov 24	10	0.00028 - 0.0007 mg/L	Av. obj. met	
		Aug 13 - Sep 2	1	av. = 0.00045 mg/L		

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Total Copper < 0.002 mg/L av.	Upper Quinsam River: 0126402	Aug 14 - Oct 27	6	0.00025 - 0.00061 mg/L	Av. obj. met
	at Argonaut Road	Aug 14 - Sep 8	1	av. = 0.00046 mg/L	
Total Iron < 0.3 mg/L av.	Long Lake Middle Quinsam Lake Quinsam River	2002	0	no data collected	Omitted 2002
Total Lead < 0.003 mg/L av. 0.005 mg/L max.	Long Lake: E219412	Aug 14 - Nov 24	8	0.00004 - 0.00015 mg/L	Max. obj. met
	at outlet	Aug 14 - Sep 8	1	av. = 0.000092 mg/L	Av. obj. met
	0900504 Middle Quinsam Lake	Aug 13 - Nov 24	9	0.00001 - 0.00032 mg/L	Max. obj. met
	Outlet	Aug 13 - Sep 2	1	av. = 0.00012 mg/L	Av. obj. met
	Upper Quinsam River: 0126402	Aug 14 - Oct 27	6	0.00006 - 0.00014 mg/L	Max. obj. met
	at Argonaut Road	Aug 14 - Sep 8	1	av. = 0.00009 mg/L	Av. obj. met
Total Mercury 0.1 ug/L max.	Long Lake Middle Quinsam Lake Quinsam River	2002	0	no data collected	Omitted 2002
Total Nickel 0.025 mg/L max.	Long Lake: E219412	Aug.18 Aug 14 - Nov 24	1 8	0.00019 mg/L all < 0.05 mg/L	Objective met Indefinite result
	0900504 Middle Quinsam Lake	Aug 13 - Nov 24	10	all < 0.05 mg/L	Indefinite result
	Outlet				
	Upper Quinsam River: 0126402	Aug 14 - Oct 27	6	all < 0.05 mg/L	Indefinite result
	at Argonaut Road				
Total Silver 0.0001 mg/L max.	Long Lake: E219412	Aug 14 - Nov 24	9	all < 0.02 mg/L	Indefinite result
	at outlet				
	0900504 Middle Quinsam Lake	Aug.13 Aug 14 - Nov 24	1 9	0.00005 mg/L all < 0.02 mg/L	Objective met Indefinite result
	Outlet				
	Upper Quinsam River: 0126402	Aug 14 - Oct 27	6	all < 0.02 mg/L	Indefinite result
	at Argonaut Road				
Total Zinc 0.03 mg/L max.	Long Lake: E219412	Aug 14 - Nov 10	8	0.0002 - 0.0018 mg/L	Objective met
	at outlet				
	0900504 Middle Quinsam Lake	Sep 8 - Nov 10	3	0.0001 - 0.0011 mg/L	Objective met
	Outlet				
	Upper Quinsam River: 0126402	Aug 14 - Oct 27	6	all < 0.1 mg/L	Indefinite result
	at Argonaut Road				

Table 4. Oyster River Water Quality Objectives – 2002.

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliforms < 100 CFU /100 mL 90th percentile (np)	Oyster River 0125582	Aug 14 - Nov 24	10	1 - 36 CFU/100 mL	Objective met
	at Duncan Main	Aug 14 - Sep 8, Oct 27 - Nov 24	2	np = 8.2 - 28.4 CFU/100 mL	
	0125580	Aug 14 - Nov 24	11	< 1 - 110 CFU/100 mL	
	at Highway	Aug 14 - Sep 8, Oct 27 - Nov 24	2	np = 19.8 - 71.6 CFU/100 mL	Objective met
Turbidity 5 NTU max	Oyster River 0125582 at Duncan Main	Aug 14 - Nov 24	10	0.14 - 0.95 NTU	Objective met
Turbidity 7 NTU 90th percentile (np)	Oyster River: 125580 at Highway	Apr 10 - Nov 24	7	0.19 - 0.83 NTU	Objective met
Suspended Solids 12 mg/L max	Oyster River 0125582 at Duncan Main	Aug 14 - Nov 24	10	< 1 - 4 mg/L	Objective met
Suspended Solids 15 mg/L 90th percentile (np)	Oyster River: 125580 at Highway	Aug 14 - Nov 3	6	< 1 - 2 mg/L	Objective met
		Aug 14 - Sep 8	1	np = 1.6 mg/L	
Ammonia-N < 1.85 mg/L av 12.7 mg/L max at pH = 7.5 temp = 10 C	Oyster River 0125582 at Duncan Main	Aug 14 - Nov 24	10	< 0.005 - 0.006 mg/L	Max objective met
		Aug 14 - Sep 2	1	av < 0.005 mg/L	Av. obj. met
	0125580 at Highway	Apr 10 - Nov 3	7	all < 0.005 mg/L	Max objective met
		Aug 10 - Sep 2	1	av < 0.005 mg/L	Av. obj. met
	Little Oyster River: E207430	Aug 14 - Nov 24	9	< 0.005 - 0.01 mg/L	Max objective met
		Aug 14 - Sep 8	1	av. = 0.005 mg/L	Av. obj. met
Woodhus Creek: E207431	Aug 14 - Nov 24	9	< 0.005 - 0.007 mg/L	Max objective met	
	Aug 14 - Sep 8	1	av. < 0.005 mg/L	Av. obj. met	
Nitrite - N < 0.02 mg/L av 0.06 mg/L max	Oyster River: Little Oyster River: Woodhus Creek:	2002	0	no data collected	Omitted 2002
Nitrate - N 10 mg/L max	Oyster River: Little Oyster River: Woodhus Creek:	2002	0	no data collected	Omitted 2002
pH > 6.5 90th perc (np) 8.5 max	Oyster River: 125580 at Highway	Apr 10 - Nov 3	7	7.2 - 7.7	Objective met
pH 6.5 - 8.5	Oyster River 0125582 at Duncan Main	Aug 14 - Nov 24	10	7.1 - 7.6	Objective met
	Little Oyster River: E207430	Aug 14 - Nov 24	9	7.1 - 7.8	Objective met

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
pH 6.5 - 8.5	Woodhus Creek: E207431	Aug 14 - Nov 24	9	7.1 - 7.9	Objective met
Dissolved Al <0.05 mg/L av 0.1 mg/L max	Oyster River 0125582	Aug 14 - Nov 24	10	0.0023 - 0.0397 mg/L	Max objective met
	at Duncan Main	Aug 14 - Sep 2	1	av = 0.010 mg/L	Av. obj. met
	0125580	Apr 10 - Nov 3	7	0.0034 - 0.0453 mg/L	Max objective met
	at Highway	Aug 14 - Sep 8	1	av = 0.009 mg/L	Av. obj. met
	Little Oyster River: E207430	Aug 14 - Nov 24	9	0.0097 - 0.13 mg/L	Max objective met
		Aug 14 - Sep 8	1	av. = 0.0177 mg/L	Av. obj. met
Total As 0.05 mg/L max	Woodhus Creek: E207431	Aug 14 - Nov 24	9	0.0043 - 0.125 mg/L	Max objective met
		Aug 14 - Sep 8	1	av. = 0.0058 mg/L	Av. obj. met
	Oyster River 0125582	Aug 14 - Nov 10	9	0.0002 - 0.0003 mg/L	Objective met
	at Duncan Main	Nov 24	1	< 0.1 mg/L	Indefinite result
Total Cd 0.2 ug/L max	0125580	Apr 10 - Nov 3	7	0.0002 - 0.0003 mg/L	Objective met
	at Highway				
	Little Oyster River: E207430	Aug 14 - Nov 10	8	0.0005 - 0.0007 mg/L	Objective met
		Nov 24	1	< 0.1 mg/L	Indefinite result
	Woodhus Creek: E207431	Aug 14 - Nov 10	8	0.0001 - 0.0005 mg/L	Objective met
		Nov 24	1	< 0.1 mg/L	Indefinite result
Total Cr 2 ug/L max	Oyster River 0125582	Aug 25 - Oct 27	2	0.04 - 0.06 ug/L	Objective met
	at Duncan Main	Aug 8 - Nov 24	8	< 10 ug/L	Indefinite result
	0125580	Sep 8	1	0.16 ug/L	Objective met
	at Highway	Apr 10 - Nov 3	6	< 10 ug/L	Indefinite result
	Little Oyster River: E207430	Sep 8 - Oct 27	2	0.02 - 0.03 ug/L	Objective met
		Aug 8 - Nov 24	7	< 10 ug/L	Indefinite result
Total Cr 2 ug/L max	Woodhus Creek: E207431	Sep 8	1	0.01 ug/L	Objective met
		Aug 8 - Nov 24	8	< 10 ug/L	Indefinite result
	Oyster River 0125582	Aug 14 - Nov 24	10	< 200 ug/L	Indefinite result
Total Cr 2 ug/L max	at Duncan Main				
	0125580	Apr 10 - Nov 3	7	< 200 ug/L	Indefinite result
Total Cr 2 ug/L max	at Highway				
	Little Oyster River: E207430	Aug 14 - Nov 24	9	< 200 ug/L	Indefinite result

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Total Cr 2 ug/L max	Woodhus Creek: E207431	Aug 14 - Nov 24	9	< 200 ug/L	Indefinite result
Total Co 50 ug/L max	Oyster River 0125582 at Duncan Main	Aug 14 - Nov 24	10	< 5 ug/L	Objective met
	0125580 at Highway	Apr 10 - Nov 3	7	0.014 - < 5 ug/L	Objective met
	Little Oyster River: E207430	Aug 14 - Nov 24	9	0.008 - < 5 ug/L	Objective met
	Woodhus Creek: E207431	Aug 14 - Nov 24	9	0.015 - < 5 ug/L	Objective met
Total Cu < 3 ug/L av < 5 ug/L 90th perc. (np)	Oyster River 0125582 at Duncan Main	Aug 14 - Nov 24	10	0.32 - 2.71 ug/L	Objective met
		Aug 14 - Sep 2	1	av. = 0.8 ug/L	
		Aug 14 - Sep 2	1	np = 1.8 ug/L	
	0125580 at Highway	Apr 10 - Nov 3	7	0.27 - 0.63 ug/L	Objective met
Aug 14 - Sep 2	1	av. = 0.5 ug/L			
Aug 14 - Sep 2	1	np = 0.6 ug/L	Objective met		
Total Cu < 10 ug/L 90th perc. (np)	Little Oyster River: E207430	Aug 14 - Nov 24	9	0.99 - 1.76 ug/L	Objective met
		Aug 14 - Sep 8	1	np = 1.5 ug/L	
	Woodhus Creek: E207431	Aug 14 - Nov 24	9	0.16 - 1.79 ug/L	Objective met
Aug 14 - Sep 8	1	np = 0.48 ug/L			
Total Fe < 0.3 mg/L 90th perc. (np)	Oyster River	2002	0	no data collected	Omitted 2002
Total Pb < 3.5 ug/L av 5.4 ug/L max at hardness 11.8 mg/L	Oyster River 0125582 at Duncan Main	Aug 14 - Nov 24	10	0.04 - 0.15 ug/L	Max objective met
		Aug 14 - Sep 2	1	av = 0.1 ug/L	Av. obj. met
	0125580 at Highway	Aug 14 - Sep 8	5	0.06 - 0.12 mg/L	Max objective met
		Apr 10 - Nov 3	2	< 10 ug/L	Indefinite result
		Aug 14 - Sep 8	1	av = 0.092 ug/L	Av. obj. met
	Little Oyster River: E207430	Aug 14 - Nov 24	9	0.07 - 0.8 ug/L	Max objective met
		Aug 14 - Sep 8	1	av. = 0.012 ug/L	Av. obj. met
	Woodhus Creek: E207431	Aug 14 - Nov 24	8	0.04 - 0.14 mg/L	Max objective met
Oct 27		1	< 10 ug/L	Indefinite result	
Aug 14 - Sep 8		1	av. = 0.086 ug/L	Av. obj. met	
Total Pb 0.8 ug/g max in fish muscle	Oyster River Woodhus Creek Little Oyster River	2002	0	no data collected	Omitted 2002

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Total Mn 0.05 mg/L max	Oyster River 0125582 at Duncan Main	Aug 14 - Nov 24	10	0.000252 - 0.00208 mg/L	Objective met
	0125580 at Highway	Apr 10 - Nov 3	7	0.00162 - 0.0034 mg/L	Objective met
	Woodhus Creek: E207431	Aug 14 - Nov 24	9	0.00137 - 0.00792 mg/L	Objective met
Total Hg <0.02 ug/L av 0.1 ug/L max	Oyster River Woodhus Creek Little Oyster River	2002	0	no data collected	Omitted 2002
Total Hg 0.5 ug/g max in fish muscle	Oyster River Woodhus Creek Little Oyster River	2002	0	no data collected	Omitted 2002
Total Ni 0.025 mg/L max	Oyster River 0125582 at Duncan Main	Oct 27	1	0.00019 mg/L	Objective met
		Aug 14 - Nov 24	9	< 0.05 mg/L	Indefinite result
	0125580 at Highway	Apr 10 - Nov 3	7	< 0.05 mg/L	Indefinite result
		Little Oyster River: E207430	Aug 14 - Nov 10 Nov 24	8 1	0.00005 - 0.00022 g/L < 0.05 mg/L
Woodhus Creek: E207431	Nov 10	1	0.00015 mg/L	Objective met	
	Aug 14 - Nov 24	8	< 0.05 mg/L	Indefinite result	
Total Zn <0.01 mg/L av 0.03 mg/L max	Oyster River 0125582 at Duncan Main	Aug 14 - Nov 24	7	0.0001 - 0.0019 mg/L	Max objective met
		Aug 18 - Nov 3	3	< 0.1 mg/L	Indefinite result
		Aug 14 - Sep 2	1	av < 0.04 mg/L	Indefinite result
	0125580 at Highway	Apr 10 - Se- 8	3	0.0001 - 0.0003 mg/L	Max objective met
		Aug 14 - Nov 3	4	< 0.1 mg/L	Indefinite result
		Aug 14 - Sep 8	1	av < 0.06 mg/L	Indefinite result
	Little Oyster River: E207430	Aug 14 - Nov 24	8	0.0008 - 0.0016 mg/L	Max objective met
		Nov 3	1	< 0.1 mg/L	Indefinite result
		Aug 14 - Sep 8	1	av. = 0.0012 mg/L	Av. obj. met
	Woodhus Creek: E207431	Aug 14 - Nov 10	5	0.0001 - 0.0017 mg/L	Max objective met
Aug 18 - Nov 24		4	< 0.1 mg/L	Indefinite result	
Aug 14 - Sep 8		1	av. < 0.04 mg/L	Indefinite result	

Table 5. Tsolum River Water Quality Objectives - 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Dissolved Copper < 0.007 mg/L av. 0.011 mg/L max.	E207826	Mar 20 - Dec 19	14	0.00048 - 0.00941 mg/L	Objective met
	Tsolum River	May 9 - Jun 10	3	0.0111 - 0.0376 mg/L	Objective not met
	500m d/s Murex Creek	Mar 20 - Dec 19	1	av. = 0.00783 mg/L	Indefinite result
% steelhead egg survival no difference between test & control (at 95% confidence)	Tsolum River	2002	0	no in situ bioassay data collected	Omitted 2002

Table 6. Holland Creek and Stocking Lake Water Quality Objectives - 2002.

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliform < 10 CFU/100 mL 90th percentile. (np)	Holland Creek:	Jul 10 - Dec 18	21	< 1 - 60 CFU/100 mL	Objective met Objective not met
	E216974 at Chicken Ladder Dam	Aug 7 - 21, Oct 9 - Nov 6 Nov 13 - 27	2 1	np = 9 - 9.2 CFU/100 mL np = 40.4 CFU/100 mL	
	Stocking Lake:	Jul 10 - Dec 18	6	< 1 - 3 CFU/100 mL	No 5-in-30 samples
	E206290 at Centre		1	np = 2.5 CFU/100 mL	Indefinite result
Turbidity 1 NTU max	Holland Creek:	Jul 10 - Nov 6	4	0.14 - 0.3 NTU	Objective met
	E216974 at Chicken Ladder Dam				
Colour 15 TCU max. or no increase if background > 15 TCU	Stocking Lake:	Jul 10 - Dec 18	5	0.9- 0.47 NTU	Objective met
	E206290 at Centre				
Total Organic Carbon ≤ 2 mg/L annual average	Holland Creek:	Jul 10 - Nov 6	4	< 5 - 15 TCU	Objective met
	E216974 at Chicken Ladder Dam		1	av. = 2.25 mg/L	Objective not met
pH 6.5 - 8.5	Stocking Lake:	Jul 10 - Dec 18	5	1.7 - 3.5 mg/L	Objective not met
	E206290 at Centre		1	av. = 2.34 mg/L	
Total Iron 0.3 mg/L max.	Holland Creek:	Jul 10 - Nov 6	4	7.0 - 7.7	Objective met
	E216974 at Chicken Ladder Dam				
Chlorophyll <i>a</i> 0.0025 mg/L summer av.	Stocking Lake:	Jul 10 - Dec 18	5	7.1 - 7.3	Objective met
	E206290 at Centre				
Total Phosphorus 0.001 mg/L av. at spring overturn	Stocking Lake	2002	0	no data collected	Omitted 2002
	Stocking Lake	2002	0	no data collected	Omitted 2002
	Stocking Lake	2002	0	no data collected	Omitted 2002

Table 7. Kathlyn, Seymour, Round and Tyhee Lakes Objectives – 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliforms	Kathlyn Lake: E207548	Aug 6 - Sep 3	5	< 1 - 59 CFU/100 mL	Objective met
	Kathlyn # 1 (beach)		1	gm = 5.9 CFU / 100 mL	
Intakes: ≤ 10 /100 mL 90th percentile (np)	E207549 Kathlyn #2	Aug 6 - Nov 3	10	< 1 - 2 CFU/100 mL	Objective met
		Aug 6 - Sep 3, Oct 7 - Nov 3	2	np = 1.6 CFU/100 mL	
Beaches: ≤ 200 /100 mL geometric mean (gm) ≤ 400 /100 mL 90th percentile (np)	E207550 Kathlyn #3	Aug 6 - Nov 3	14	< 1 - 21 CFU/100 mL	Objective met
		Aug 6 - Sep 3, Oct 7 - Nov 3	2	np = 2.2 - 9.8 CFU/100 mL	
	E207551 Kathlyn #4	Aug 6 - Nov 3	10	< 1 - 12 CFU/100 mL	Objective met
		Aug 6 - Sep 3, Oct 7 - Nov 3	1	np = < 1 - 8.4 CFU/100 mL	
	Seymour Lake: E207552	Aug 6 - Nov 3	15	< 1 - 22 CFU/100 mL	Objective not met
	Seymour #1	Aug 6 - Sep 3	1	np = 16.4 CFU/100 mL	
	E207553 Seymour #2	Oct 7 - Nov 3	1	np = 5.2 CFU/100 mL	Objective met
		Aug 6 - Nov 3	10	< 1 - 3 CFU/100 mL	
		Aug 6 - Sep 3, Oct 7 - Nov 3	2	np = < 1 - 2.2 CFU/100 mL	Objective met
	E207554 Seymour #3	Aug 6 - Nov 3	10	< 1 - 1 CFU/100 mL	
		Aug 6 - Sep 3, Oct 7 - Nov 3	2	np = < 1 - 1 CFU/100 mL	Objective met
	Round Lake: E207557	Aug 6 - Nov 3	15	< 1 - 160 CFU/100 mL	
	Round #3	Aug 6 - Sep 3	1	np = 4 CFU/100 mL	Objective met
		Oct 7 - Nov 3	1	np = 112 CFU/100 mL	
	E207558 Round #4	Aug 6 - Nov 3	10	< 1 - 1 CFU/100 mL	Objective met
		Aug 6 - Sep 3, Oct 7 - Nov 3	2	np = 1 CFU/100 mL	
	E249107 Round #5	Aug 6 - Oct 28	11	< 1 - 2 CFU/100 mL	Objective met
		Aug 6 - Sep 3	1	np = 1.6 CFU/100 mL	
	Tyhee Lake: E207559	Aug 6 - Sep 3	5	< 1 - 130 CFU/100 mL	Objective met
	Tyhee #1 (beach)	Aug 6 - Sep 3	1	gm = 4 CFU / 100 mL	
	E207560 Tyhee #2	Aug 6 - Sep 3	1	np = 79 CFU/100 mL	Objective met
		Aug 6 - Nov 3	10	< 1 - 7 CFU/100 mL	
		Aug 6 - Sep 3, Oct 7 - Nov 3	2	np = 1 - 4.6 CFU/100 mL	Objective met
	E207561 Tyhee #3	Aug 6 - Oct 28	9	< 1 - 1 CFU/100 mL	
		Aug 6 - Sep 3	1	np = 1 CFU/100 mL	Objective met
	E207562 Tyhee #4	Aug 6 - Nov 3	14	< 1 - 1 CFU/100 mL	
		Aug 6 - Sep 3, Oct 7 - Nov 3	2	np = 1 CFU/100 mL	Objective met

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Turbidity ≤ 5 NTU max ≤ 1 NTU av	E207549 Kathlyn #2	Aug 6 - Nov 3	9	0.88 - 2.85 NTU	Max obj met
		Aug 12	1	5.1 NTU	Max obj not met
		Aug 6 - Sep 3, Oct 7 - Nov 3	2	av = 1.2 - 2.7 NTU	Av obj not met
	E207550 Kathlyn #3	Aug 6 - Nov 3	11	0.74 - 2.3 NTU	Max obj met
		Aug 6 - Sep 3, Oct 7 - Oct 28	2	av = 1.2 - 1.9 NTU	Av obj not met
	E207551 Kathlyn #4	Aug 6 - Nov 3	10	0.8 - 3.3 NTU	Max obj met
		Aug 6 - Sep 3, Oct 7 - Oct 28	2	av = 1.1 - 2.0 NTU	Av obj not met
	Seymour Lake: E207552 Seymour #1	Nov 3	1	2.15 NTU	Max obj met
		Aug 6 - Oct 28	9	5.14 - 26 NTU	Max obj not met
		Aug 6 - Sep 3	1	av = 15 NTU	Av obj not met
	E207553 Seymour #2	Aug 6 - Nov 3	10	0.26 - 2.47 NTU	Max obj met
		Aug 6 - Sep 3	1	av = 1.1 NTU	Av obj not met
	E207554 Seymour #3	Aug 6 - Nov 3	10	0.89 - 2.88 NTU	Max obj met
		Aug 6 - Sep 3, Oct 7 - Nov 3	2	av = 1.4 - 1.8 NTU	Av obj not met
	Round Lake: E207557 Round #3	Aug 6 - Nov 3	9	0.72 - 1.61 NTU	Max obj met
		Aug 14	1	8.25 NTU	Max obj not met
		Aug 6 - Sep 3	1	av = 2.3 NTU	Av obj not met
	E207558 Round #4	Aug 6 - Nov 3	9	0.99 - 3.6 NTU	Max obj met
		Sep 3	1	44 NTU	Max obj not met
		Aug 6 - Sep 3	1	av = 10.4 NTU	Av obj not met
E249107 Round #5	Aug 6 - Oct 28	8	0.81 - 1.79 NTU	Max obj met	
	Oct 21	1	6.53 NTU	Max obj not met	
	Aug 6 - Sep 3	1	av = 1.41 NTU	Av obj not met	
Tyhee Lake: E207560 Tyhee #2	Aug 6 - Nov 3	10	0.1 - 1.24 NTU	Max obj met	
	Aug 6 - Sep 3, Oct 15 - Nov 3	2	av = 0.54 - 0.57 NTU	Av obj met	
	E207561 Tyhee #3	Aug 6 - Oct 28	9	0.28 - 2.16 NTU	Max obj met
	Aug 6 - Sep 3	1	av = 1.1 NTU	Av obj not met	
E207562 Tyhee #4	Aug 6 - Nov 3	10	0.43 - 2.72 NTU	Max obj met	
	Aug 6 - Sep 3	1	av = 0.82 NTU	Av obj met	
	Oct 7 - Nov 3	1	av = 1.14 NTU	Av obj not met	
Total Phosphorus ≤ 0.029 mg/L av. Spring turnover	Kathlyn Lake Seymour Lake Round Lake Tyhee Lake	2002	0	no data collected	Omitted 2002
Colour ≤ 15 TCU max	E207549 Kathlyn #2	Aug 6 - Nov 3	10	< 5 - 15 TCU	Objective met
	E207550 Kathlyn #3	Aug 6 - Nov 3	11	< 5 - 15 TCU	Objective met
	E207551 Kathlyn #4	Aug 6 - Nov 3	10	< 5 - 15 TCU	Objective met

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Colour ≤ 15 TCU max	Seymour Lake: E207552 Seymour #1	Aug 12 Aug 6 - Nov 3	1 10	5 TCU 50 - 120 TCU	Objective met Objective not met
	E207553 Seymour #2	Aug 6 - Nov 3	10	30 - 100 TCU	Objective not met
	E207554 Seymour #3	Aug 6 - Nov 3	10	20 - 50 TCU	Objective not met
	Round Lake: E207557 Round #3	Aug 6 - Oct 28 Aug 14 - Nov 3	8 2	5 - 15TCU 20 - 30 TCU	Objective met Objective not met
	E207558 Round #4	Aug 6 - Oct 28 Aug 14 - Nov 3	7 3	5 - 15TCU 20 - 40 TCU	Objective met Objective not met
	E249107 Round #5	Aug 6 - Oct 221 Oct 28	8 1	< 5 - 15 TCU 20 TCU	Objective met Objective not met
	Tyhee Lake: E207560 Tyhee #2	Aug 6 - Nov 3	10	< 5 - 10 TCU	Objective met
	E207561 Tyhee #3	Aug 6 - Oct 28	9	< 5 - 10 TCU	Objective met
	E207562 Tyhee #4	Aug 6 - Nov 3	10	< 5 - 15 TCU	Objective met

Table 8. Lakelse Lake Water Quality Objectives – 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliforms Intakes: ≤ 10 /100 mL	E207583 Furlong Beach	Aug 8 - Sep 3	5	< 1 - 6 CFU/100 mL	Indefinite result Objective met
			1	gm = 2.0 CFU/100 mL np = 4.8 CFU/100 mL	
90th percentile (np)	E207580 Lakelse Lake #1	Aug 8 - Sep 3 Aug 8 - Sep 3, Oct 8 - Nov 6	10	< 1 - 5 CFU/100 mL	Objective met
			2	np = < 1 - 5 CFU/100 mL	
Beaches: ≤ 200 /100 mL geometric mean (gm) ≤ 400 /100 mL 90th percentile (np)	E246120 Lakelse Lake #2	Aug 8 - Sep 3 Aug 8 - Sep 3, Oct 8 - Nov 6	10	< 1 - 14 CFU/100 mL	Objective met
			2	np = 8.8 - 9.8 CFU/100 mL	
	E246121 Lakelse Lake #3	Aug 8 - Sep 3 Aug 8 - Sep 3, Oct 8 - Nov 6	10	< 1 - 1 CFU/100 mL	Objective met
			2	np = < 1 - 1 CFU/100 mL	
Turbidity ≤ 5 NTU max ≤ 1 NTU av	E207580 Lakelse Lake #1	Aug 8 - Nov 6 Oct 8 Aug 8 - Sep 3, Oct 8 - Nov 6	9	0.98 - 2.51 NTU	Objective met
			1	5.04 NTU	Objective not met
	E246120 Lakelse Lake #2	Aug 8 - Nov 6 Oct 8 Aug 8 - Sep 3 Oct 8 - Nov 6	9	0.54 - 2.95 NTU	Objective met
			1	5.44 NTU	Objective not met
	E246121 Lakelse Lake #3	Aug 8 - Oct 23 Aug 8 - Sep 3 Oct 8 - Nov 6	10	0.5 - 3.14 NTU	Objective met
			1	av = 0.69 NTU	Objective met
			1	av = 2.87 NTU	Objective not met
			1	av = 0.92 NTU	Objective met
			1	av = 2.39 NTU	Objective not met
Total Phosphorus ≤ 0.01 mg/L av.	E206616 Deep Station	Jul 9 - Sep 10 Aug 13 - Sep 10	9	0.002 - 0.005 mg/L	Objective met
			1	av = 0.004 mg/L	
Chlorophyll a ≤ 0.003 mg/L av.	E206616 Deep Station	Jul 10 - Sep 10 Aug 13 - Sep 10	11	0.0006 - 0.0019 mg/L	Objective met
			1	av = 0.00118 mg/L	
Dissolved Oxygen ≥ 6 mg/L @ 5m above sediments	E206616 Deep Station	Jul 7 - Sep 10	3	8.5 - 9.6 mg/L	Objective met

Table 9. Nechako River Water Quality Objectives - 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliform <100/100ml 90th perc. (np)	Nechako River E206583	Jan 2 - Dec 17	32	< 1 - 23 CFU/100 mL	Objective met
	at Prince George	Jan 2 - Jan 29, Aug 1 - Aug 26, Nov 19 - Dec 17	3	np = 3.2 - 17.4 CFU/100 mL	
	Chilako River:	2002	0	no data collected	Omitted 2002
Fecal Coliforms <10/100ml 90th perc (np)	Stuart River:	2002	0	no data collected	Omitted 2002
Fecal Coliforms <200/100ml geometric mean (gm) <400/100ml 90 perc. (np)	Necoslie River:	2002	0	no data collected	Omitted 2002
Total Cl ₂ Res. 0.002 mg/L max	Nechako & Stuart Rivers	2002	0	no data collected	Omitted 2002
Ammonia-N <2.05 mg/L av 14.1 mg/L max at pH = 7.5 temp = 1 °C	Nechako River	2002	0	no data collected	Omitted 2002
Ammonia-N <1.24 mg/L av 6.46 mg/L max at pH = 8.0 temp = 1 °C	Stuart River	2002	0	no data collected	Omitted 2002
Nitrite-N < 0.02 mg/L av 0.06 mg/l max	Nechako River	2002	0	no data collected	Omitted 2002
Chlorophyll - a < 50 mg/L av	Nechako River Stuart River	2002	0	no data collected	Omitted 2002
Chlorophyll - a < 100 mg/L av	Chilako River	2002	0	no data collected	Omitted 2002
Dissolved Oxygen 7.75 - 11.2 mg/L min depending on fish egg stage	Nechako River E206583 at Prince George	Jan 2 - Sep 10	19	8.4 - 12.7 mg/L	Objective met
pH 6.5 - 8.5	Nechako River E206583 at Prince George	Jan 2 - Sep 10	18	7.5 - 8.0	Objective met
		Jan 29, Aug 6	2	6.08 - 6.2	Objective not met

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Temperature < 15 °C av ~ 100 m d/s Cheslatta Falls	Nechako River: immediately d/s Cheslatta Falls* (DFO's Cheslatta Falls site)	2002	0	no data collected	Omitted 2002
	10 km d/s Cheslatta Falls* (DFO's B. Irvine site)	2002	0	no data collected	Omitted 2002
Temperature < 20 °C Jul - Aug. < 18 °C Sep - Jun. ~ 100 m u/s Stuart River	Nechako River: at Vanderhoof ~40 km u/s Stuart R. confl. (DFO's Vanderhoof site)	2002	0	no data collected	Omitted 2002
Total Gas Pressure 109 % max	Nechako River	2002	0	no data collected	Omitted 2002

Table 10. Peace River Water Quality Objectives - 2002.

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliforms <100 /100 mL 90th percentile (np)	E206585 at Alces	Jan 8 - Mar 21	5	all < 1 CFU/100 mL	Indefinite result No 5-in-30 day samples
			1	np. < 1 CFU/100 mL	
Turbidity 5 NTU or 10% max increase	E206585 at Alces	Apr 13 - Sep 30	7	9.11 - 542 NTU	Indefinite result No control
Suspended solids 10 mg/L or 10% max increase	Peace River	2002	0	no data collected	Omitted 2002
Total chlorine residual 0.002 mg/L max	Peace River	2002	0	no data collected	Omitted 2002
Dissolved fluoride 1.0 mg/L max	Peace River	2002	0	no data collected	Omitted 2002
Chlorophyll-a 50 mg/m2 max	Peace River	2002	0	no data collected	Omitted 2002
Ammonia-N < 1.78 mg/L av 9.26 mg/L max at pH = 7.8 temp = 0 °C	Peace River	2002	0	no data collected	Omitted 2002
Nitrite - N < 0.04 mg/L av. 0.12 mg/L max. at chloride 2-4 mg/L	Peace River	2002	0	no data collected	Omitted 2002
Dissolved Oxygen 7.25 mg/L min	Peace River	2002	0	no data collected	Omitted 2002
pH 6.5 - 9.0 max change 0.5 pH units	E206585 at Alces	Jan 8 - Sep 30	12	7.88 - 8.5	Objective met
Total dissolved gas 110% saturation max	Peace River	2002	0	no data collected	Omitted 2002
Temperature max increase 1°C	E206585 at Alces	Jan 8 - Sep 30	12	minus 2 - 2°C	Indefinite result No control
Total copper 4 ug/L av. 11 ug/L max. at hardness 100 mg/L	E206585 at Alces	Jan 8 - Sep 30	11	0.1 - 1.5 ug/L	Max obj. met
			1	av. = 4.1 ug/L	Indefinite result No 5-in-30 day samples

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Chlorinated phenols sum of tri, tetra and penta 0.2 ug/L	Peace River	2002	0	no data collected	Omitted 2002
Total lead 6 ug/L av. 82 ug/L max. at hardness 100 mg/L	E206585 at Alces	Jan 8 - Sep 30	11	0.2 - 12.9 ug/L	Max obj. met
			1	av. = 2.3 ug/L	Indefinite result No 5-in-30 day samples
Total nickel 0.065 mg/L max. at hardness 60 - 120 mg/L	E206585 at Alces	Jan 8 - Sep 30	11	0.0004 - 0.0214 mg/L	Max obj. met
Total zinc 0.03 mg/L max or 20% increase	E206585 at Alces	Jan 8 - Sep 30	9	0.0006 - 0.003 mg/L	Objective met
		Jun 12 - Jun 26	2	0.074 - 0.078 mg/L	Indefinite result No control
Phenol 0.002 mg/L av.	Peace River	2002	0	no data collected	Omitted 2002
Un-ionized H ₂ S 0.002 mg/L max	Peace River	2002	0	no data collected	Omitted 2002
2,4-D Ester 0.004 mg/L	Peace River	2002	0	no data collected	Omitted 2002

Table 11. Fraser River (From the Source to Hope) Water Quality Objectives - 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliforms <100 /100 mL 90th percentile (np)	E206182 at Stoner (d/s Pr. Ge. mills)	Jan 3 - Dec 18	9	16 - 81 CFU/100 mL	No 5-in-30 samples:
			1	np = 72 CFU/100 mL	Indefinite result
	0600011 at Marguerite (d/s Quesnel)	Jan 9 - Dec 18	24	< 1 - 74 CFU/100 mL	
		Apr 17 - May 15	1	np = 45 CFU/100 mL	Objective met
E206581 at Hope	Jan 2 - Dec 17	28	< 1 - 68 CFU/100 mL		
	Jul 30 - Aug 27	1	np = 16 CFU/100 mL	Objective met	
<i>E. coli</i> <100/100 mL 90th percentile (np)	E206182 at Stoner (d/s Pr. Ge. mills)	Jan 3 - Dec 18	9	13 - 64 CFU/100 mL	No 5-in-30 samples:
			1	np = 46 CFU/100 mL	Indefinite result
Chlorine Residual < 2 ug/L av.	Fraser River	2002	0	no data collected	Omitted 2002
Suspended Solids 10 mg/L or 10% max increase	Fraser River	2002	0	no data collected	Omitted 2002
Turbidity 1 - 5 NTU max increase (control: 5 - 50 NTU)	0600011 at Marguerite (d/s Quesnel)	Jan 9 - Sep 4	14	6.82 - 340 NTU	Indefinite result No control
	E206581 at Hope	Jan 2 - Sep 10	22	2.13 - 147 NTU	Indefinite result No control
Colour 15 TCU max Jun - Sep 75 TCU max Oct - May	0600011 at Marguerite (d/s Quesnel)	Jan 9 - May 29	4	17.5 - 30 TCU	Objective met
		Apr 30 - May 15	3	80 - 120 TCU	Objective not met
		Jun 13 - Sep 4	7	< 5 - 15 TCU	Objective met
	E206581 at Hope	Jan 2 - May 21	11	11 - 60 TCU	Objective met
		Apr 23	1	120 TCU	Objective not met
		Jun.4	1	30 TCU	Objective not met
Jun 18 - Sep 10	8	< 5 - 10 TCU	Objective met		
Temperature 1 °C max increase	E206182 at Stoner (d/s Pr. Ge. mills)	Feb 19 - Dec 18	7	0 - 4 °C	Indefinite result No control
		0600011 at Marguerite (d/s Quesnel)	Jan 9 - Sep 4	15	-1 - 17°C
	E206581 at Hope	Jan 2 - Sep 10	21	0 - 19 °C	Indefinite result No control
Ammonia-N < 1.78 mg/L av 9.26 mg/L max at pH = 7.8 temp = 0 °C	Fraser River	2002	0	no data collected	Omitted 2002

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Nitrite - N < 0.04 mg/L av. 0.12 mg/L max. at chloride 2-4 mg/L	Fraser River	2002	0	no data collected	Omitted 2002
Nitrate+Nitrite-N 10 mg/L max	Fraser River	2002	0	no data collected	Omitted 2002
Chlorophyll-a 50 mg/m2 max	Fraser River	2002	0	no data collected	Omitted 2002
pH 6.5 - 8.5	E206182 at Stoner (d/s Pr. Ge. mills)	Feb 19 - Dec 18	6	7.3 - 7.97	Objective met
	0600011 at Marguerite (d/s Quesnel)	Jan 9 - Sep 4	14	7.6 - 8.05	Objective met
	E206581 at Hope	Jan 2 - Sep 10	21	7.8 - 8.06	Objective met
Dissolved Oxygen 8.0 mg/L min May to Oct 11.0 mg/L min Nov to Apr	E206182 at Stoner (d/s Pr. Ge. mills)	Feb 19 - Dec 18	4	11 - 14.3 mg/L	Objective met
	0600011 at Marguerite (d/s Quesnel)	Jan 9 - Jan 24	3	9 - 9.9 mg/L	Objective not met
		Apr 17 - Apr 24	2	13.2 - 15.2 mg/L	Objective met
	E206581 at Hope	May 1 - Sep 4	10	9.1 - 11.2 mg/L	Objective met
		Jan 2 - Apr 9 Apr 23 May 7 - Sep 10	9 1 5	13.4 - 15.4 mg/L 10.4 mg/L 9.6 - 11.4 mg/L	Objective met Objective not met Objective met
Total Lead 0.8 ug/g max in fish muscle	Fraser River	2002	0	no data collected	Omitted 2002
Total PCBs 2.0 ug/g max in fish muscle 0.1 ug/g max in whole fish	Fraser River	2002	0	no data collected	Omitted 2002
Chlorophenols max. TCP's pH 7.8 2,3,4-: 0.1 ug/L 2,3,5-: 0.08 ug/L 2,3,6-: 0.32 ug/L 2,4,5-: 0.08 ug/L 2,4,6-: 0.5 ug/L 3,4,5-: 0.06 ug/L tot: 1.14 ug/L	Fraser River	2002	0	no data collected	Omitted 2002

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
max TTCPs pH 7.8: 2,3,4,5-: 0.2 ug/L 2,3,4,6-: 0.3 ug/L tot: 0.6 ug/L	Fraser River	2002	0	no data collected	Omitted 2002
max PCP pH 7.8: 0.1 ug/L	Fraser River	2002	0	no data collected	Omitted 2002
AOX no increase over control at 95% confidence	Fraser River	2002	0	no data collected	Omitted 2002
AOX no increase over control at 95% confidence	E206182 at Stoner (d/s Pr. Ge. mills)	Feb 19 - Dec 18	8	all < 0.1 mg/L	Indefinite result No control
	0600011 at Marguerite (d/s Quesnel)	Jan 9 - Sep 4	13	0.038 - 0.12 mg/L	Indefinite result No control
	E206581 at Hope	Jan 2 - Jun 18	14	0.033 - < 0.1 mg/L	Indefinite result No control
Resin Acids 12 ug/L max DHA 45 ug/L max total at pH 7.5	Fraser River	2002	0	no data collected	Omitted 2002
Dioxins and Furans in water 0.06 pg/L max TCDD-TEQ	Fraser River	2002	0	no data collected	Omitted 2002
Dioxins and Furans in sediments 0.25 pg/g max TCDD-TEQ	Fraser River	2002	0	no data collected	Omitted 2002
Dioxins and Furans in fish lipids 50 pg/g TCDD-TEQ	Fraser River	2002	0	no data collected	Omitted 2002

Table 12. Williams Lake Water Quality Objectives – 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliform < 200 /100 mL geometric mean (gm) < 400 /100 mL 90th percentile (np) at beaches	Williams Lake	2002	0	no data collected	Omitted 2002
Fecal Coliform < 10/100 mL 90th percentile at water intakes	Williams Lake	2002	0	no data collected	Omitted 2002
Turbidity < 1 NTU av 5 NTU max.	0603019 Williams Lake: at lake centre	Apr.24	5	1.87 - 4.0 NTU	Max obj. met
			1	av. = 2.7 mg/L	Objective not met
	0603022 Williams Lake: at deepest point	Apr.24	1	5.2 NTU	Max obj. not met
			1	av. = 5.2 NTU	Objective not met
Total P < 0.020 mg/L av at spring overturn	0603019 Williams Lake: at lake centre	Apr.24	5	0.065 - 0.075 mg/L	
			1	av. = 0.071 mg/L	Objective not met
	0603022 Williams Lake: at deepest point	Apr.24	1	0.058 mg/L	
			1	av. = 0.058 mg/L	Objective not met
Chlorophyll-a < 5 ug/L av (May to Aug)	Williams Lake	2002	0	no data collected	Omitted 2002
Dissolved Oxygen 4.0 mg/L min 5 m above sed.	Williams Lake	2002	0	no data collected	Omitted 2002
Water Clarity 1.2 m min Secchi reading (May to August)	0603019	May 4 - Aug 31 Aug.24	1	1.25 - 3.50 m 1.05 m	Objective met Objective not met
	Williams Lake: at lake centre		7		
			1		

Table 13. Okanagan Valley Lakes Water Quality Objectives – 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Total - P < 0.040 mg/L av. at spring overturn (short-term)	Wood Lake: 0500450 West of Vernon Creek	Mar.13	1	<10 m: 0.044 mg/L	Objective not met
			1	>20 m: 0.043 mg/L	
			1	av. = 0.0434 mg/L	
	0500848 Wood Lake Deep Basin	Mar.13	1	<10 m: 0.048 mg/L	Objective not met
			1	>20 m: 0.048 mg/L	
			1	av. = 0.048 mg/L	
Total - P < 0.008 mg/L av. at spring overturn	Kalamalka Lake: 0500246 at south end	Feb.18	1	<10 m: 0.007 mg/L	Objective met
			2	>10 m: 0.007 - 0.01 mg/L	
			1	av. = 0.008 mg/L	
	0500461 Kalamalka Lake South of Coldstream Creek	Mar.13	1	<10 m: 0.01 mg/L	Objective not met
			2	>10 m: 0.007 - 0.01 mg/L	
			1	av. = 0.009 mg/L	
	0500847 Kalamalka Lake Deep Site	Mar.13	1	<10 m: 0.009 mg/L	Objective not met
			1	>20 m: 0.01 mg/L	
			1	av. = 0.0095 mg/L	
Total - P < 0.010 mg/L av at spring overturn	Okanagan Lake: 0500239 at Armstrong Arm	Apr.17	1	15 m: 0.004 mg/L	Objective met
			1	20 m: 0.002 mg/L	
			1	av. = 0.003 mg/L	
	0500238 Okanagan Lake at Vernon Arm	Feb.19	2	18m: 0.008 - 0.009 mg/L	Objective met
			1	av. = 0.00085 mg/L	
			1		
	0500730 Okanagan Lake at north basin	Feb.19	1	1 m: 0.007 mg/L	Objective met
			1	15 m: 0.009 mg/L	
			1	20 m: 0.008 mg/L	
			1	av. = 0.008 mg/L	
		May.9	1	1 m: 0.009 mg/L	Objective met
			1	20 m: < 0.002 mg/L	
	0500236 Okanagan Lake at central basin	Feb.21	1	1 m: 0.005 mg/L	Objective met
			2	15 m: 0.005 - 0.007 mg/L	
			1	20 m: 0.005 mg/L	
			1	av. = 0.0055 mg/L	
		May.9	1	1 m: 0.007 mg/L	Objective met
			1	20 m: 0.007 mg/L	
	0500729 Okanagan Lake at south basin	Feb.12	1	1 m: < 0.002 mg/L	Objective met
			1	15 m: < 0.002 mg/L	
			1	20 m: < 0.002 mg/L	
1			av. = < 0.002 mg/L		
0500454 Okanagan Lake U/S Kelowna STP	Feb.12	1	1 m: < 0.002 mg/L	Objective met	
		1	20 m: < 0.002 mg/L		
		1	av. = < 0.002 mg/L		
0500456 Okanagan Lake South Prairie C.	Feb.21	1	1 m: 0.007 mg/L	Objective met	
		1	20 m: 0.007 mg/L		
		1	av. = 0.007 mg/L		

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Total - P < 0.015 mg/L av at spring overturn	Skaha Lake: 0500615 Skaha Lake at center	Feb 11	1	1 m: 0.002 mg/L	Objective met
			1	15 m: 0.005 mg/L	
			1	20 m: 0.002 mg/L	
			1	av. = 0.003 mg/L	
	Apr.10	1	1 m: 0.005 mg/L	Objective met	
		1	20 m: 0.015 mg/L		
		1	45 m: 0.005 mg/L		
		1	av. = 0.0083 mg/L		
	May.8	1	1 m: 0.007 mg/L	Objective met	
		1	20 m: 0.005 mg/L		
		1	45 m: 0.005 mg/L		
		1	av. = 0.0057 mg/L		
	0500453 Skaha Lake W.Okanagan L. river mouth	Feb.11	1	1 m: < 0.002 mg/L	Objective met
			1	20 m: 0.002 mg/L	
			1	av. = 0.002 mg/L	
	0500846 Skaha Lake south basin	Feb 11	1	1 m: 0.003 mg/L	Objective met
			1	20 m: 0.004 mg/L	
			1	av. = 0.0035 mg/L	
		Apr.10	1	1 m: 0.011 mg/L	Objective met
			1	20 m: 0.009 mg/L	
			1	36 m: 0.006 mg/L	
			1	av. = 0.0087 mg/L	
		May.8	1	1 m: 0.009 mg/L	Objective met
	1		20 m: 0.009 mg/L		
1	36 m: 0.009 mg/L				
1	av. = 0.009 mg/L				
Osoyoos Lake: 0500249 at north basin	Feb 14	1	1 m: 0.025 mg/L	Objective not met	
		1	15 m: 0.022 mg/L		
		1	20 m: 0.021 mg/L		
		1	av. = 0.023 mg/L		
	Apr.10	1	1 m: 0.009 mg/L	Objective met	
		1	20 m: 0.012 mg/L		
		1	32 m: 0.007 mg/L		
		1	av. = 0.009 mg/L		
	May.8	1	1 m: 0.015 mg/L	Objective met	
		1	20 m: 0.008 mg/L		
		1	24 m: 0.012 mg/L		
		1	av. = 0.012 mg/L		
0500728 Osoyoos Lake opp. Monashee Co-op	Feb 14	1	1 m: 0.020 mg/L	Objective not met	
		1	20 m: 0.026 mg/L		
		1	av. = 0.023 mg/L		
	Apr.10	1	1 m: 0.008 mg/L	Objective met	
		1	20 m: 0.009 mg/L		
		1	45 m: 0.009 mg/L		
		1	av. = 0.009 mg/L		
	May.8	1	1 m: 0.007 mg/L	Objective met	
1		20 m: 0.007 mg/L			
1		45 m: 0.012 mg/L			
1		av. = 0.009 mg/L			

Table 14. Similkameen River and Hedley Creek Water Quality Objectives – 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliforms < 10 /100 mL 90th percentile (np)	0500073 Similkameen River @ Chopka Rd. Bridge	Jan 8 - Dec 17	29	< 1 - 103 CFU/100 mL	
		Aug 20 - Sep 17	1	np = 12.6 CFU/100 mL	Objective not met
	0500629 Similkameen River @ Princeton Hwy 3 Bridge	Jan 8 - Dec 17	29	< 1 - 44 CFU/100 mL	
		May 28 - Jun 25	1	np = 9.4 CFU/100 mL	Objective met
	0500693 Similkameen River D/S Keremeos STP	Jun 3 - Jun 17	2	7 - 10 CFU/100 mL	
		1	np = 9.7 CFU/100 mL	Indefinite result	
<i>E. coli</i> < 10 /100 mL 90th percentile (np)	0500073 Similkameen River @ Chopka Rd. Bridge	Jun 3 - Jun 17	2	2 - 12 CFU/100 mL	
			1	np = 11 CFU/100 mL	Indefinite result
	0500629 Similkameen River @ Princeton Hwy 3 Bridge	Jun 3 - Jun 17	2	1-4 CFU/100 mL	
			1	np = 3.7 CFU/100 mL	Indefinite result
	0500693 Similkameen River D/S Keremeos STP	Jun 3 - Jun 17	2	4 - 10 CFU/100 mL	
		1	np = 9.4 CFU/100 mL	Indefinite result	
Enterococci < 3 /100 mL 90th percentile	Similkameen River	2002	0	no data collected	Omitted 2002
Suspended Solids max. increase: 10 mg/L or 10%	0500629 Similkameen River @ Princeton Hwy 3 Bridge	May 2 - Jun 17	5	15 - 111 mg/L	Control Site
	0500073 Similkameen River @ Chopka Rd. Bridge	May 13 - Jun 17	4	23 - 122 mg/L	
		May 13 - Jun 17	2	increase = 2 - 8 mg/L	Objective met
		May 23 - Jun 3	2	increase = 64 - 86 mg/L	Objective not met
	0500693 Similkameen River D/S Keremeos STP	May 13 - Jun 17	4	23 - 122 mg/L	
		May 13 - Jun 17	2	increase = 0 mg/L	Objective met
		May 23 - Jun 3	2	increase = 22 - 76 mg/L	Objective not met
	E223873 Hedley Creek U/S Nickel Plate Diffuser	Jan 7 - Dec 30	60	< 0.1 - 151 mg/L	Control Site
E223874 Hedley Creek 100 m D/S Nickel Plate Diffuser	Jan 7 - Dec 30	60	0.01 - 13.8 mg/L		
		60	increase = 0 - 8.6 mg/L	Objective met	
Substrate Sedimentation: no increase in weight of particles < 3 mm dia.	Similkameen River	2002	0	no data collected	Omitted 2002
Turbidity max. increase: 1 - 5 NTU or 10%	0500629 Similkameen River @ Princeton Hwy 3 Bridge	Jan 8 - Sep 3	27	< 0.1 - 53.5 NTU	Control Site
	0500073 Similkameen River @ Chopka Rd. Bridge	Jan 8 - Sep 3	24	< 0.1 - 89.1 NTU	
		Jan 8 - Sep 3	13	increase = 0 - 0.16 NTU	Objective met
		May 13 - Jun 17	7	increase = 1.78 - 77.7 NTU	Objective not met

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Turbidity max. increase: 1 - 5 NTU or 10%	0500693 Similkameen River D/S Keremeos STP	May 13 - Jun 17 May.13 May 13 - Jun 17	5 1 4	4.94 - 54.2 NTU increase = 0 NTU increase = 1.06 - 42.8 NTU	Objective met Objective not met
	E223873 Hedley Creek U/S Nickel Plate Diffuser	Jan 7 - Dec 30	60	0.3 - 61.4 NTU	Control Site
	E223874 Hedley Creek 100 m D/S Nickel Plate Diffuser	Jan 7 - Dec 30	60	0.01 - 13.8 mg/L	Objective met
		Jan 7 - Dec 30 Sep 16	59 1	increase = 0 - 0.8 NTU increase = 4.4 NTU	Objective not met
	Total Cl ₂ Residue 0.002 mg/L max.	Similkameen River	2002	0	no data collected
WAD-CN < 0.005 mg/L av 0.010 mg/L max.	0500629 Similkameen River @ Princeton Hwy 3 Bridge	Jan 8 - Sep 3 Aug 6 - Sep 3	20 1	< 0.0005 - 0.0009 mg/L av. = < 0.0005 mg/L	Max objective met Objective met
	0500073 Similkameen River @ Chopka Rd. Bridge	Jan 8 - Sep 3	20	< 0.0005 - 0.0014 mg/L	Max objective met
		Aug 6 - Sep 3	1	av. = 0.00068 mg/L	Objective met
	0500693 Similkameen River D/S Keremeos STP	Jun 17	1	< 0.0005 mg/L	Max objective met
			1	av. = < 0.0005 mg/L	Indefinite result
	E223873 Hedley Creek U/S Nickel Plate Diffuser	Jan 7 - Dec 30	59	all < 0.005 mg/L	Objective met
		Jan 7 - Dec 2	11	av. = < 0.005 mg/L	Objective met
	E223874 Hedley Creek 100 m D/S Nickel Plate Diffuser	Jan 7 - Dec 30	59	< 0.005 - 0.006 mg/L	Objective met
		Jan 7 - Dec 2	11	av. = < 0.005 mg/L	Objective met
	SAD-CN + SCN 0.20 mg/L	0500629 Similkameen River @ Princeton Hwy 3 Bridge	Jan 8 - Mar 19	7	< 0.0005 - 0.0016 mg/L
0500073 Similkameen River @ Chopka Rd. Bridge		Jan 8 - Mar 19	7	< 0.0005 - 0.0031 mg/L	Objective met
E223873 Hedley Creek U/S Nickel Plate Diffuser		Jan 7 - Dec 30 May 6	55 1	< 0.018442 - 0.030442 mg/L 0.23404 mg/L	Objective met Objective not met
		Feb 11 - Nov 4	3	all < 0.22904	Indefinite result
E223874 Hedley Creek 100 m D/S Nickel Plate Diffuser		Jan 7 - Dec 30 Feb 11 - Nov 4	55 4	< 0.018442 - 0.041442 mg/L all 0.23604 mg/L	Objective met Objective not met
Cyanate as CN 0.45 mg/L max.	0500629 Similkameen River @ Princeton Hwy 3 Bridge	Apr 3 - Sep 3	13	< 0.0005 - 0.0008 mg/L	Objective met
	0500073 Similkameen River @ Chopka Rd. Bridge	Apr 3 - Sep 3	13	< 0.0005 - 0.0018 mg/L	Objective met
	0500693 Similkameen River D/S Keremeos STP	Jun 17	1	< 0.0005 mg/L	Objective met

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Cyanate as CN 0.45 mg/L max.	E223873 Hedley Creek U/S Nickel Plate Diffuser	Jan 7 - Dec 30	59	< 0.005 - 0.017 mg/L	Objective met
	E223874 Hedley Creek 100 m D/S Nickel Plate Diffuser	Jan 7 - Dec 30	59	< 0.005 - 0.028 mg/L	Objective met
Total Arsenic 0.005 mg/L max. or 20% increase	0500629 Similkameen River @ Princeton Hwy 3 Bridge	Jan 8 - Jun 3	10	0.0001 - 0.0006 mg/L	Objective met
	0500073 Similkameen River @ Chopka Rd. Bridge	Jan 8 - Jun 17	11	0.0003 - 0.0035 mg/L	Objective met
	0500693 Similkameen River D/S Keremeos STP	May 13 - Jun 3	3	0.0007 - 0.0012 mg/L	Objective met
	E223873 Hedley Creek U/S Nickel Plate Diffuser	Jan 7 - Dec 30	57	0.0002 - < 0.0005 mg/L	Objective met
	E223874 Hedley Creek 100 m D/S Nickel Plate Diffuser	Jan 7 - Dec 30	58	0.0001 - 0.001 mg/L	Objective met
Chlorophyll-a < 50 mg/m ² av.	Similkameen River	2002	0	no data collected	Omitted 2002
Chlorophyll-a < 100 mg/m ² av.	Hedley Creek	2002	0	no data collected	Omitted 2002
Dissolved Oxygen 8 mg/L min. (July - March) 11 mg/L min. (April - June)	Similkameen River	2002	0	no data collected	Omitted 2002
pH 6.5 - 8.5	0500629 Similkameen River @ Princeton Hwy 3 Bridge	Jan 8 - Sep 3	19	7.47 - 8.1	Objective met
	0500073 Similkameen River @ Chopka Rd. Bridge	Jan 8 - Sep 3	18	7.2 - 8.11	Objective met
	E223873 Hedley Creek U/S Nickel Plate Diffuser	Jan 7 - Dec 30	59	7.11 - 8.26	Objective met
	E223874 Hedley Creek 100 m D/S Nickel Plate Diffuser	Jan 7 - Dec 30	59	7 - 7.84	Objective met

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION	
	SITE	DATE	n	VALUE		
Dissolved Aluminum < 0.05 mg/L av. 0.10 mg/L max. or 20% increase	0500629 Similkameen River @ Princeton Hwy 3 Bridge	May 2	1	0.12 mg/L	Max obj met	
	E223874 Hedley Creek 100 m D/S Nickel Plate Diffuser	May 23	1	0.173 mg/L	Max obj not met	
Total Chromium < 0.002 mg/L av. 0.02 mg/L max. or 20% increase	0500629 Similkameen River @ Princeton Hwy 3 Bridge	Jan 8 - Jun 17	8	< 0.0002 - 0.0032 mg/L	Max obj met	
	0500073 Similkameen River @ Chopka Rd. Bridge	Jan 8 - Jun 17	10	0.0002 - 0.001 mg/L	Max obj met	
	0500693 Similkameen River D/S Keremeos STP	May 23 - Jun 3	3	0.0005 - 0.0009 mg/L	Max obj met	
Total Copper < 0.002 mg/L av. 0.003 mg/L max. or 20% inc. at hardness = 14	0500629 Similkameen River @ Princeton Hwy 3 Bridge	Jan 22 - May 3 Jan 8 - May 17	8 3	0.0006 - 0.00283 mg/L 0.00389 - 0.0222 mg/L	Max obj met Max obj not met	
	0500073 Similkameen River @ Chopka Rd. Bridge	Jan 8 - May 13 May 23 - Jun 17	8 3	0.0003 - 0.00265 mg/L 0.00547 - 0.00997 mg/L	Max obj met Max obj not met	
	0500693 Similkameen River D/S Keremeos STP	May 13 May 23 - Jun 17	1 3	0.00213 mg/L 0.0043 - 0.00805 mg/L	Max obj met Max obj not met	
	E223873 Hedley Creek U/S Nickel Plate Diffuser	Jan 7 - Dec 30 Jan 7 - Dec 2	59 11	0.0004 - 0.0027 mg/L av. = 0.0008 - 0.00162 mg/L	Max obj met Av obj met	
	E223874 Hedley Creek 100 m D/S Nickel Plate Diffuser	Jan 7 - Dec 30 Jan 7 - Dec 30	58 12	0.0005 - 0.0025 mg/L av. = 0.00092 - 0.00148 mg/L	Max obj met Av obj met	
	Total Iron 0.3 mg/L max. or 20% increase	0500629 Similkameen River @ Princeton Hwy 3 Bridge	Jan 22 - Mar 19 Jan 8	6 1	0.0138 - 0.16 mg/L 3.81 mg/L	Objective met Objective not met
		0500073 Similkameen River @ Chopka Rd. Bridge	Jan 8 - Mar 19	7	0.0185 - 0.163 mg/L	Objective met
	Total Manganese 0.05 mg/L max. or 20% increase	0500629 Similkameen River @ Princeton Hwy 3 Bridge	Jan 22 - Jun 17 Jan 8	10 1	0.0009 - 0.0359 mg/L 0.137 mg/L	Objective met Objective not met
		0500073 Similkameen River @ Chopka Rd. Bridge	Jan 8 - Jun 3 May 23 - Jun 17	9 2	0.003 - 0.0439 mg/L 0.0511 - 0.133 mg/L	Objective met Objective not met
		0500693 Similkameen River D/S Keremeos STP	May 13 - Jun 17 May 23	3 1	0.0141 - 0.0431 mg/L 0.105 mg/L	Objective met Objective not met
E223874 Hedley Creek 100 m D/S Nickel Plate Diffuser		May 23	1	0.02 mg/L	Objective met	

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Total Lead 0.004 mg/L av. 0.030 mg/L max. or 20% inc. at hardness = 46	0500629 Similkameen River @ Princeton Hwy 3 Bridge	Jan 8 - Jun 17	11	0.00015 - 0.0037 mg/L	Max obj met
			1	av. = 0.00061 mg/L	Indefinite result
	0500073 Similkameen River @ Chopka Rd. Bridge	Jan 8 - Jun 17	11	0.00019 - 0.00226 mg/L	Max obj met
			1	av. = 0.00050 mg/L	Indefinite result
	0500693 Similkameen River D/S Keremeos STP	May 13 - Jun 17	4	0.00019 - 0.00232 mg/L	Max obj met
			1	av. = 0.00091 mg/L	Indefinite result
E223874 Hedley Creek 100 m D/S Nickel Plate Diffuser	May 23	1	0.00016 mg/L	Max obj met	
		1	av. = 0.00016 mg/L	Indefinite result	
Total Mercury < 0.02 ug/L av. 0.1 ug/L max.	Similkameen River	2002	0	no data collected	Omitted 2002
Total Molybdenum < 0.01 mg/L av. 0.05 mg/L max. (May - Sept.)	0500629 Similkameen River @ Princeton Hwy 3 Bridge	Jan 8 - Jun 17	11	0.00039 - 0.0009 mg/L	Max obj met
			1	av. = 0.00060 mg/L	Indefinite result
	0500073 Similkameen River @ Chopka Rd. Bridge	Jan 8 - Jun 17	11	0.00049 - 0.00107 mg/L	Max obj met
			1	av. = 0.00107 mg/L	Indefinite result
	0500693 Similkameen River D/S Keremeos STP	May 13 - Jun 17	4	0.00048 - 0.00068 mg/L	Max obj met
			1	av. = 0.000558 mg/L	Indefinite result
E223874 Hedley Creek 100 m D/S Nickel Plate Diffuser	May 23	1	0.00032 mg/L	Max obj met	
		1	av. = 0.00032 mg/L	Indefinite result	
Total Nickel 0.025 mg/L max. or 20% increase at hardness < 65	0500629 Similkameen River @ Princeton Hwy 3 Bridge	Jan 8 - Jun 17	11	0.0001 - 0.0031 mg/L	Objective met
			11	0.0001 - 0.00169 mg/L	Objective met
	0500693 Similkameen River D/S Keremeos STP	May 13 - Jun 17	4	0.00012 - 0.00132 mg/L	Objective met
			1	0.00015 mg/L	Objective met
E223874 Hedley Creek 100 m D/S Nickel Plate Diffuser	May 23	1	0.00015 mg/L	Objective met	
Total Uranium < 0.01 mg/L av. 0.10 mg/L max. or 20% increase	0500629 Similkameen River @ Princeton Hwy 3 Bridge	May 2 - Jun 17	4	0.000111 - 0.000178 mg/L	Max obj met
			1	av. = 0.000145 mg/L	Indefinite result
	0500073 Similkameen River @ Chopka Rd. Bridge	May 13 - Jun 17	4	0.000269 - 0.00148 mg/L	Max obj met
		1	av. = 0.000592 mg/L	Indefinite result	

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Total Uranium < 0.01 mg/L av. 0.10 mg/L max. or 20% increase	0500693 Similkameen River D/S Keremeos STP	May 13 - Jun 17	4	0.000234 - 0.00159 mg/L	Max obj met
			1	av. = 0.000596 mg/L	Indefinite result
	E223874 Hedley Creek 100 m D/S Nickel Plate Diffuser	May 23	1	0.000723 mg/L	Max obj met
			1	av. = 0.000723 mg/L	Indefinite result
Total Zinc < 0.01 mg/L av. 0.03 mg/L max. or 20% increase	0500629 Similkameen River @ Princeton Hwy 3 Bridge	Jan 8 - Jun 17	11	< 0.0002 - 0.0197 mg/L	Max obj met
			1	0.00464 mg/L	Indefinite result
	0500073 Similkameen River @ Chopka Rd. Bridge	Jan 8 - Jun 17	11	< 0.0002 - 0.02 mg/L	Max obj met
			1	0.00496 mg/L	Indefinite result
	0500693 Similkameen River D/S Keremeos STP	May 13 - Jun 17	4	0.0015 - 0.0199 mg/L	Max obj met
			1	0.00938mg/L	Indefinite result
	E223874 Hedley Creek 100 m D/S Nickel Plate Diffuser	May 23	1	0.0072 mg/L	Max obj met
			1	0.0072 mg/L	Indefinite result

Table 15. Cahill Creek Water Quality Objectives - 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Suspended Solids 10 mg/L or 10% max. increase	Cahill Creek (Hwy to Similkameen) Red Top Gulch Creek	2002	0	no data collected	Omitted 2002
Suspended Solids 20 mg/L or 10% max. increase	Cahill Creek (Headwaters to Hwy) Nickel Plate Mine Creek Sunset Creek	2002	0	no data collected	Omitted 2002
Turbidity 5 NTU or 10% max. increase	Cahill Creek: E206635 U/S Sunset / Nickle Plate Mine Cks	Jan 7 - Dec 2	12	0.4 - 5.5 NTU	Control Site
	E206823 D/S confluence (Cahill #4)	Jan 7 - Dec 2	12	0.3 - 4.5 NTU	Objective met
	E249949 Cahill #4A	May 6 - Dec 2	8	0.5 - 4.7 NTU	Objective met
	E249950 Cahill #4B	Jun 3 - Dec 2 May 6	7 1	0.5 - 3.4 NTU 6 NTU (inc = 0.5 NTU)	Objective met Objective met
	E250424 Cahill #4C	Aug 12 - Dec 2	5	0.8 - 1.5 NTU	Objective met
	E206824 D/S Tailings Ponds (Cahill #2)	Jan 7 - Dec 2	12	0.5 - 4.2 NTU	Objective met
	E206636 D/S Tailings Ponds (Cahill #2A)	Jan 7 - Dec 2	12	0.5 - 4.7 NTU	Objective met
	E206637 at highway (Cahill #3)	Jan 7 - Dec 2 May 23	11 1 1	0.4 - 3.1 NTU 12.2 NTU 5.2 NTU (inc = 2.0 NTU)	Objective met Indefinite result (no control) Objective met
	Red Top Gulch Creek: E206638 Below Tailings Pond	Jan 7 - Dec 2	12	0.9 - 6.3 NTU	Control Site
	E215957 East Fork	May 6 - Jul 1	3	1.5 - 7.7 NTU	
		May 6 - Jul 1	3	Increase = 0 - 1.4 NTU	Objective met
	E215956 West Fork	May 6 - Sep 2	5	0.3 - 4.8 NTU	Objective met
	Turbidity 10 NTU or 20% max. increase	Sunset Creek: E215954 U/S Canty Pit	Jan 7 - Dec 2	12	0.13 - 1.4 NTU
E250751 Lower SS		Jan 7 - Dec 2	12	0.3 - 2.5 NTU	Objective met

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Turbidity 10 NTU or 20% max. increase	E206634 U/S Cahill Creek	Jan 7 - Dec 2	12	0.32 - 3 NTU	Objective met
	Nickel Plate Mine Creek: E206633 U/S Sunset Creek	Jan 7 - Dec 2	12	0.19 - 1.4 NTU	Objective met
Dissolved Solids 500 mg/L max.	Cahill Creek Red Top Gulch Nickel Plate Mine Creek Sunset Creek	2002	0	no data collected	Omitted 2002
Sulphate < 50 mg/L av. 150 mg/L max.	Cahill Creek: E206635	Jan 7 - Dec 2	8	4.2 - 10.2 mg/L	Max objective met
	U/S Sunset / Nickle Plate Mine Cks	Jan 7 - Dec 2	1	av = 8.3 mg/L	Indefinite result
	E206823	Jan 1 - Dec 31	265	13.9 - 71.3 mg/L	Max obj. met
	D/S confluence (Cahill #4)	Jan 1 - Dec 31	50	av. = 15.6 - 43.6 mg/L	Av. obj. met
		May 23 - Jun 11	3	av = 54.7 - 65.4 mg/L	Av. obj. not met
	E249949 Cahill #4A	Apr 23 - Dec 31	147	26 - 126.8 mg/L	Max obj. met
		Sep 18	1	172 mg/L	Max obj. not met
		Apr 23 - Dec 4	3	av. = 41.3 - 47.4 mg/L	Av. obj. met
		May 27 - Dec 25	26	av = 50.8 - 114.3 mg/L	Av. obj. not met
		E249950 Cahill #4B	Apr 23 - Dec 31	152	31.3 - 148.4 mg/L
		Apr 23 - Dec 2	3	av. = 43.6 - 49.9 mg/L	Av. obj. met
		May 27 - Dec 27	27	av = 50.6 - 119.3mg/L	Av. obj. not met
	E250424 Cahill #4C	Aug 20 - Dec 20	38	69.4 - 149 mg/L	Max obj. met
		Aug 16 - Dec 31	52	150.3 - 294.4 mg/L	Max obj. not met
		Aug 16 - Dec 31	18	av = 127.0 - 213.7 mg/L	Av. obj. not met
	E206824 D/S Tailings Ponds (Cahill #2)	Jan 1 - Dec 4	255	30.9 - 150 mg/L	Max obj. met
		Jul 27 - Dec 31	117	150.4 - 213.5 mg/L	Max obj. not met
		Apr 28 - May 2, May 18 - 22	2	av. = 48.8 - 49.4 mg/L	Av. obj. met
		Jan 1 - Dec 29	72	av = 55.3 - 209.2 mg/L	Av. obj. not met
		E206636 D/S Tailings Ponds (Cahill #2A)	Jan 7 - Nov 28	130	33.8 - 149.4 mg/L
Jul 29 - Dec 31			91	150.7 - 215.3 mg/L	Max obj. not met
	Apr 30 - May 6	1	av = 46.3 mg/L	Av. obj. met	
	Feb 11 - Dec 31	43	av = 57.9 - 204.4 mg/L	Av. obj. not met	
E206637 at highway (Cahill #3)	Jan 1 - Nov 28	173	35.4 - 149.9 mg/L	Max obj. met	
	Jul 29 - Dec 31	91	152 - 211.3 mg/L	Max obj. not met	
	Jan 1 - Dec 25	52	av = 55.0 - 201.5 mg/L	Av. obj. not met	
Red Top Gulch Creek: E206638 Below Tailings Pond	Jan 7 - Dec 27	53	150.4 - 409.5 mg/L	Max objective not met	
	Jan 7 - Dec 2	10	av = 151.5 - 319.7 mg/L	Av. obj. not met	
E215957 East Fork	Jul 1	1	122.6 mg/L	Max obj. met	
	Jun 3	1	238.3 mg/L	Max obj. not met	
	Jun 3 - Jul 1	1	av = 180.5 mg/L	Indefinite result	
E215956 West Fork	Jun 3 - Sep 2	3	308.8 - 651.1 mg/L	Max objective not met	
	Jun 3 - Sep 2	1	av = 434.5 mg/L	Indefinite result	
Nickel Plate Mine Creek: E206633 U/S Sunset Creek	Jan 1 - Dec 31	264	447.2 - 595 mg/L	Max objective not met	
	Jan 1 - Dec 25	52	av = 464.6 - 582.1 mg/L	Av. obj. not met	

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
WAD-CN < 0.005 mg/L av. 0.010 mg/L max.	Cahill Creek: E206637	Jan 7 - Dec 31	57	0.002 - 0.006 mg/L	Max obj. met
	at highway (Cahill #3)	Jan 7 - Dec 17	9	av = 0.0044 - 0.005 mg/L	Av. obj. met
		Apr 1 - Nov 4	2	av = 0.0052 mg/L	Av. obj. not met
SAD - CN + Thiocyanate as CN 0.20 mg/L max.	Cahill Creek: E206635	Jan 7 - Dec 2 May 6	8 1	0.018442 - 0.025442 mg/L 0.23804 mg/L	Objective met Objective not met
	U/S Sunset / Nickle Plate Mine Cks	Feb 11 - Nov 4	3	all < 0.22904 mg/L	Indefinite result
	E206823 D/S confluence (Cahill #4)	Jan 1 - Dec 31	55	0.018442 - 0.036442 mg/L	Objective met
		May 6	1	0.23504 mg/L	Objective not met
		Feb 11 - Nov 4	3	all < 0.22904 mg/L	Indefinite result
	E249949 Cahill #4A	Apr 29 - Dec 24	34	0.017442 - 0.026442 mg/L	Objective met
		May 6 - Sep 9	4	0.22904 - 0.280848 mg/L	Objective not met
		Oct 21 - Dec 11	3	all < 0.22904 mg/L	Indefinite result
	E249950 Cahill #4B	Apr 29 - Dec 31	34	0.017442 - 0.028442 mg/L	Objective met
		May 6 - Nov 4	4	0.22804 - 0.279848 mg/L	Objective not met
		Sep 9 - Dec 11	3	all < 0.22904 mg/L	Indefinite result
	E250424 Cahill #4C	Aug 20 - Dec 31	20	0.018442 - 0.026442 mg/L	Objective met
Sep 9 - Dec 11		4	0.23104 - 0.25804 mg/L	Objective not met	
E206824 D/S Tailings Ponds (Cahill #2)	Jan 7 - Dec 31	55	0.018442 - 0.036442 mg/L	Objective met	
	Feb 11 - Dec 11	8	0.22704 - 0.415272 mg/L	Objective not met	
SAD - CN + Thiocyanate as CN 0.20 mg/L max.	E206636 D/S Tailings Ponds (Cahill #2A)	Jan 7 - Dec 31	50	0.018442 - 0.054804 mg/L	Objective met
		Feb 11 - Nov 4	4	0.23304 - 0.23804 mg/L	Objective not met
	E206637 at highway (Cahill #3)	Jan 7 - Dec 31	54	0.018442 - 0.043442 mg/L	Objective met
		Feb 11 - Nov 4	4	0.22904 - 0.23704 mg/L	Objective not met
	Red Top Gulch Creek: E206638 Below Tailings Pond	Jan 7 - Dec 2	8	0.018442 - 0.023442 mg/L	Objective met
		Feb 11 - Nov 4	4	0.23004 - 0.23404 mg/L	Objective not met
	E215957 East Fork	Jun 3 - Jul 1	2	0.028442 - 0.041442 mg/L	Objective met
		May 6	1	0.26304 mg/L	Objective not met
	E215956 West Fork	Jun 3 - Jul 1	2	0.054442 - 0.094327 mg/L	Objective met
		May 6 - Sep 2	3	0.25304 - 4.732146 mg/L	Objective not met
Cyanates as CN 0.45 mg/L max.	E206637 at highway (Cahill #3)	Jan 7 - Dec 31	58	0.005 - < 0.03 mg/L	Objective met
Total Arsenic 0.05 mg/L max.	Cahill Creek: E206823 D/S confluence (Cahill #4)	Jan 7 - Dec 2	12	0.0129 - 0.0244 mg/L	Objective met
		May 6 - Dec 2	8	0.0159 - 0.022 mg/L	Objective met
	E249949 Cahill #4A	May 6 - Dec 2	8	0.0159 - 0.022 mg/L	Objective met
	E249950 Cahill #4B	May 6 - Dec 2	8	0.0166 - 0.0207 mg/L	Objective met
E250424 Cahill #4C	Sep 2 - Dec 2	4	0.0156 - 0.021 mg/L	Objective met	

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Total Arsenic 0.05 mg/L max.	E206824 D/S Tailings Ponds (Cahill #2)	Jan 7 - Dec 2	12	0.013 - 0.0204 mg/L	Objective met
	E206636 D/S Tailings Ponds (Cahill #2A)	Jan 7 - Dec 31	29	0.01 - 0.02 mg/L	Objective met
	E206637 at highway (Cahill #3)	Jan 7 - Dec 31	34	0.01 - 0.02 mg/L	Objective met
	Hedley Creek: E223873 U/S Nickel Plate Diffuser	Jan 7 - Dec 30	57	0.0002 - 0.0005 mg/L	Objective met
	E223874 100 m D/S Nickel Plate Diffuser	Jan 7 - Dec 30	58	0.0001 - 0.001 mg/L	Objective met
	Red Top Gulch Creek: E206638 Below Tailings Pond	Jan 7 - Dec 2	12	0.008 - 0.023 mg/L	Objective met
Total Arsenic 0.5 mg/L max.	Nickel Plate Mine Creek	2002	0	no data collected	Omitted 2002
Ammonia-N < 1.11 mg/L av. 5.78 mg/L max. at pH = 8.0 temp. = 12 °C	Cahill Creek: E206637 at highway (Cahill #3)	Jan 7 - Dec 31	82	< 0.005 - < 0.1 mg/L	Max obj met
		Jan 7 - Dec 24	16	av. = 0.009 - 0.054 mg/L	Av obj met
Nitrite-N < 0.02 mg/L av. 0.06 mg/L max.	Cahill Creek: E206637 at highway (Cahill #3)	Jan 1 - Dec 31	263	< 0.03 - 0.03 mg/L	Max obj met
		Jan 1 - Dec 26	52	av. = < 0.03 - 0.03 mg/L	Av obj met
Nitrite-N < 1 mg/L max	Cahill Creek: E206635 U/S Sunset / Nickle Plate Mine Cks	Jan 7 - Dec 2	8	all < 0.03 mg/L	Objective met
	E206823 D/S confluence (Cahill #4)	Jan 1 - Dec 31	265	< 0.03 - 0.03 mg/L	Objective met
	E249949 Cahill #4A	Apr 23 - Dec 30	154	< 0.001 - < 0.03 mg/L	Objective met
	E249950 Cahill #4B	Apr 23 - Dec 31	158	< 0.001 - < 0.03 mg/L	Objective met
	E250424 Cahill #4C	Aug 16 - Dec 31	103	< 0.001 - < 0.03 mg/L	Objective met
	E206824 D/S Tailings Ponds (Cahill #2)	Jan 1 - Dec 31	378	0.001 - 0.03 mg/L	Objective met
	E206636 D/S Tailings Ponds (Cahill #2A)	Jan 1 - Dec 31	262	< 0.03 - 0.03 mg/L	Objective met

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Nitrite-N < 1 mg/L max	Red Top Gulch Creek: E206638 Below Tailings Pond	Jan 7 - Dec 20	52	< 0.03 - < 0.06 mg/L	Objective met
	E215957 East Fork	Jun 3 - Jul 1	2	< 0.03 - < 0.06 mg/L	Objective met
	E215956 West Fork	Jun 3 - Sep 2	3	0.04 - 0.18 mg/L	Objective met
Nitrite-N < 10 mg/L max	Nickel Plate Mine Creek: E206633 U/S Sunset Creek	Jan 1 - Dec 31	264	< 0.03 - < 0.3 mg/L	Objective met
Nitrate-N < 10 mg/L max.	Cahill Creek: E206635 U/S Sunset / Nickle Plate Mine Cks	Jan 7 - Dec 2	12	< 0.005 - 0.04 mg/L	Objective met
	E206823 D/S confluence (Cahill #4)	Jan 1 - Dec 31	269	0.17 - 4.01 mg/L	Objective met
	E249949 Cahill #4A	Apr 23 - Dec 30	155	0.47 - 7.72 mg/L	Objective met
	E249950 Cahill #4B	Apr 23 - Dec 31	159	0.74 - 6.49 mg/L	Objective met
	E250424 Cahill #4C	Aug 16 - Dec 31	103	0.65 - 5.74 mg/L	Objective met
	E206824 D/S Tailings Ponds (Cahill #2)	Jan 1 - Dec 31	380	0.8 - 5.35 mg/L	Objective met
	E206636 D/S Tailings Ponds (Cahill #2A)	Jan 1 - Dec 31	267	0.85 - 4.56 mg/L	Objective met
	E206637 at highway (Cahill #3)	Jan 1 - Dec 31	268	0.83 - 4.78 mg/L	Max obj met
	Red Top Gulch Creek: E206638 Below Tailings Pond	Jan 7 - Dec 27 Jun 3 - Jul 1	52 5	3.56 - 9.61 mg/L 10.1 - 11.27 mg/L	Objective met Objective not met
	Nitrate-N < 10 mg/L max.	E215957 East Fork	May 6 - Jul 1	3	1.52 - 2.65 mg/L
E215956 West Fork		May 6 - Sep 2	5	0.5 - 2.68 mg/L	Objective met
Nitrate-N < 100 mg/L max	Nickel Plate Mine Creek: E206633 U/S Sunset Creek	Jan 1 - Dec 31	268	22.52 - 37.7 mg/L	Objective met
Total Aluminum 0.30 mg/L max. or 20% increase at pH > 7	Cahill Creek: E206637 at highway (Cahill #3)	May 23	1	0.379 mg/L	Objective not met

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Total Cadmium 0.005 mg/L	Cahill Creek Red Top Gulch Nickel Plate Mine Creek Sunset Creek	2002	0	no data collected	Omitted 2002
Total Cadmium 0.0002 mg/L	Cahill Creek: E206637 at highway (Cahill #3)	May 23	1	0.00006 mg/L	Objective met
Total Cadmium 0.005 mg/L	Cahill Creek: Headwaters to Highway crossing Red Top Gulch Creek: Headwaters to Highway crossing	2002	0	no data collected	Omitted 2002
Total Cadmium 0.02 mg/L	Nickel Plate Mine Creek	2002	0	no data collected	Omitted 2002
Total Copper < 0.005 mg/L av. 0.007 mg/L max. or 20% max. increase	Cahill Creek: E206637 at highway (Cahill #3)	Jan 7 - Dec 2	14	< 0.001 - 0.005 mg/L	Max obj met
		Jan 7 - Dec 2	1	av. = 0.002 mg/L	Indefinite result
Total Copper < 0.2 mg/L max	Cahill Creek: E206823 D/S confluence (Cahill #4)	Jan 7 - Dec 2	12	< 0.001 - 0.003 mg/L	Objective met
	E249949 Cahill #4A	May 6 - Dec 2	8	< 0.001 - 0.003 mg/L	Objective met
	E249950 Cahill #4B	May 6 - Dec 2	8	0.001 - 0.003 mg/L	Objective met
	E250424 Cahill #4C	Sep 2 - Dec 2	4	0.001 - 0.005 mg/L	Objective met
	E206824 D/S Tailings Ponds (Cahill #2)	Jan 7 - Dec 2	12	< 0.001 - 0.003 mg/L	Objective met
	E206636 D/S Tailings Ponds (Cahill #2A)	Jan 7 - Dec 2	9	< 0.002 - 0.004 mg/L	Objective met
	E206637 at highway (Cahill #3)	Jan 7 - Dec 2	14	< 0.001 - 0.005 mg/L	Objective met
	Red Top Gulch Creek: E206638 Below Tailings Pond	Feb 11 - Nov 4	4	< 0.001 - 0.005 mg/L	Objective met
Total Copper < 0.2 mg/L max	Nickel Plate Mine Creek	2002	0	no data collected	Omitted 2002
Dissolved Iron 0.3 mg/L max.	Cahill Creek: E206637 at highway	Jan 7 - Dec 31	31	< 0.01 - 0.04 mg/L	Objective met

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Total Lead < 0.005 mg/L av. 0.015 mg/L max. at 20% increase	Cahill Creek Red Top Gulch Nickel Plate Mine Creek Sunset Creek	2002	0	no data collected	Omitted 2002
Total Lead < 0.005 mg/L av. 0.015 mg/L max. at 20% increase	Cahill Creek: E206637 at highway (Cahill #3)	May 23	1	0.0004 mg/L	Max obj met
		May 23	1	av. = 0.0004 mg/L	Indefinite result
Total Lead < 0.05 mg/L max	Cahill Creek: Headwaters to Highway crossing Red Top Gulch Creek: Headwaters to Highway crossing	2002	0	no data collected	Omitted 2002
Total Lead < 0.1 mg/L max	Nickel Plate Mine Creek: E206633 U/S Sunset Creek	2002	0	no data collected	Omitted 2002
Total Mercury 0.1 ug/L max.	Cahill Creek: Highway Crossing to Similkameen Red Top Gulch Creek: Highway Crossing to Similkameen	2002	0	no data collected	Omitted 2002
Total Mercury 1 ug/L max.	Cahill Creek: Headwaters to Highway crossing Red Top Gulch Creek: Headwaters to Highway crossing	2002	0	no data collected	Omitted 2002
Total Mercury 3 ug/L max.	Nickel Plate Mine Creek	2002	0	no data collected	Omitted 2002
Total Mercury 0.5 ug/g max. wet weight in fish	Cahill Creek: Highway Crossing to Similkameen Red Top Gulch Creek: Highway Crossing to Similkameen	2002	0	no data collected	Omitted 2002
Total Molybdenum 0.01 mg/L av. (May - Sept.) 0.05 mg/L max.	Cahill Creek: E206637 at highway (Cahill #3)	May 23	1	0.00155 mg/L	Max obj met
			1	av. = 0.00155 mg/L	Indefinite result
Total Molybdenum 0.01 mg/L av. 0.05 mg/L max.	Nickel Plate Mine Creek	2002	0	no data collected	Omitted 2002
Total Selenium 0.001 mg/L max. or 20% max. increase	Cahill Creek: E206637 at highway (Cahill #3)	May 23	1	0.0033 mg/L	Objective not met
Total Selenium 0.01 mg/L max.	Cahill Creek: Highway Crossing to Similkameen Red Top Gulch Creek: Highway Crossing to Similkameen	2002	0	no data collected	Omitted 2002
Total Selenium 0.05 mg/L max.	Nickel Plate Mine Creek	2002	0	no data collected	Omitted 2002

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Total Silver 0.0001 mg/L max. or 20% max. increase	Cahill Creek: E206637 at highway (Cahill #3)	May 23	1	< 0.02 mg/L	Indefinite result
Total Silver 0.05 mg/L max.	Cahill Creek: Highway Crossing to Similkameen Red Top Gulch Creek: Highway Crossing to Similkameen Nickel Plate Mine Creek	2002	0	no data collected	Omitted 2002
Total Zinc 0.05 mg/L max.	Cahill Creek: E206637 at highway (Cahill #3)	May 23	1	0.0071 mg/L	Objective met

Table 16. Christina Lake Water Quality Objectives – 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Zooplankton > 10% for any of the rotifers (ro objective) <i>Kellicottia</i> <i>Conochilus</i> > 10% for any of the crustaceans (cr objective) <i>Bosmina</i> <i>Epishura</i> <i>Diacyclops</i>	Christina Lake	2002	0	no data collected	Omitted 2002
Dissolved Oxygen 8 mg/L at any depth	Christina Lake	2002	0	no data collected	Omitted 2002
Turbidity ≤ 1 NTU seasonal av 5 NTU max	0200078 Christina Lake at Christina	Jul 20 - Sep 9	3	< 0.1 - 0.36 NTU	Max obj met
			1	av = 0.26 NTU	Indefinite Result
Secchi Depth 3 m min seasonal av > 10 m	0200078 Christina Lake at Christina	Apr 9 - Oct 3	4	4 - 16.3 m	Objective met
			1	av = 9.25 m	Objective not met
	E215758 north basin deep center	Apr 9 - Oct 3	3	4 - 16.5 m	Objective met
			1	av = 8.2 m	Objective not met
Total Phosphorus < 0.007 mg/L av at spring overturn	0200078 Christina Lake at Christina	Apr.9	2	0.004 - 0.005 mg/L	
			1	av = 0.0045 g/L	Objective met
	E215758 north basin deep center	Apr.9	2	all 0.005 mg/L	
			1	av = 0.005 mg/L	Objective met
Total Nitrogen ≤ 0.200 mg/L av at spring overturn	0200078 Christina Lake at Christina	Apr.9	2	all 0.08 mg/L	
			1	av = 0.08 mg/L	Objective met
	E215758 north basin deep center	Apr.9	2	all 0.08 mg/L	
			1	av = 0.08 mg/L	Objective met
Chlorophyll - <i>a</i> ≤ 0.0025 mg/L seasonal av.	0200078 Christina Lake at Christina	Apr 9 - Oct 3	3	0.001 - 0.0014 mg/L	
			1	av = 0.0013 mg/L	Objective met
	E215758 north basin deep center	Apr 9 - Oct 3	2	0.0014 - 0.0016 mg/L	
			1	av = 0.0015 mg/L	Objective met
Periphyton Chlorophyll - <i>a</i> 10 mg/m ² seasonal av.	Christina Lake	2002	0	no data collected	Omitted 2002

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliforms ≤ 10/100 mL 90th perc. (np) over 30 days	Christina Lake	2002	0	no data collected	Omitted 2002

Table 17. Thompson River Water Quality Objectives - 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliform < 10 CFU/100 mL 90th percentile. (np)	0600135 South Thompson River Kamloops d/s Peterson Cr.	Jan 16 - Dec 18	6	< 1 - 2 CFU/100 mL	No 5-in-30 samples
			1	np = 2 CFU/100 mL	Indefinite result
	0600164 North Thompson River at Kamloops u/s Paul Cr.	Jan 16 - Dec 18	6	< 1 - 6 CFU/100 mL	No 5-in-30 samples
			1	np = 4.5 CFU/100 mL	Indefinite result
	E218768 Kamloops Lake near outlet	Jan 16 - Dec 18	6	< 1 - 1 CFU/100 mL	No 5-in-30 samples
			1	np = 1 CFU/100 mL	Indefinite result
	0600004 Lower Thompson at Savona	Jan 16 - Dec 18	6	all < 1 CFU/100 mL	No 5-in-30 samples
			1	np = < 1 CFU/100 mL	Indefinite result
	0600163 Lower Thompson d/s Walhachin	Jan 16 - Dec 18	6	< 1 - 6 CFU/100 mL	No 5-in-30 samples
			1	np = 3.5 CFU/100 mL	Indefinite result
	0600005 Lower Thompson at Spences Bridge	Jan 16 - Dec 18	6	< 1 - 14 CFU/100 mL	No 5-in-30 samples
			1	np = 7.5 CFU/100 mL	Indefinite result
	E206586 Lower Thompson at Spences Br. d/s Nicola R.	Jan 2 - Dec 18	28	< 1 - 154 CFU/100 mL	
		Jan 2 - Jan 22	1	np = 94.4 CFU/100 mL	Objective not met
<i>E. coli</i> < 200/100 mL geometric mean (gm)	0600135 South Thompson River Kamloops d/s Peterson Cr.	Jan 16 - Dec 18	6	< 1 - 2 CFU/100 mL	No 5-in-30 samples
			1	np = 1.5 CFU/100 mL	Indefinite result
	0600164 North Thompson River at Kamloops u/s Paul Cr.	Jan 16 - Dec 18	6	< 1 - 3 CFU/100 mL	No 5-in-30 samples
			1	np = 2 CFU/100 mL	Indefinite result
	E218768 Kamloops Lake near outlet	Jan 16 - Dec 18	6	< 1 - 1 CFU/100 mL	No 5-in-30 samples
			1	np = 1 CFU/100 mL	Indefinite result
	0600004 Lower Thompson at Savona	Jan 16 - Dec 18	6	all < 1 CFU/100 mL	No 5-in-30 samples
			1	np = < 1 CFU/100 mL	Indefinite result
	0600163 Lower Thompson d/s Walhachin	Jan 16 - Dec 18	6	< 1 - 4 CFU/100 mL	No 5-in-30 samples
			1	np = 2.5 CFU/100 mL	Indefinite result
	0600005 Lower Thompson at Spences Bridge	Jan 16 - Dec 18	6	< 1 - 18 CFU/100 mL	No 5-in-30 samples
			1	np = 8 CFU/100 mL	Indefinite result

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Colour 15 TCU max. or 5 TCU increase over average of N + S Thompson Rivers	E218768 Kamloops Lake near outlet	Feb 13 - Dec 18	5	< 5 - 5 TCU	Objective met
	0600163 Lower Thompson d/s Walhachin	Mar 12	1	5 TCU	Objective met
	0600005 Lower Thompson at Spences Bridge	Mar 12	1	5 TCU	Objective met
	E206586 Lower Thompson at Spences Br. d/s Nicola R.	Jan 2 - Sep 4	22	< 5 - 15 TCU	Objective met
Chlorophyll - a < 50 mg/m ²	0600005 Lower Thompson at Spences Bridge	Feb.13	6	147 - 273 mg/m ²	Objective not met
		Oct.29	6	30 - 92 mg/m ²	
			2	av. = 59 - 201 mg/m ²	
	Thompson River at Savona	Jan.24	5	0 - 23.6 mg/m ²	Objective met
		Feb.20	5	0 - 36.7 mg/m ²	
		Mar.13	5	12.7 - 100.3 mg/m ²	
		Apr.17	5	0 - 22.2 mg/m ²	
		Jan 24 - Apr 14	3	av. = 0 - 4.6 mg/m ²	
	Thompson River at Walhachin	Mar.13	1	av. = 55.7 mg/m ²	Objective not met
		Jan.24	5	0 - 27.4 mg/m ²	Objective met
Feb.20		5	all 0 mg/m ²		
Mar.13		5	all 0 mg/m ²		
Apr.17		5	0 - 21.5 mg/m ²		
Jan 24 - Apr 14	3	av. = 0 - 1.6 mg/m ²			
Dioxins & Furans 0.2 pg/L max. TEQ-TCDD	Thompson River Kamloops Lake	2002	0	no data collected	Omitted 2002
Dioxins & Furans 1.0 pg/g max. TEQ-TCDD wet weight in fish	Thompson River Kamloops Lake	2002	0	no data collected	Omitted 2002
Dioxins & Furans 0.7 pg/g max. TEQ-TCDD dry weight in sed.	Thompson River Kamloops Lake	2002	0	no data collected	Omitted 2002
Resin Acids 12 µg/L DHA max. 45 µg/L total max. at pH = 7.5	Thompson River Kamloops Lake	2002	0	no data collected	Omitted 2002

Table 18. Keremeos Creek Water Quality Objectives – 2002.

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION	
	SITE	DATE	n	VALUE		
Fecal Coliforms < 10 /100 mL 90th percentile (np)	Keremeos Creek: E221386 at Gunbarrel Intake	Jun 4 - Jul 2	5	< 1 - 1 CFU/100 mL	Objective met	
			1	np = 1 CFU/100 mL		
	Cedar Creek: E221525 at Highway 3A	Mar 25 - Jul 2	10	< 1 - 3 CFU/100 mL	Objective met	
		Mar 25 - Apr 22, Jun 4 - Jul 2	2	np = 1 - 2.6 CFU/100 mL		
	Olalla Creek: E221526 at Olalla	Mar 25 - Jul 2	10	< 1 - 36 CFU/100 mL	Objective met	
		Mar 25 - Apr 22 Jun 4 - Jul 2	1 1	np = 1 CFU/100 mL np = 24.4 CFU/100 mL		
Fecal Coliforms < 100 /100 mL 90th percentile (np)	Keremeos Creek: E221384 U/S Apex Parking Lot	Jun 11 - Jul 2	4	< 1 - 2 CFU/100 mL	Indefinite result	
			1	np = 1.7 CFU/100 mL		
	E221413	Jun 11 - Jul 2	4	all < 1 CFU/100 mL	Indefinite result	
	North Fork U/S West Fork		1	np = < 1 CFU/100 mL		
	E221387	Jun 11 - Jul 2	4	< 1 - 1 CFU/100 mL	Indefinite result	
	U/S Apex STP		1	np = 1 CFU/100 mL		
	E221390	Jun 11 - Jul 2	4	< 1 - 2 CFU/100 mL	Indefinite result	
	Base of Triple Chair		1	np = 1.7 CFU/100 mL		
	E221389	Jun 4 - Jul 2	5	< 1 - 1 CFU/100 mL	Objective met	
	at Dividend Road		1	np = 1 CFU/100 mL		
	E221339	Mar 25 - Jul 2	10	< 1 - 5 CFU/100 mL	Objective met	
	at Highway 3A	Mar 25 - Apr 22, Jun 4 - Jul 2	2	np = 3.4 - 4 CFU/100 mL		
	E221340	Mar 25 - Jul 2	10	17 - 184 CFU/100 mL	Objective not met	
		Mar 25 - Apr 22 Jun 4 - Jul 2	1 1	np = 132.1 CFU/100 mL np = 97.6 CFU/100 mL		
	E221341	U/S Olalla Creek	Jun 4 - Jul 2	5	9 - 217 CFU/100 mL	Objective not met
				1	np = 213.8 CFU/100 mL	
0500757	at Mouth	Mar 25 - Jul 2	9	10 - 96 CFU/100 mL	Objective met	
		Jun 4 - Jul 2	1	np = 58.4 CFU/100 mL		
Suspended Solids 10 mg/L during clear flow (Jul 1 - Mar 31)	Keremeos Creek: E221386 at Gunbarrel Intake	Jul.2	1	< 1 mg/L	Objective met	
Suspended Solids max. increase 10 mg/L in 24 hours or 5 mg/L in 30 days during clear flow (Jul 1 - Mar 31)	Keremeos Creek: E221384 U/S Apex Parking Lot	Jul.2	1	< 4 mg/L	Objective met	
	E221413	Jul.2	1	1 mg/L	Objective met	
	North Fork U/S West Fork E221387 U/S Apex STP	Jul.2	1	3 mg/L	Objective met	

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Suspended Solids max. increase 10 mg/L in 24 hours or 5 mg/L in 30 days	E221390 Base of Triple Chair	Jul.2	1	2 mg/L	Objective met
	E221389 at Dividend Road	Jul.2	1	2 mg/L	Objective met
	E221339 at Highway 3A	Mar 25, Jul 2	2	< 4 mg/L	Objective met
Suspended Solids max. increase 10 mg/L in 24 hours or 5 mg/L in 30 days during clear flow (Jul 1 - Mar 31)	Keremeos Creek: E221340 U/S Olalla Creek	Mar 25, Jul 2	2	< 4 - 8 mg/L	Objective met
	E221341 at Keremeos	Mar.25	3	all < 4 mg/L	Objective met
	0500757 at Mouth	Mar 25, Jul 2	2	< 4 - 6 mg/L	Objective met
	Cedar Creek: E221525 at Highway 3A	Mar 25, Jul 2	2	1 - < 4 mg/L	Objective met
	Olalla Creek: E221526 at Olalla	Mar 25, Jul 2	2	< 1 - < 4 mg/L	Objective met
Suspended Solids max. increase 10 mg/L or 10% during turbid flow (Apr 1 - Jun 30)	Keremeos Creek: E221386 at Gunbarrel Intake	Jun 4 - Jun 25	4	2 - < 4 mg/L	Objective met
	E221384 U/S Apex Parking Lot	Jun 4 - Jun 25	4	20 - 36 mg/L	Objective not met
	E221413 North Fork U/S West Fork	Jun 4 - Jun 25	4	1 - < 4 mg/L	Objective met
	E221387 U/S Apex STP	Jun 11 - Jun 25	3 3	6 - 11 mg/L increase = 5 - 9 mg/L	Objective met
	E221390 Base of Triple Chair	Jun 24 - Jun 19 Jun 11 - Jun 25	2 2	increase = 5 - 8 mg/L increase = 18 - 39 mg/L	Objective met Objective not met
Suspended Solids max. increase 10 mg/L or 10% during turbid flow (Apr 1 - Jun 30)	E221389 at Dividend Road	Jun 24 - Jun 19 Jun 11 - Jun 25	2 2	increase = 4 - 8 mg/L increase = 21 - 22 mg/L	Objective met Objective not met
	E221339 at Highway 3A	Apr 2 - Jun 25 Jun.4 Jun 11 - Jun 25	12 1 3	< 4 - 20 mg/L increase = 16 mg/L increase = 0 - 7 mg/L	Objective not met Objective met
	E221340 U/S Olalla Creek	Apr 2 - Jun 25 Jun 4 - Jun 25	10 4	< 4 - 20 mg/L increase = 4 - 5 mg/L	Objective met
	E221341 at Keremeos	Apr 2 - Jun 11 Jun.11	7 1	< 4 - 11 mg/L increase = 7 mg/L	Objective met
	0500757 at Mouth	Apr 2 - Jun 25 Jun.4 Jun 11 - Jun 25	9 1 3	< 4 - 22 mg/L increase = 11 mg/L increase = 6 - 7 mg/L	Objective not met Objective met

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Suspended Solids max. increase 5 mg/L or 10% during turbid flow (Apr 1 - Jun 30)	Cedar Creek: E221525 at Highway 3A	Apr 2 - Jun 25	6	2 - 4 mg/L	Objective met
		Jun 4 - Jun 19	2	6 mg/L	Indefinite result - no control
	Olalla Creek: E221526 at Olalla	Apr 2 - Jun 25	7	3 - 5 mg/L	Objective met
		Jun.4	1	16 mg/L	Indefinite result - no control
Turbidity max 5 NTU av. 2.5 NTU during clear flow	Keremeos Creek: E221386 at Gunbarrel Intake	Jul.2	1	0.34 NTU	Objective met
			1	av. = 0.34 NTU	Indefinite result
Turbidity 8 NTU increase over 24 hours or 2 NTU increase over 30 days during clear flow (July 1 - March 31)	Keremeos Creek: E221384 U/S Apex Parking Lot	Jul.2	1	0.49 NTU	Objective met
	E221413 North Fork U/S West Fork	Jul.2	1	0.2 NTU	Objective met
	E221387 U/S Apex STP	Jul.2	1	0.37 NTU	Objective met
	E221390 Base of Triple Chair	Jul.2	1	0.32 NTU	Objective met
	E221389 at Dividend Road	Jul.2	1	0.46 NTU	Objective met
	E221339 at Highway 3A	Mar 25, Jul 2	2	0.12 - 0.82 NTU	Objective met
Turbidity 8 NTU increase over 24 hours or 2 NTU increase over 30 days during clear flow (July 1 - March 31)	E221340 U/S Olalla Creek	Mar.25	1	1.09 NTU	Objective met
		Jul.2	1	increase = 2.19 NTU	Objective not met
	E221341 at Keremeos	Mar.25	3	0.46 - 0.53 NTU	Objective met
	0500757 at Mouth	Mar.25	1	0.46 NTU	Objective met
		Jul.2	1	increase = 2.56 NTU	Objective not met
Turbidity 1 NTU increase when background < 5 NTU during clear flow (July 1 - March 31)	Cedar Creek: E221525 at Highway 3A	Mar 25, Jul 2	2	0.1 - 0.3 NTU	Objective met
	Olalla Creek: E221526 at Olalla	Mar 25, Jul 2	2	0.22 - 0.34 NTU	Objective met
Turbidity max. increase 5 NTU or 10% during turbid flow (Apr 1 - Jun 30)	Keremeos Creek: E221386 at Gunbarrel Intake	Jun 4 - Jun 25	4	0.31 - 0.64 NTU	Objective met
	E221384 U/S Apex Parking Lot	Jun 4 - Jun 25	4	2.6 - 4.36 NTU	Objective met
	E221413 North Fork U/S West Fork	Jun 4 - Jun 25	4	0.43 - 0.81 NTU	Objective met
	E221387 U/S Apex STP	Jun 11 - Jun 25	3	0.65 - 1.68 NTU	Objective met
	E221390 Base of Triple Chair	Jun 4 - Jun 25	4	1.34 - 3.75 NTU	Objective met
	E221389 at Dividend Road	Jun 11 - Jun 25 Jun.4	3 1	1.35 - 3.62 NTU 7.02 NTU	Objective met Objective not met

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION	
	SITE	DATE	n	VALUE		
Turbidity max. increase 5 NTU or 10% during turbid flow (Apr 1 - Jun 30)	E221339 at Highway 3A	Apr 2 - Jun 25 Jun.4	12 1	< 0.1 - 4.53 NTU 6.25 NTU	Objective met Objective not met	
	E221340 U/S Olalla Creek	Apr 2 - Jun 25	9	1.42 - 3.15 NTU	Objective met	
	E221341 at Keremeos	Apr 2 - Jun 11	7	< 0.1 - 2.15 NTU	Objective met	
	0500757 at Mouth	Apr 2 - Jun 25 May 23 - Jun 4	9 2	< 0.1 - 5 NTU 6.86 - 10.3 NTU	Objective met Objective not met	
	Cedar Creek: E221525 at Highway 3A	Apr 2 - Jun 25	9	< 0.1 - 2.33 NTU	Objective met	
	Olalla Creek: E221526 at Olalla	Apr 2 - Jun 25 Jun.4	8 1	< 0.1 - 1.69 NTU 6.18 NTU	Objective met Indefinite result - no control	
Ammonia-N < 1.30 mg/L av 6.75 mg/L max at pH = 7.9 temp = 15 C	Keremeos Creek: E221386 at Gunbarrel Intake	Jun 4 - Jul 2	5 1	all < 0.005 mg/L av. = < 0.005 mg/L	Max. obj. met Av. obj. met	
	E221384 U/S Apex Parking Lot	Jun 4 - Jul 2	5 1	< 0.005 - 0.008 mg/L av. = 0.0056 mg/L	Max. obj. met Av. obj. met	
	E221413 North Fork U/S West Fork	Jun 4 - Jul 2	5 1	all < 0.005 mg/L av. = < 0.005 mg/L	Max. obj. met Av. obj. met	
	E221387 U/S Apex STP	Jun 11 - Jul 2	4 1	< 0.005 - 0.007 mg/L av. = 0.0055 mg/L	Max. obj. met Indefinite result	
	E221390 Base of Triple Chair	Jun 4 - Jul 2	5 1	all < 0.005 mg/L av. = < 0.005 mg/L	Max. obj. met Av. obj. met	
	E221389 at Dividend Road	Jun 4 - Jul 2	5 1	< 0.005 - 0.005 mg/L av. = 0.005 mg/L	Max. obj. met Av. obj. met	
	E221339 at Highway 3A	Mar 25 - Jul 2 Mar 25 - Apr 22, Jun 4 - Jul 2	14 2	all < 0.005 mg/L av. = < 0.005 mg/L	Max. obj. met Av. obj. met	
	E221340 U/S Olalla Creek	Mar 25 - Jul 2 Mar 25 - Apr 22, Jun 4 - Jul 2	10 2	< 0.005 - 0.005 av. = < 0.005 - 0.005 mg/L	Max. obj. met Av. obj. met	
	E221341 at Keremeos	Mar 25 - Jun 11 Mar 25 - Apr 22	7 1	< 0.005 - 0.039 mg/L av. = 0.005 mg/L	Max. obj. met Av. obj. met	
	0500757 at Mouth	Mar 25 - Jul 2 Mar 25 - Apr 22, Jun 4 - Jul 2	10 2	< 0.005 - 0.005 av. = < 0.005 - 0.005 mg/L	Max. obj. met Av. obj. met	
	Cedar Creek: E221525 at Highway 3A	Mar 25 - Jul 2 Mar 25 - Apr 22, Jun 4 - Jul 2	10 2	all < 0.005 mg/L av. = < 0.005 mg/L	Max. obj. met Av. obj. met	
	Olalla Creek: E221526 at Olalla	Mar 25 - Jul 2 Mar 25 - Apr 22, Jun 4 - Jul 2	10 2	< 0.005 - 0.006 mg/L av. = < 0.005 - 0.0052 mg/L	Max. obj. met Av. obj. met	
	Nitrite-N < 0.02 mg/L av 0.06 mg/L max at Chloride < 2 mg/L	Keremeos Creek: E221386 at Gunbarrel Intake	Jun 4 - Jul 2	5 1	all < 0.002 mg/L av. = < 0.002 mg/L	Max. obj. met Av. obj. met
		E221384 U/S Apex Parking Lot	Jun 4 - Jul 2	5 1	all < 0.002 mg/L av. = < 0.002 mg/L	Max. obj. met Av. obj. met
		E221413 North Fork U/S West Fork	Jun 4 - Jul 2	5 1	all < 0.002 mg/L av. = < 0.002 mg/L	Max. obj. met Av. obj. met

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Nitrite-N < 0.02 mg/L av 0.06 mg/L max at Chloride < 2 mg/L	E221387	Jun 11 - Jul 2	4	all < 0.002 mg/L	Max. obj. met
	U/S Apex STP		1	av. = < 0.002 mg/L	Indefinite result
	E221390	Jun 4 - Jul 2	5	< 0.002 - 0.002 mg/L	Max. obj. met
	Base of Triple Chair		1	av. = 0.002 mg/L	Av. obj. met
Nitrite-N < 0.02 mg/L av 0.06 mg/L max at Chloride < 2 mg/L	Keremeos Creek: E221389 at Dividend Road	Jun 4 - Jul 2	5	< 0.002 - 0.002 mg/L	Max. obj. met
			1	av. = 0.002 mg/L	Av. obj. met
	E221339 at Highway 3A	Jun 4 - Jul 2	5	< 0.002 - 0.002 mg/L	Max. obj. met
			1	av. = 0.002 mg/L	Av. obj. met
	E221340 U/S Olalla Creek	Jun 4 - Jul 2	5	< 0.002 - 0.002 mg/L	Max. obj. met
			1	av. = 0.002 mg/L	Av. obj. met
	E221341 at Keremeos	Jun.11	1	0.007 mg/L	Max. obj. met
			1	av. = 0.007 mg/L	Indefinite result
	0500757 at Mouth	Jun 4 - Jul 2	5	all < 0.002 mg/L	Max. obj. met
			1	av. = < 0.002 mg/L	Av. obj. met
	Cedar Creek: E221525 at Highway 3A	Jun 4 - Jul 2	5	all < 0.002 mg/L	Max. obj. met
			1	av. = < 0.002 mg/L	Av. obj. met
Nitrate + Nitrite-N 10 mg/L max	Olalla Creek: E221526 at Olalla	Jun 4 - Jul 2	5	all < 0.002 mg/L	Max. obj. met
			1	av. = < 0.002 mg/L	Av. obj. met
	Keremeos Creek: E221386 at Gunbarrel Intake	Jun 4 - Jul 2	5	0.02 - 0.079 mg/L	Objective met
	E221384 U/S Apex Parking Lot	Jun 4 - Jul 2	5	0.04 - 0.09 mg/L	Objective met
	E221413 North Fork U/S West Fork	Jun 4 - Jul 2	5	0.026 - 0.051 mg/L	Objective met
	E221387 U/S Apex STP	Jun 11 - Jul 2	4	0.042 - 0.064 mg/L	Objective met
	E221390 Base of Triple Chair	Jun 4 - Jul 2	5	0.145 - 0.256 mg/L	Objective met
	E221389 at Dividend Road	Jun 4 - Jul 2	5	0.140 - 0.243 mg/L	Objective met
	E221339 at Highway 3A	Mar 25 - Jul 2	14	0.065 - 0.12 mg/L	Objective met
	E221340 U/S Olalla Creek	Mar 25 - Jul 2	10	0.008 - 0.455 mg/L	Objective met
	E221341 at Keremeos	Mar 25 - Jun 11	8	0.051 - 0.226 mg/L	Objective met
	0500757 at Mouth	Mar 25 - Jul 2	10	0.027 - 0.146 mg/L	Objective met
Nitrate + Nitrite-N 10 mg/L max	Olalla Creek: E221526 at Olalla	Mar 25 - Jul 2	10	< 0.002 - 0.006 mg/L	Objective met

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
pH 6.5 - 8.5	Keremeos Creek: E221339 at Highway 3A	Mar 25 - Apr 22	10	7.33 - 8.2	Objective met
	E221340 U/S Olalla Creek	Mar 25 - Apr 22	6	7.06 - 8.2	Objective met
	E221341 at Keremeos	Mar 25 - Apr 22	8	6.78 - 8.4	Objective met
	0500757 at Mouth	Mar 25 - Apr 22	6	7.06 - 8.4	Objective met
	Cedar Creek: E221525 at Highway 3A	Mar 25 - Apr 22	6	7.33 - 8.2	Objective met
	Olalla Creek: E221526 at Olalla	Mar 25 - Apr 22	6	7.14 - 8.3	Objective met
Dissolved Oxygen 8.0 mg/L min 11.0 mg/L min when salmonid embryos and larvae present	Keremeos Creek: E221339 at Highway 3A	Apr 2 - Apr 22	8	10.5 - 11.0 mg/L	Objective met
	E221340 U/S Olalla Creek	Apr 2 - Apr 22	6	9.4 - 11.2 mg/L	Objective met
	E221341 at Keremeos	Apr 10 - Apr 22	3	11.2 - 11.8 mg/L	Objective met
	0500757 at Mouth	Apr 10 - Apr 22	3	10.8 - 11.6 mg/L	Objective met
	Cedar Creek: E221525 at Highway 3A	Apr 2 - Apr 22	4	10.5 - 11.0 mg/L	Objective met
	Olalla Creek: E221526 at Olalla	Apr 2 - Apr 22	4	11.2 - 12.4 mg/L	Objective met
Chlorophyll-a 50 mg/m ² max	Keremeos Creek Cedar Creek Olalla Creek	2002	0	no data collected	Omitted 2002
Dissolved Solids 500 mg/L max	Keremeos Creek: E221339 at Highway 3A	Mar 25 - Apr 22	9	150 - 174 mg/L	Objective met
	E221340 U/S Olalla Creek	Mar 25 - Apr 22	5	234 - 340 mg/L	Objective met
Dissolved Solids 500 mg/L max	E221341 at Keremeos	Mar 25 - Apr 22	7	214 - 298 mg/L	Objective met
	0500757 at Mouth	Mar 25 - Apr 22	5	208 - 304 mg/L	Objective met
	Cedar Creek: E221525 at Highway 3A	Mar 25 - Apr 22	5	154 - 162 mg/L	Objective met
	Olalla Creek: E221526 at Olalla	Mar 25 - Apr 22	5	150 - 174 mg/L	Objective met

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Dissolved Chloride 100 mg/L max.	Keremeos Creek: E221339 at Highway 3A	Mar 25 - Jul 2	14	4.7 - 12 mg/L	Objective met
	E221340 U/S Olalla Creek	Mar 25 - Jul 2	10	3.7 - 12.9 mg/L	Objective met
	E221341 at Keremeos	Mar 25 - Jun 11	8	3.5 - 10.3 mg/L	Objective met
	0500757 at Mouth	Mar 25 - Jul 2	10	2.9 - 11.1 mg/L	Objective met
Temperature 17°C weekly max.	Keremeos Creek: E221386 at Gunbarrel Intake	Jun 11 - Jul 2	4	1 - 4°C	Objective met
	E221384 U/S Apex Parking Lot	Jun 11 - Jul 2	4	2.5 - 6°C	Objective met
	E221413 North Fork U/S West Fork	Jun 11 - Jul 2	4	3 - 5°C	Objective met
	E221387 U/S Apex STP	Jun 11 - Jul 2	4	2.5 - 4.5°C	Objective met
	E221390 Base of Triple Chair	Jun 11 - Jul 2	4	3 - 5.4°C	Objective met
	E221389 at Dividend Road	Jun 11 - Jul 2	4	3 - 5°C	Objective met
	E221339 at Highway 3A	Mar 25 - Jul 2	13	6 - 9.5°C	Objective met
	E221340 U/S Olalla Creek	Mar 25 - Jul 2	9	4 - 12°C	Objective met
	E221341 at Keremeos	Mar 25 - Jun 11	8	2 - 9°C	Objective met
	0500757 at Mouth	Mar 25 - Jul 2	10	1 - 11°C	Objective met

Table 19. Columbia River (Keenleyside to Birchbank) Water Quality Objectives – 2002.

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Dissolved Oxygen 10 mg/L min.	200183 3 km U/S Celgar	Sep 4 - 23	5	9.2 - 9.8 mg/L	Objective not met
	E213039 400 m D/S Celgar	Sep 4 - 23	4	9.7 - 9.9 mg/L	Objective not met
		Sep 16	1	10.0 mg/L	Objective met
	0200200 at Castlegar	Sep 4 - 16	3	9.5 - 9.8 mg/L	Objective not met
Sep 18 - 23		2	10.0 - 10.1 mg/L	Objective met	
0200003 at Birchbank	Sep 4 - 23	5	9.4 - 9.7 mg/L	Objective not met	
pH 6.5 - 8.5	200183 3 km U/S Celgar	Sep 4 - 23	5	7.2 - 8.1	Objective met
	E213039 400 m D/S Celgar	Sep 4 - 23	5	7.4 - 8.0	Objective met
		Sep 4 - 23	5	7.5 - 8.0	Objective met
	0200003 at Birchbank	Sep 4 - 23	5	7.6 - 8.0	Objective met
Colour 15 TCU max	200183 3 km U/S Celgar	Sep 4 - 23	5	< 5 TCU	Objective met
	E213039 400 m D/S Celgar	Sep 4 - 23	5	< 5 TCU	Objective met
		Sep 4 - 23	5	< 5 - 5 TCU	Objective met
	0200003 at Birchbank	Sep 4 - 23	5	< 5 - 5 TCU	Objective met
Suspended Solids 10 mg/L max increase	200183 3 km U/S Celgar	Sep 4 - 23	5	all < 4 mg/L	Control Site
	E213039 400 m D/S Celgar	Sep 4 - 23	5	all < 4 mg/L	Objective met
	0200200 at Castlegar	Sep 4 - 23	5	all < 4 mg/L	Objective met

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Suspended Solids 10 mg/L	0200003 at Birchbank	Sep 4 - 23	5	all < 4 mg/L	Objective met
Turbidity 5 NTU max increase	200183 3 km U/S Celgar	Sep 4 - 23	5	0.3 - 0.47 NTU	Control Site
	E213039 400 m D/S Celgar	Sep 4 - 23	5	0.4 - 0.49 NTU increase = 0 - 0.16 NTU	Objective met
	0200200 at Castlegar	Sep 4 - 23	5	0.45 - 0.63 NTU increase = 0.03 - 0.21 NTU	Objective met
	0200003 at Birchbank	Sep 4 - 23	5	0.42 - 0.58 NTU increase = 0.01 - 0.22 NTU	Objective met
Sediment TOC no increase u/s to d/s at 95% confidence	Columbia River:	2002	0	no data collected	Omitted 2002
Temperature max increase < 1°C	200183 3 km U/S Celgar	Sep 4 - 23	5	14.7 - 16.0 °C	Control Site
	E213039 400 m D/S Celgar	Sep 4 - 23	5	14.6 - 16.1 °C increase = 0 - 0.1 °C	Objective met
	0200200 at Castlegar	Sep 4 - 23	5	14.4 - 16.2 °C increase = 0 - 0.2 °C	Objective met
	0200003 at Birchbank	Sep 4 - 23	5	14.8 - 16.7 °C increase = 0 - 0.7 °C	Objective met
Dissolved Gas 110% max.	200183 3 km U/S Celgar	Sep 4 - 23	5	104.5 - 107 %	Objective met
	200203 at Birchbank	Sep 4 - 23	5	103.6 - 107 %	Objective met
Fecal Coliform < 100/100 mL 90th percentile (np)	200183 3 km U/S Celgar	Sep 4 - 23	5	< 1 - 1 CFU/100 mL	
			1	np = 1 CFU/100 mL	Objective met
	E213039 400 m D/S Celgar	Sep 4 - 23	5	< 1 - 1 CFU/100 mL	
			1	np = 1 CFU/100 mL	Objective met
0200200 at Castlegar	Sep 4 - 23	5	< 1 - 1 CFU/100 mL		
		1	np = 1 CFU/100 mL	Objective met	

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliform < 100/100 mL 90th percentile	0200003 at Birchbank	Sep 4 - 23	5	1 - 2 CFU/100 mL	
			1	np = 2 CFU/100 mL	Objective met
E. coli < 100 /100mL 90th percentile (np)	200183 3 km U/S Celgar	Sep 4 - 23	5	all < 1 CFU/100 mL	
			1	np < 1 CFU/100 mL	Objective met
	E213039 400 m D/S Celgar	Sep 4 - 23	5	all < 1 CFU/100 mL	
			1	np < 1 CFU/100 mL	Objective met
	0200200 at Castlegar	Sep 4 - 23	5	all < 1 CFU/100 mL	
			1	np < 1 CFU/100 mL	Objective met
0200003 at Birchbank	Sep 4 - 23	5	< 1 - 1 CFU/100 mL		
		1	np = 1 CFU/100 mL	Objective met	
Toxicity % mill effluent in river: < 0.05 of the 96 - h LC ₅₀	Columbia River	2002	0	no data collected	Omitted 2002
Chlorophenols < 0.05 µg/L tri < 0.10 µg/L tetra < 0.05 µg/L penta	Columbia River	2002	0	no data collected	Omitted 2002
Dioxins & Furans 1pg/g TCDD TEQ max. in fish (wet weight)	Columbia River near Celgar Pulp Company	Sep 2	5	0.48 - 0.70 TEQ	Objective met
Dioxins & Furans 0.2 pg/L TCDD TEQ max. in water	Columbia River	2002	0	no data collected	Omitted 2002
Dioxins & Furans 0.7 pg/g TCDD TEQ max. in sed.	0200200 at Castlegar	Aug 31	1	0.42 pg/g	Objective met
	E249078 near Celgar	Aug 28	1	7.08 pg/g	Objective not met
Resin Acids 12 µg/L max DHA 45 µg/L max total pH = 7.6	Columbia River	2002	0	no data collected	Omitted 2002

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Chlorinated Resin Acids 6 µg/L max. of mono Cl-DHA & di Cl-DHA	Columbia River	2002	0	no data collected	Omitted 2002
Chlorophyll - a < 50 mg/m ² av.	Columbia River	2002	0	no data collected	Omitted 2002

Table 20. Columbia River (Birchbank to International Border) Water Quality Objectives - 2002.

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliform < 100/100 mL 90th percentile (np)	0200003 at Birchbank	Jan 23 - Feb 19	5	< 1 - 2 CFU/100 mL	Objective met
		Apr 18 - May 13	5	< 1 - 1 CFU/100 mL	
		Aug 19 - Sep 16	5	< 1 - 2 CFU/100 mL	
		Nov 18 - Dec 16	5	< 1 - 5 CFU/100 mL	
			4	np = 1 - 3.8 CFU/100 mL	
	E223893 100 m D/S RDKB STP outfall	Jan 23 - Feb 19	5	3 - 12 CFU/100 mL	Objective met Objective not met
		Apr 18 - May 13	5	7 - 22 CFU/100 mL	
		Nov 18 - Dec 16	5	7 - 520 CFU/100 mL	
			2	np = 11 - 18 CFU/100 mL	
			1	np = 416 CFU/100 mL	
	0200559 at Waneta	Jan 2 - Jan 22	5	1 - 73 CFU/100 mL	Objective met
		Jan 22 - Feb 18	5	1 - 3 CFU/100 mL	
		Jan 23 - Feb 19	5	< 1 - 4 CFU/100 mL	
		Feb 26 - Mar 26	5	< 1 - 18 CFU/100 mL	
		Apr 1 - Apr 29	5	< 1 - 4 CFU/100 mL	
		Apr 18 - May 13	5	1 - 6 CFU/100 mL	
		May 22 - Jun 17	5	1 - 25 CFU/100 mL	
		Oct 15 - Nov 12	5	4 - 94 CFU/100 mL	
		Nov 18 - Dec 16	5	5 - 36 CFU/100 mL	
			9	np = 2.6 - 61.2 CFU /100 mL	
Enterococcus sp. < 25 /100mL 90th percentile (np)	0200003 at Birchbank	Jan 23 - Feb 19	5	all < 1 CFU/100 mL	Objective met
		Apr 18 - May 13	5	< 1 - 1 CFU/100 mL	
		Sep 4 - Sep 23	5	1 - 13 CFU/100 mL	
		Nov 18 - Dec 16	5	< 1 - 10 CFU/100 mL	
			4	np = 1 - 11 CFU /100 mL	
	E223893 100 m D/S RDKB STP outfall	Jan 23 - Feb 19	5	1 - 39 CFU/100 mL	Objective met Objective not met
		Apr 18 - May 13	5	1 - 4 CFU/100 mL	
		Nov 18 - Dec 16	5	6 - 170 CFU/100 mL	
			1	np = 3.6 CFU /100 mL	
			2	np = 29 - 128 CFU /100 mL	
	0200559 at Waneta	Jan 23 - Feb 19	5	< 1 - 4 CFU/100 mL	Objective met Objective not met
		Apr 18 - May 13	5	1 - 6 CFU/100 mL	
		Nov 18 - Dec 16	5	5 - 36 CFU/100 mL	
			2	np = 3.2 - 5.2 CFU/100 mL	
			1	np = 30.8 CFU /100 mL	
<i>E. coli</i> < 100 /100mL 90th percentile (np)	0200003 at Birchbank at Birchbank	Jan 23 - Feb 19	5	< 1 - 2 CFU/100 mL	Objective met
		Apr 18 - May 13	5	< 1 - 1 CFU/100 mL	
		Sep 4 - Sep 23	5	< 1 - 1 CFU/100 mL	
		Nov 18 - Dec 16	5	< 1 - 2 CFU/100 mL	
			4	np = 1 - 1.6 CFU /100 mL	
	E223893 100 m D/S RDKB STP outfall	Jan 23 - Feb 19	5	3 - 10 CFU/100 mL	Objective met Objective not met
		Apr 18 - May 13	5	5 - 22 CFU/100 mL	
		Nov 18 - Dec 16	5	5 - 270 CFU/100 mL	
			2	np = 9 - 18 CFU /100 mL	
			1	np = 230 CFU /100 mL	

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
<i>E. coli</i> < 100 /100mL 90th percentile (np)	0200559 at Waneta	Jan 23 - Feb 19	5	1 - 4 CFU/100 mL	Objective met
		Apr 18 - May 13	5	1 - 6 CFU/100 mL	
		Nov 18 - Dec 16	5	2 - 21 CFU/100 mL	
			3	np = 3.2 - 17.8 CFU /100 mL	
Ammonia 30-day average 1.13 mg/L at 10°C and pH 8.0 5.86 mg/L max. at 10°C and pH 8.0	0200003 at Birchbank	Jan 23 - Dec 16	22	< 0.005 - 0.009 mg/L	Max. obj. met
		Jan 23 - Feb 19	5	< 0.005 - 0.009 mg/L	
		Apr 18 - May 13	5	all < 0.005 mg/L	
		Sep 2 - Sep 18	5	all < 0.005 mg/L	
		Nov 18 - Dec 16	5	all < 0.005 mg/L	
		4	av. = < 0.005 - 0.0064 mg/L	Objective met	
	E223892 D/S Stoney Creek	Jan 23 - Dec 16	16	< 0.005 - 0.044 mg/L	Max. obj. met
		Jan 23 - Feb 19	5	< 0.005 - 0.031 mg/L	
		Apr 18 - May 13	5	< 0.005 - 0.015 mg/L	
		Nov 18 - Dec 9	5	< 0.005 - 0.044 mg/L	
		3	av. = 0.007 - 0.015 mg/L	Objective met	
	E223893 100 m D/S RDKB STP outfall	Feb 7 - Dec 16	15	< 0.005 - 0.092 mg/L	Max. obj. met
		Jan 23 - Feb 19	5	0.018 - 0.039 mg/L	
		Feb.12 - Feb.22	5	< 0.005 - 0.017 mg/L	
		Apr.24 - May.15	5	< 0.005 - 0.092 mg/L	
		3	av. = 0.010 - 0.035 mg/L	Objective met	
	0200559 at Waneta	Feb 7 - Dec 16	16	< 0.005 - 0.026 mg/L	Max. obj. met
		Jan 23 - Feb 19	5	< 0.005 - 0.015 mg/L	
		Apr 18 - May 13	5	< 0.005 - 0.026 mg/L	
		Nov 18 - Dec 16	5	all < 0.005 mg/L	
		3	av. = < 0.005 - 0.011 mg/L	Objective met	
E216137 Old Trail Bridge	Jan 23 - Dec 16	13	< 0.005 - 0.03 mg/L	Max. obj. met	
	Jan 23 - Feb 19	5	0.009 - 0.03 mg/L		
	Apr 18 - May 13	5	< 0.005 - 0.017 mg/L		
	Nov 18 - Dec 16	5	< 0.005 - 0.007 mg/L		
	3	av. = 0.005 - 0.018 mg/L	Objective met		
pH 6.5 - 8.5	0200103 at Birchbank	Jan 7 - Dec 16	57	7.1 - 8.1	Objective met
		Aug.19	1	6.1	Objective not met
	E223892 D/S Stoney Creek	Jan 23 - Dec 9	28	6.52 - 8.1	Objective met
		Dec. 16	1	6.15	Objective not met
	E223893 100 m D/S RDKB STP outfall	Jan 23 - Dec 16	29	7.06 - 8.1	Objective met
	0200559 at Waneta	Jan 2 - Dec 16	66	6.61 - 8.1	Objective met
		Aug.19	1	5.9	Objective not met
	E216137 Old Trail Bridge	Jan 23 - Dec 16	15	7.5 - 8.1	Objective met

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Dissolved Oxygen May to October 5 mg/L min. November to April 9 mg/L min	0200003 at Birchbank	May 6 - Sep 23	8	9.4 - 11.1 mg/L	Objective met
		Jan 23 - Apr 23, Nov 18 - Dec 16	10	9.3 - 11.8 mg/L	Objective met
	E223892 D/S Stoney Creek	May 6 - May 13	3	10.8 - 11.2 mg/L	Objective met
		Jan 23 - Apr 23, Nov 18 - Dec 16	12	9.4 - 12.0 mg/L	Objective met
	E223893 100 m D/S RDKB STP outfall	May 6 - May 13	3	11.1 - 12.4 mg/L	Objective met
		Jan 23 - Apr 23, Nov 18 - Dec 16	12	9.6 - 12.2 mg/L	Objective met
	0200559 at Waneta	May 6 - May 13	3	11.1 - 12.9 mg/L	Objective met
		Jan 23 - Apr 23, Nov 18 - Dec 16	12	9.2 - 11.9 mg/L	Objective met
E216137 Old Trail Bridge	May 6 - May 13	3	11.1 - 11.8 mg/L	Objective met	
	Jan 23 - Apr 23, Nov 18 - Dec 16	12	9.5 - 12.2 mg/L	Objective met	
Dissolved Gas 110% max.	0200003 Columbia River at Birchbank	Jan 23 - Dec 16	13	100 - 105 %	Objective met
		0200559 at Waneta	Jan 23 - Dec 16	14	100 - 106 %
Total As 0.005 mg/L av.	0200003 at Birchbank	Jan 23 - Feb 19	5	0.0002 - 0.0005 mg/L	Objective met
		Apr 18 - May 13	5	0.0002 - 0.0003 mg/L	
		Nov 18 - Dec 16	5	0.0001 - 0.0002 mg/L	
			3	av. = 0.00012 – 0.00036 mg/L	
	E223892 D/S Stoney Creek	Jan 23 - Feb 19	5	0.0003 - 0.0008 mg/L	Objective met
		Apr 18 - May 13	5	0.0002 - 0.0006 mg/L	
		Nov 18 - Dec 16	5	0.0002 - 0.0004 mg/L	
			3	av. = 0.00024 – 0.00056 mg/L	
	0200559 at Waneta	Jan 2 - Jan 22	5	0.0001 - 0.0003 mg/L	Objective met
		Jan 22 - Feb 18	5	0.0001 - 0.0003 mg/L	
		Jan 23 - Feb 19	5	0.0002 - 0.0003 mg/L	
		Feb 26 - Mar 26	5	0.0001 - 0.0003 mg/L	
		Apr 1 - Apr 29	5	all 0.0002 mg/L	
		Apr 18 - May 13	5	0.0002 - 0.0003 mg/L	
		May 22 - Jun 17	5	0.0002 - 0.0003 mg/L	
		Jul 22 - Aug 19	5	0.0001 - 0.0002 mg/L	
		Aug 19 - Sep 11	5	0.0001 - 0.0002 mg/L	
		Sep 16 - Oct 15	5	0.0001 - 0.0003 mg/L	
		Nov 12 - Dec 10	5	all 0.0002 mg/L	
		Nov 18 - Dec 16	5	0.0001 - 0.0002 mg/L	
	12	av. = 0.00012 – 0.00038 mg/L			
E216137 Old Trail Bridge	Jan 23 - Feb 19	5	0.0002 - 0.0006 mg/L	Objective met	
	Apr 18 - May 13	5	0.0001 - 0.0004 mg/L		
	Nov 18 - Dec 16	5	0.0002 - 0.0003 mg/L		
		3	av. = 0.00026 – 0.00056 mg/L		

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Total Cd 0.05 ug/L av.	0200003 at Birchbank	Jan 23 - Feb 19	5	< 0.01 - 0.05 ug/L	Objective met Indefinite result
		Jul 22 - Aug 19	5	0.005 - 0.02 ug/L	
		Nov 18 - Dec 16	5	all < 0.1 ug/L	
			2	0.01 - 0.02 ug/L	
			1	av. < 0.1 ug/L	
	E223892 D/S Stoney Creek	Jan 23 - Feb 19	5	0.02 - 0.08 ug/L	Objective met
		Apr 18 - May 13	5	0.01 - 0.06 ug/L	
			2	av. = 0.04 ug/L	
	0200559 at Waneta	Jan 2 - Jan 22	5	all < 0.1 ug/L	Objective met Indefinite result
		Jan 22 - Feb 18	5	all < 0.1 ug/L	
		Jan 23 - Feb 19	5	0.01 - 0.07 ug/L	
		Feb 26 - Mar 26	5	all < 0.1 ug/L	
		Apr 1 - Apr 29	5	all < 0.1 ug/L	
		Apr 18 - May 13	5	0.03 - 0.06 ug/L	
		May 22 - Jun 17	5	all < 0.1 ug/L	
		Jul 22 - Aug 19	5	all < 0.1 ug/L	
		Aug 19 - Sep 11	5	all < 0.1 ug/L	
		Sep 16 - Oct 15	5	all < 0.1 ug/L	
		Nov 12 - Dec 10	5	all < 0.1 ug/L	
			2	av. = 0.038 - 0.048 ug/L	
		9	av. = < 0.1 ug/L		
E216137 Old Trail Bridge	Jan 23 - Feb 19	5	0.03 - 0.05 ug/L	Objective met	
	Apr 18 - May 13	5	0.02 - 0.07 ug/L		
		2	av. = 0.05 ug/L		
Total Cr 1 ug/L av.	0200003 at Birchbank	Jan 23 - Feb 19	5	all < 0.2 ug/L	Objective met
		Apr 18 - May 13	5	all < 0.2 ug/L	
		Nov 18 - Dec 16	5	all < 0.2 ug/L	
			3	av. = < 0.2 ug/L	
	E223892 D/S Stoney Creek	Jan 23 - Feb 19	5	all < 0.2 ug/L	Objective met
		Apr 18 - May 13	5	all < 0.2 ug/L	
			2	av. = < 0.2 ug/L	
	0200559 at Waneta	Jan 2 - Jan 22	5	0.2 - 0.6 ug/L	Objective met
		Jan 22 - Feb 18	5	0.2 - 0.4 ug/L	
		Jan 23 - Feb 19	5	all < 0.2 ug/L	
		Feb 26 - Mar 26	5	all 0.2 ug/L	
		Apr 1 - Apr 29	5	all 0.2 ug/L	
		Apr 18 - May 13	5	all < 0.2 ug/L	
		May 22 - Jun 17	5	0.2 - 0.6 ug/L	
		Jul 22 - Aug 19	5	0.2 - 0.3 ug/L	
		Aug 19 - Sep 11	5	all 0.2 ug/L	
		Sep 16 - Oct 15	5	all 0.2 ug/L	
		Nov 12 - Dec 10	5	all 0.2 ug/L	
		11	av. = < 0.2 - 0.44 ug/L		
	E216137 Old Trail Bridge	Jan 23 - Feb 19	5	all < 0.2 ug/L	Objective met
Apr 18 - May 13		5	all < 0.2 ug/L		
		2	av. = < 0.2 ug/L		

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION	
	SITE	DATE	n	VALUE		
Total Cu 7.17 ug/L max 2 ug/L av.	0200003 at Birchbank	Jan 7 - Dec 16	41	< 0.2 - 1.07 ug/L	Max. obj. met	
		Jan 23 - Feb 19	5	0.31 - 0.56 ug/L		
		Apr 18 - May 13	5	0.32 - 1.07 ug/L		
		Nov 18 - Dec 16	5	0.4 - 0.5 ug/L		
			3	av. = 0.43 - 0.52 ug/L		Av. obj. met
	E223892 D/S Stoney Creek	Jan 23 - Dec 16	14	0.15 - 0.8 ug/L	Max. obj. met	
		Jan 23 - Feb 19	5	0.26- 0.55 ug/L		
		Apr 18 - May 13	5	0.15 - 0.45 ug/L		
			2	av. = 0.3 - 0.4 ug/L		Av. obj. met
	0200559 at Waneta	Jan 2 - Dec 10	64	0.2 - 3.49 ug/L	Max. obj. met	
		Jan 2 - Jan 22	5	0.3 - 0.5 ug/L		
		Jan 22 - Feb 18	5	0.4 - 2.4 ug/L		
		Jan 23 - Feb 19	5	0.35 - 0.7 ug/L		
		Feb 26 - Mar 26	5	0.2 - 0.3 ug/L		
		Apr 1 - Apr 29	5	0.4 - 1.3 ug/L		
		Apr 18 - May 13	5	0.47 - 0.8 ug/L		
		May 22 - Jun 17	5	0.6 - 0.8 ug/L		
		Jul 22 - Aug 19	5	0.2 - 0.6 ug/L		
		Aug 19 - Sep 11	5	0.6 - 0.7 ug/L		
Sep 16 - Oct 15		5	0.5 - 0.6 ug/L			
Nov 12 - Dec 10	5	0.6 - 0.8 ug/L				
	11	av. = 0.3 - 1.6 ug/L	Av. obj. met			
E216137 Old Trail Bridge	Jan 23 - Dec 16	14	0.09 - 0.84 ug/L	Max. obj. met		
	Jan 23 - Feb 19	5	0.29 - 0.71 ug/L			
	Apr 18 - May 13	5	0.09 - 0.84 ug/L			
		1	av. = 0.45 - 0.48 ug/L		Av. obj. met	
Total Pb 37.9 ug/L max 4.8 ug/L av.	0200003 at Birchbank	Jan 7 - Dec 16	41	< 0.2 - 2.1 ug/L	Max. obj. met	
		Jan 23 - Feb 19	5	0.04 - 0.11 ug/L		
		Apr 18 - May 13	5	0.11 - 0.39 ug/L		
		Nov 18 - Dec 16	5	0.2 - 0.7 ug/L		
			3	av. = 0.08 - 0.3 ug/L		Av. obj. met
	E223892 D/S Stoney Creek	Jan 23 - Dec 16	14	0.05 - 1.81 ug/L	Max. obj. met	
		Jan 23 - Feb 19	5	0.05 - 1.81 ug/L		
		Apr 18 - May 13	5	0.05 - 0.81 ug/L		
			2	av. = 0.30 - 0.51 ug/L		Av. obj. met
	0200559 at Waneta	Jan 2 - Dec 10	64	< 0.2 - 1.0 ug/L	Max. obj. met	
		Jan 2 - Jan 22	5	0.2 - 0.3 ug/L		
		Jan 22 - Feb 18	5	0.2 - 1.0 ug/L		
		Jan 23 - Feb 19	5	0.04 - 0.28 ug/L		
		Feb 26 - Mar 26	5	0.2 - 0.5 ug/L		
		Apr 1 - Apr 29	5	0.2 - 0.8 ug/L		
		Apr 18 - May 13	5	0.13 - 0.28 ug/L		
		May 22 - Jun 17	5	0.2 - 0.9 ug/L		
		Jul 22 - Aug 19	5	0.2 - 0.7 ug/L		
		Aug 19 - Sep 11	5	0.2 - 0.3 ug/L		
Sep 16 - Oct 15		5	0.2 - 0.4 ug/L			
Nov 12 - Dec 10	5	0.2 - 0.4 ug/L				
	11	av. = 0.22 - 0.74 ug/L	Av. obj. met			

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION	
	SITE	DATE	n	VALUE		
Total Pb 37.9 ug/L max 4.8 ug/L av.	E216137	Jan 23 - Dec 16	14	0.09 - 0.8 ug/L	Max. obj. met	
		Jan 23 - Feb 19	5	0.09 - 0.35 ug/L		
	Old Trail Bridge	Apr 18 - May 13	5	0.17 - 0.6 ug/L	Av. obj. met	
			2	av. = 0.21 - 0.36 ug/L		
Total Tl 0.8 ug/L av.	0200003 at Birchbank	Jan 23 - Feb 19	5	< 0.002 - 0.013 ug/L	Objective met	
		Apr 18 - May 13	5	0.002 - 0.004 ug/L		
			2	av. = 0.003 - 0.004 ug/L		
	E223892 D/S Stoney Creek	Jan 23 - Feb 19	5	all < 0.002 ug/L	Objective met	
		Apr 18 - May 13	5	0.002 - 0.005 ug/L		
			2	av. = < 0.002 - 0.005 ug/L		
	0200559 at Waneta	Jan 23 - Feb 19	5	< 0.002 - 0.011 ug/L	Objective met	
		Apr 18 - May 13	5	0.023 - 0.076 ug/L		
			2	av. = 0.004 - 0.044 ug/L		
	E216137 Old Trail Bridge	Jan 23 - Feb 19	5	0.003 - 0.039 ug/L	Objective met	
		Apr 18 - May 13	5	0.014 - 0.159 ug/L		
			2	av. = 0.019 - 0.072 ug/L		
	Total Zn 33 ug/L max 7.5 ug/L av.	0200003 at Birchbank	Jan 7 - Dec 16	15	< 0.1 - 2.4 ug/L	Max. obj. met
			Jan 23 - Feb 19	5	< 0.1 - 2.4 ug/L	
Apr 18 - May 13			5	0.3 - 2.1 ug/L		
Nov 18 - Dec 16			5	0.3 - 0.9 ug/L		
			3	av. = 0.5 - 1.2 ug/L		
E223892 D/S Stoney Creek		Jan 23 - Dec 16	14	1.0 - 19.4 ug/L	Max. obj. met	
		Jan 23 - Feb 19	5	1.5 - 4.5 ug/L		
		Apr 18 - May 13	5	1.0 - 7.3 ug/L		
			2	av. = 3.0 - 6.0 ug/L		
0200559 at Waneta		Jan 2 - Dec 9	29	1.0 - 7.9 ug/L	Max. obj. met	
		Jan 2 - Jan 22	5	1.6 - 2.5 ug/L		
		Jan 23 - Feb 19	5	1.0 - 3.7 ug/L		
		Jan 28 - Feb 26	5	2.9 - 7.9 ug/L		
		Apr 18 - May 13	5	2.5 - 6.1 ug/L		
			4	av. = 2.2 - 4.1 ug/L		
0200559 at Waneta		Jan 2 - Dec 10	64	0.2 - 7.9 ug/L	Max. obj. met	
		Jan 2 - Jan 22	5	0.7 - 2.5 ug/L		
		Jan 22 - Feb 18	5	2.2 - 7.9 ug/L		
		Jan 23 - Feb 19	5	1.0 - 3.7 ug/L		
		Feb 26 - Mar 26	5	2.0 - 3.3 ug/L		
	Apr 1 - Apr 29	5	2.4 - 6.3 ug/L			
	Apr 18 - May 13	5	2.5 - 6.1 ug/L			
	May 22 - Jun 17	5	3.9 - 5.6 ug/L			
	Jul 22 - Aug 19	5	0.2 - 2.3 ug/L			
	Aug 19 - Sep 11	5	0.8 - 1.4 ug/L			
	Sep 16 - Oct 15	5	1.2 - 1.8 ug/L			
Nov 12 - Dec 10	5	1.3 - 4.5 ug/L				
	11	av. = 1.4 - 6.0 ug/L				
E216137 Old Trail Bridge	Jan 23 - Dec 16	14	1.1 - 5.9 ug/L	Max. obj. met		
	Jan 23 - Feb 19	5	1.6 - 4.1 ug/L			
	Apr 18 - May 13	5	2.1 - 5.9 ug/L			
		2	av. = 2.7 - 3.7 ug/L			

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Total As 5.7 µg/g dry weight max in sediments	0200003 at Birchbank	Sep. 1	1	1 µg/g	Objective met
	0200559 at Waneta	Aug. 30	1	16.6 µg/g	Objective not met
Total Cd 0.6 µg/g dry weight max in sediments	0200003 at Birchbank	Sep. 1	1	0.2 µg/g	Objective met
	0200559 at Waneta	Aug. 30	1	0.7 µg/g	Objective not met
Total Cr 36.4 µg/g dry weight max in sediments	0200003 at Birchbank	Sep. 1	1	6.4 µg/g	Objective met
	0200559 at Waneta	Aug. 30	1	26.6 µg/g	Objective met
Total Cu 35.1 µg/g dry weight max in sediments	0200003 at Birchbank	Sep. 1	1	4.2 µg/g	Objective met
	0200559 at Waneta	Aug. 30	1	460 µg/g	Objective not met
Total Pb 33.4 µg/g dry weight max in sediments	0200003 at Birchbank	Sep. 1	1	6.7 µg/g	Objective met
	0200559 at Waneta	Aug. 30	1	127 µg/g	Objective not met
Total Hg 0.16 µg/g dry weight max in sediments	0200003 at Birchbank	Sep. 1	1	< 0.05 µg/g	Objective met
	0200559 at Waneta	Aug. 30	1	< 0.05 µg/g	Objective met
Total Zn 120 µg/g dry weight max in sediments	0200003 at Birchbank	Sep. 1	1	44.6 µg/g	Objective met
	0200559 at Waneta	Aug. 30	1	3220 µg/g	Objective not met
Total As 471 µg/kg wet weight max in fish	Genelle to Birchbank	Oct.25	10	< 200 - 300 µg/kg	Objective met
	Beaver Creek to Pend d'Oreille	Oct.23	9	all < 200 µg/kg	Objective met

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Total Cd 900 µg/kg wet weight max in fish	Genelle to Birchbank	Oct.25	10	all < 50 µg/kg	Objective met
	Beaver Creek to Pend d'Oreille	Oct.23	9	all < 50 µg/kg	Objective met
Total Cr 940 µg/kg wet weight max in fish	Genelle to Birchbank	Oct.25	10	< 200 - 200 µg/kg	Objective met
	Beaver Creek to Pend d'Oreille	Oct.23	9	all < 200 µg/kg	Objective met
Total Pb 160 µg/kg wet weight max in fish	Genelle to Birchbank	Oct.25	9	< 100 - 100 µg/kg	Objective met
		Oct.25	1	200 µg/kg	Objective not met
	Beaver Creek to Pend d'Oreille	Oct.23	9	all < 100 µg/kg	Objective met
Total Hg 100 µg/kg wet weight max in fish	Genelle to Birchbank	Oct.25	10	210 -560 µg/kg	Objective not met
	Beaver Creek to Pend d'Oreille	Oct.23	2	80 - 100 µg/kg	Objective met
		Oct.23	7	140 - 480 µg/kg	Objective not met
Dioxins & Furans 0.85 pg/g PCDD and PCDF TEQ max. in sediments (dry weight)	0200003 at Birchbank	Sep. 1	1	0.312 pg/g	Objective met
	0200559 at Waneta	Aug. 30	1	0.19 pg/g	Objective met
Dioxins & Furans 0.71 pg/g PCDD and PCDF TEQ max. in fish (wet weight)	Genelle to Birchbank	Oct 10 - Oct 25	3	0.378 - 0.532 pg/g	Objective met
		Oct-25	2	0.807 - 0.910 pg/g	Objective not met
	Beaver Creek to Pend d'Oreille	Sep.16	3	0.427 - 0.529 pg/g	Objective met
		Sep.16	2	0.828 - 2.460 pg/g	Objective not met

Table 21. Elk River Water Quality Objectives - 2002.

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Suspended Solids < 25 mg/L av 80 mg/L max Sept - mid April	Elk River 0200102	Sep 3 - Dec 16	7	0 - 8 mg/L	Max objective met
	D/S Sparwood		1	av. = 1.1 mg/L	Indefinite result
	0200016 near Elko	Jan 16 - Mar 21	8	5 - 8 mg/L	Max objective met
		Jan 29 - Feb 26	1	av. = 5.2 mg/L	Av. Obj. met
Substrate Sediment no increase in particulates < 3 mm Sept - mid April	Elk River	2002	0	no data collected	Omitted 2002

Table 22. Fraser River (Kanaka Creek to the Mouth) Water Quality Objectives - 2002.

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliforms < 200 CFU /100 mL geometric mean (gm)	Main Arm GVRD Annacis 1 u/s Annacis	Feb 13 - Dec 3	6	40 - 300 MPN/100 mL	Indefinite result
			1	geomean = 118 MPN/100 mL	
April - October	GVRD Annacis 2 d/s Annacis	Feb 13 - Dec 3	6	20 - 900 MPN/100 mL	Indefinite result
			1	geomean = 126 MPN/100 mL	
	GVRD Lulu 1 u/s Lulu	Feb 13 - Dec 3	6	20 - 600 MPN/100 mL	Indefinite result
			1	geomean = 114 MPN/100 mL	
	GVRD Lulu 2	Feb 13 - Dec 3	6	< 20 - 500 MPN/100 mL	Indefinite result
			1	geomean = 83 MPN/100 mL	
	GVRD Lulu 3 at Iona Jetty	Feb 13 - Dec 3	6	20 - 500 MPN/100 mL	Indefinite result
			1	geomean = 123 MPN/100 mL	
	Sturgeon Banks: Iona Beach every 1.5 km along jetty east to west GVRD 4	Jan 16 - Nov 27	35	20 - 500 MPN/100 mL	Objective met
		Apr 23 - Oct 29	5	geomean = 20 - 38 MPN/100 mL	
	GVRD 5	Jan 16 - Nov 27	36	20 - 300 MPN/100 mL	Objective met
		Apr 23 - Oct 29	5	geomean = 20 - 37 MPN/100 mL	
	GVRD 6	Jan 16 - Nov 27	36	20 - 1300 MPN/100 mL	Objective met
		Apr 23 - Oct 29	5	geomean = 26 - 46 MPN/100 mL	
	GVRD 7	Jan 16 - Nov 27	34	20 - 1300 MPN/100 mL	Objective met
		May 21 - Oct 22	4	geomean = 26 - 46 MPN/100 mL	
	GVRD 8	Jan 16 - Nov 27	34	20 - 300 MPN/100 mL	Objective met
		May 21 - Oct 22	4	geomean = 20 - 37 MPN/100 mL	
	GVRD 9	Jan 16 - Nov 27	34	20 - 230 MPN/100 mL	Objective met
		May 21 - Oct 22	4	geomean = 22 - 33 MPN/100 mL	
	GVRD 10	Jan 16 - Nov 27	34	20 - 300 MPN/100 mL	Objective met
		May 21 - Oct 22	4	geomean = 20 - 34 MPN/100 mL	
	GVRD 11	Jan 16 - Nov 27	34	20 - 500 MPN/100 mL	Objective met
		May 21 - Oct 22	4	geomean = 26 - 43 MPN/100 mL	
	GVRD 12	Jan 16 - Nov 27	34	20 - 500 MPN/100 mL	Objective met
		May 21 - Oct 22	4	geomean = 23 - 48 MPN/100 mL	
	GVRD 13	Jan 16 - Nov 27	34	20 - 300 MPN/100 mL	Objective met
		May 21 - Oct 22	4	geomean = 23 - 45 MPN/100 mL	
	GVRD 14	Jan 16 - Nov 27	34	20 - 700 MPN/100 mL	Objective met
		May 21 - Oct 22	4	geomean = 20 - 38 MPN/100 mL	

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION	
	SITE	DATE	n	VALUE		
Enterococci < 20 CFU /100 mL geometric mean (gm) April - October	Main Stem Main Arm North Arm Middle Arm Sturgeon Bank Roberts Bank	2002	0	no data collected	Omitted 2002	
<i>Escherichia coli</i> < 77 CFU /100 mL geometric mean (gm) April - October	Main Stem Main Arm North Arm Middle Arm Sturgeon Bank Roberts Bank	2002	0	no data collected	Omitted 2002	
<i>Pseudomonas aeruginosa</i> < 10 CFU /100 mL geometric mean (gm) April - October	Main Stem Main Arm North Arm Middle Arm Sturgeon Bank Roberts Bank	2002	0	no data collected	Omitted 2002	
Suspended Solids max. increase: 10 mg/L or 10 %	Main Arm GVRD Annacis 1 u/s Annacis	Feb 13 - Dec 3	6	5 - 180 mg/L	Control Site	
	GVRD Annacis 2 d/s Annacis	Feb 13 - Dec 3	6	4 - 172 mg/L	Objective met	
			6	increase = 0 - 1 mg/L		
	GVRD Lulu 1 u/s Lulu	Feb 13 - Dec 3	6	3 - 134 mg/L	Objective met	
			6	increase = 0 - 8 mg/L		
	GVRD Lulu 2	Feb 13 - Dec 3	6	3 - 183 mg/L	Objective met	
			6	increase = 0 - 7 mg/L		
	GVRD Lulu 3 at Iona Jetty	Feb 13 - Dec 3	6	2 - 149 mg/L	Objective met	
			6	increase = 0 - 6 mg/L		
	Ammonia-N 1.85 mg/L av 17.6 mg/L max. at pH = 7.2 temp = 10°C	Main Arm GVRD Annacis 1 u/s Annacis	Feb 13 - Dec 3	6	0.01 - 0.08 mg/L	Max obj met
				1	av = 0.05 mg/L	Indefinite result
		GVRD Annacis 2 d/s Annacis	Feb 13 - Dec 3	6	< 0.01 - 0.13 mg/L	Max obj met
1				av = 0.065 mg/L	Indefinite result	
GVRD Lulu 1 u/s Lulu		Feb 13 - Dec 3	6	0.02 - 0.17 mg/L	Max obj met	
			1	av = 0.093 mg/L	Indefinite result	
GVRD Lulu 2		Feb 13 - Dec 3	6	0.02 - 0.13 mg/L	Max obj met	
			1	av = 0.098 mg/L	Indefinite result	
GVRD Lulu 3 at Iona Jetty		Feb 13 - Dec 3	6	0.02 - 0.13 mg/L	Max obj met	
			1	av = 0.098 mg/L	Indefinite result	

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Nitrite - N 0.02 mg/L av 0.06 mg/L max. at chloride < 2 mg/L	Main Stem Main Arm North Arm Middle Arm	2002	0	no data collected	Omitted 2002
Dissolved Oxygen May-October: 5 mg/L inst. min. 30-d mean > 8.0 mg/L or 80% saturation (whichever is higher) November - April: 9 mg/L inst. min. 30-d mean > 11.0 mg/L	Main Arm GVRD Annacis 1 u/s Annacis	Jun 19 - Oct 10	3	9.7 - 11.3 mg/L	Objective met
		Feb 13 - Dec 3	3	13.4 - 15.2 mg/L	Objective met
	GVRD Annacis 2 d/s Annacis	Jun 19 - Oct 10	3	9.2 - 11.4 mg/L	Objective met
		Feb 13 - Dec 3	3	11.0 - 13.1 mg/L	Objective met
	GVRD Lulu 1 u/s Lulu	Jun 19 - Oct 10	3	9.5 - 11.2 mg/L	Objective met
		Feb 13 - Dec 3	3	11.2 - 13.2 mg/L	Objective met
	GVRD Lulu 2	Jun 19 - Oct 10	3	9.3 - 11.3 mg/L	Objective met
		Feb 13 - Dec 3	3	10.9 - 12.3 mg/L	Objective met
Dissolved Oxygen 5 mg/L inst. min. 30-d mean > 8.0 mg/L or 80% saturation (whichever is higher)	GVRD Lulu 3 at Iona Jetty	Jun 19 - Oct 10	3	9.7 - 11.3 mg/L	Objective met
		Feb 13 - Dec 3	3	11.3 - 11.9 mg/L	Objective met
pH 6.5 - 8.5	Sturgeon Bank Roberts Bank	2002	0	no data collected	Omitted 2002
	Main Arm GVRD Annacis 1 u/s Annacis	Feb 13 - Dec 3	6	7.1 - 7.8	Objective met
	GVRD Annacis 2 d/s Annacis	Feb 13 - Dec 3	6	7.1 - 7.8	Objective met
	GVRD Lulu 1 u/s Lulu	Feb 13 - Dec 3	6	7.1 - 7.8	Objective met
	GVRD Lulu 2	Feb 13 - Dec 3	6	7.2 - 7.8	Objective met
Total Cu <0.004 mg/L av 0.006 mg/L max. hardness > 35 or 20% increase	GVRD Lulu 3 at Iona Jetty	Feb 13 - Dec 3	6	7.4 - 7.8	Objective met
	Main Stem Main Arm North Arm Middle Arm	2002	0	no data collected	Omitted 2002

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Total Pb < 0.003 mg/L av 0.010 mg/L max.	Main Stem Main Arm North Arm Middle Arm	2002	0	no data collected	Omitted 2002
Total Zn < 0.050 mg/L av. 0.100 mg/L max.	Main Stem Main Arm North Arm Middle Arm	2002	0	no data collected	Omitted 2002
PCBs in sediments < 0.02 ug/g max. av of replicates (dry weight)	Main Stem Main Arm North Arm Middle Arm	2002	0	no data collected	Omitted 2002
PCBs in fish 0.1 ug/g max. (wet weight)	Main Stem Main Arm North Arm Middle Arm	2002	0	no data collected	Omitted 2002
Chlorophenols (tri + tetra + penta - CP) in sediments 0.01 ug/g max. av of replicates (dry weight)	Main Stem Main Arm North Arm Middle Arm	2002	0	no data collected	Omitted 2002
Chlorophenols (tri + tetra + penta-CP) in fish 0.10 ug/g max. (wet weight)	Main Stem Main Arm North Arm Middle Arm	2002	0	no data collected	Omitted 2002
Chlorophenols 2,3,4,6-TTCP in water 0.3 ug/L max. pH > 7.1	North Arm Middle Arm	2002	0	no data collected	Omitted 2002
Chlorophenols 2,3,5,6-TTCP in water 0.1 ug/L max. pH 7.1 - 8.1	North Arm Middle Arm	2002	0	no data collected	Omitted 2002
Chlorophenols PCP in water 0.1 ug/L max. pH 6.9 - 7.9	North Arm Middle Arm	2002	0	no data collected	Omitted 2002

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Dioxins and Furans in sediments 2,3,7,8-T ₄ CDD TEQs < 0.25 pg TEQ/g	Main Stem Main Arm North Arm Middle Arm Sturgeon Bank Roberts Bank	2002	0	no data collected	Omitted 2002
Dioxins and Furans in fish 2,3,7,8-T ₄ CDD TEQs < 50 pg TEQ/g wet weight in fish muscle or egg tissue	Main Stem North Arm Middle Arm Main Arm	2002	0	no data collected	Omitted 2002
PAHs acridine in sediment < 1 ug/g max. av of replicates (dry weight)	Main Stem North Arm Middle Arm Main Arm	2002	0	no data collected	Omitted 2002
PAHs acenaphthene in sediment < 0.15 ug/g max. av of replicates (dry weight)	Main Stem North Arm Middle Arm Main Arm	2002	0	no data collected	Omitted 2002
PAHs acenaphthylene in sediment < 0.66 ug/g max. av of replicates (dry weight) (September - April)	Main Stem North Arm Middle Arm Main Arm	2002	0	no data collected	Omitted 2002
PAHs benzo(a)anthracene in sediment < 0.06 ug/g max. av of replicates (dry weight)	Main Stem North Arm Middle Arm Main Arm	2002	0	no data collected	Omitted 2002
PAHs benzo(a)pyrene in sediment < 0.06 ug/g max. av of replicates (dry weight)	Main Stem North Arm Middle Arm Main Arm Sturgeon Bank Roberts Bank	2002	0	no data collected	Omitted 2002

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
PAHs benzo(a)pyrene in fish < 1 ug/kg max. av of replicates (wet weight)	Main Stem North Arm Middle Arm Main Arm	2002	0	no data collected	Omitted 2002
PAHs chrysene in sediment < 0.2 ug/g max. av of replicates (dry weight)	Main Stem North Arm Middle Arm Main Arm Sturgeon Bank Roberts Bank	2002	0	no data collected	Omitted 2002
PAHs dibenzo(a,h)anthracene in sediment < 0.005 ug/g max. av of replicates (dry weight)	Main Stem North Arm Middle Arm Main Arm	2002	0	no data collected	Omitted 2002
PAHs fluoranthene in sediment < 2 ug/g max. av of replicates (dry weight)	Main Stem North Arm Middle Arm Main Arm	2002	0	no data collected	Omitted 2002
PAHs fluorene in sediment < 0.2 ug/g max. av of replicates (dry weight)	Main Stem North Arm Middle Arm Main Arm	2002	0	no data collected	Omitted 2002
PAHs naphthalene in sediment < 0.01 ug/g max. av of replicates (dry weight)	Main Stem North Arm Middle Arm Main Arm	2002	0	no data collected	Omitted 2002
PAHs phenanthrene in sediment < 0.0867 ug/g max. av of replicates (dry weight) (September - April)	Main Stem North Arm Middle Arm Main Arm	2002	0	no data collected	Omitted 2002

Table 23. Boundary Bay Water Quality Objectives - 2002.

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliform < 1000 / 100 mL geometric mean (gm) < 4000 / 100 mL max April - October	0300056 Mahood Creek at 52nd St.	Oct 31 - Nov 28	5	34 - 1100 CFU / 100 mL	Max objective met
			1	gm = 195 CFU / 100 mL	Objective met
	0300059 Serpentine River at 80th Avenue	Oct 31 - Nov 28	5	26 - 840 CFU / 100 mL	Max objective met
			1	gm = 219 CFU / 100 mL	Objective met
	0300057 Serpentine River at Hwy. 99A	Oct 31 - Nov 28	5	18 - 290 CFU / 100 mL	Max objective met
			1	gm = 88 CFU / 100 mL	Objective met
	0110065 Latimer Creek	Oct 31 - Nov 28	5	45 - 300 CFU / 100 mL	Max objective met
			1	gm = 138 CFU / 100 mL	Objective met
	E207718 Hyland Creek	Oct 31 - Nov 28	5	41 - 1600 CFU / 100 mL	Max objective met
			1	gm = 192 CFU / 100 mL	Objective met
	0300062 Nicomekl River at 64th Ave	Oct 31 - Nov 28	5	58 - 220 CFU / 100 mL	Max objective met
			1	gm = 102 CFU / 100 mL	Objective met
	0300061 Nicomekl River at 192nd Street	Oct 31 - Nov 28	5	67 - 350 CFU / 100 mL	Max objective met
			1	gm = 147 CFU / 100 mL	Objective met
	0300060 Nicomekl River downstream	Oct 31 - Nov 28	5	17 - 570 CFU / 100 mL	Max objective met
			1	gm = 70 CFU / 100 mL	Objective met
	0300063 Anderson Creek at Colebrook Road	Oct 31 - Nov 28	5	34 - 190 CFU / 100 mL	Max objective met
			1	gm = 55 CFU / 100 mL	Objective met
0300064 Murray Creek at 48th Avenue	Oct 31 - Nov 28	5	17 - 140 CFU / 100 mL	Max objective met	
		1	gm = 43 CFU / 100 mL	Objective met	
Fecal Coliform < 200 / 100 mL geometric mean (gm) < 400 / 100 mL 90th perc. (np) April - October	0300066 Little Campbell River upstream	Oct 31 - Nov 28	5	10 - 364 CFU / 100 mL	Objective met Objective met
			1	gm = 40 CFU / 100 mL	
			1	np = 242 CFU / 100 mL	
	0300065 Little Campbell River downstream	Oct 31 - Nov 28	5	21 - 410 CFU / 100 mL	Objective met Objective met
1			gm = 81 CFU / 100 mL		
1	np = 306 CFU / 100 mL				
Suspended Solids max increase: 10 mg/L or 10%	0300056 Mahood Creek at 52nd St.	Oct 31 - Nov 28	3	1 - 4 mg/L	Indefinite result No control
			2	5 - 38 mg/L	Control site
	0300057 Serpentine River at Hwy. 99A	Oct 31 - Nov 28 Oct 31 - Nov 21 Nov 28	2	7 - 16 mg/L	Objective met Objective not met
4			inc. = 0 - 3 mg/L		
1	inc. = 11 mg/L				

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Suspended Solids max increase: 10 mg/L or 10%	0110065 Latimer Creek	Oct 31 - Nov 28	5	2 - 11 mg/L	Indefinite result No control
	E207718 Hyland Creek	Oct 31 - Nov 28	5	2 - 13 mg/L	Indefinite result No control
	0300062 Nicomekl River at 64th Ave	Oct 31 - Nov 28	5	1 - 7 mg/L	Control site
	0300061 Nicomekl River at 192nd Street	Oct 31 - Nov 28	5	3 - 10 mg/L	
				inc. = 0 - 6 mg/L	Objective met
	0300060 Nicomekl River downstream	Oct 31 - Nov 28	5	5 - 13 mg/L	
				inc. = 0 - 9 mg/L	Objective met
	0300063 Anderson Creek at Colebrook Road	Oct 31 - Nov 28	5	< 1 - 2 mg/L	Indefinite result No control
	0300064 Murray Creek at 48th Avenue	Oct 31 - Nov 28	5	< 1 - 8 mg/L	Indefinite result No control
	0300066 Little Campbell River upstream	Oct 31 - Nov 28	5	2 - 8 mg/L	Control site
0300065 Little Campbell River downstream	Oct 31 - Nov 28	5	1 - 11 mg/L		
			inc. = 0 - 9 mg/L	Objective met	
Substrate Sedimentation no increase in weight of particles <3 mm dia	Mahood Creek Serpentine River Nicomekl River Anderson Creek Murray Creek Latimer Creek Hyland Creek Little Campbell River	2002	0	no data collected	Omitted 2002
Turbidity max increase: 5 NTU or 10%	Mahood Creek Serpentine River Nicomekl River Anderson Creek Murray Creek Latimer Creek Hyland Creek Little Campbell River	2002	0	no data collected	Omitted 2002

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Ammonia-N <0.76 mg/L av 5.6 mg/L max at pH = 8.0 temp = 20 C	0300056 Mahood Creek at 52nd St.	Oct 31 - Nov 28	5	< 0.005 - 0.016 mg/L	Max objective met
			1	av = 0.0078 mg/L	Av. Obj. met
	0300059 Serpentine River at 80th Avenue	Oct 31 - Nov 28	5	< 0.005 - 0.276 mg/L	Max objective met
			1	av = 0.0722 mg/L	Av. Obj. met
	0300057 Serpentine River at Hwy. 99A	Oct 31 - Nov 28	5	< 0.005 - 0.279 mg/L	Max objective met
			1	av = 0.0646 mg/L	Av. Obj. met
	0110065 Latimer Creek	Oct 31 - Nov 28	5	< 0.005 - 0.011 mg/L	Max objective met
			1	av = 0.0066 mg/L	Av. Obj. met
	E207718 Hyland Creek	Oct 31 - Nov 28	5	all < 0.005 mg/L	Max objective met
			1	av < 0.005 mg/L	Av. Obj. met
	0300062 Nicomekl River at 64th Ave	Oct 31 - Nov 28	5	< 0.005 - 0.069 mg/L	Max objective met
			1	av = 0.0258 mg/L	Av. Obj. met
	0300061 Nicomekl River at 192nd Street	Oct 31 - Nov 28	5	< 0.005 - 0.048 mg/L	Max objective met
			1	av = 0.019 mg/L	Av. Obj. met
	0300060 Nicomekl River downstream	Oct 31 - Nov 28	5	< 0.005 - 0.034 mg/L	Max objective met
			1	av = 0.03 mg/L	Av. Obj. met
0300063 Anderson Creek at Colebrook Road	Oct 31 - Nov 28	5	< 0.005 - 0.103 mg/L	Max objective met	
		1	av = 0.0272 mg/L	Av. Obj. met	
0300064 Murray Creek at 48th Avenue	Oct 31 - Nov 28	5	< 0.005 - 0.024 mg/L	Max objective met	
		1	av = 0.0088 mg/L	Av. Obj. met	
0300066 Little Campbell River upstream	Oct 31 - Nov 28	5	< 0.005 - 0.027 mg/L	Max objective met	
		1	av = 0.0104 mg/L	Av. Obj. met	
0300065 Little Campbell River downstream	Oct 31 - Nov 28	5	< 0.005 - 0.016 mg/L	Max objective met	
		1	av = 0.0082 mg/L	Av. Obj. met	
Nitrite - N < 0.02 mg/L av 0.06 mg/L max	0300056 Mahood Creek at 52nd St.	Oct 31 - Nov 28	5	0.003 - 0.037 mg/L	Max objective met
			1	av = 0.0168 mg/L	Av. Obj. met
	0300059 Serpentine River at 80th Avenue	Oct 31 - Nov 21 Nov 28	4	0.02 - 0.038 mg/L	Max objective met
			1	0.084 mg/L	Objective not met
			1	av = 0.0384 mg/L	Objective not met
	0300057 Serpentine River at Hwy. 99A	Oct 31 - Nov 28	5	0.013 - 0.049 mg/L	Max objective met
			1	av = 0.0238 mg/L	Objective not met
	0110065 Latimer Creek	Oct 31 - Nov 28	5	0.008 - 0.026 mg/L	Max objective met
			1	av = 0.013 mg/L	Av. Obj. met

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION		
	SITE	DATE	n	VALUE			
Nitrite - N < 0.02 mg/L av 0.06 mg/L max	E207718 Hyland Creek	Oct 31 - Nov 28	5	0.013 - 0.04 mg/L	Max objective met		
			1	av = 0.0228 mg/L	Objective not met		
	0300062 Nicomekl River at 64th Ave	Oct 31 - Nov 21 Nov 28	4	0.008 - 0.033 mg/L	Max objective met		
			1	0.072 mg/L	Objective not met		
	0300061 Nicomekl River at 192nd Street	Oct 31 - Nov 28	5	0.014 - 0.042 mg/L	Max objective met		
			1	av = 0.0282 mg/L	Objective not met		
	0300060 Nicomekl River downstream	Oct 31 - Nov 21 Nov 28	4	0.013 - 0.039 mg/L	Max objective met		
			1	0.077 mg/L	Objective not met		
			1	av = 0.0356 mg/L	Objective not met		
	0300063 Anderson Creek at Colebrook Road	Oct 31 - Nov 28	5	0.01 - 0.057 mg/L	Max objective met		
			1	av = 0.0264 mg/L	Objective not met		
	0300064 Murray Creek at 48th Avenue	Oct 31 - Nov 28	5	0.006 - 0.021 mg/L	Max objective met		
			1	av = 0.0148 mg/L	Av. Obj. met		
	0300066 Little Campbell River upstream	Oct 31 - Nov 28	5	< 0.002 - 0.011 mg/L	Max objective met		
1			av = 0.0052 mg/L	Av. Obj. met			
0300065 Little Campbell River downstream	Oct 31 - Nov 28	5	0.01 - 0.025 mg/L	Max objective met			
		1	av = 0.0188 mg/L	Av. Obj. met			
Chlorophyll-a 50 mg/m ² av	Mahood Creek Serpentine River Nicomekl River Anderson Creek Murray Creek Latimer Creek Hyland Creek Little Campbell River	2002	0	no data collected	Omitted 2002		
			0300056 Mahood Creek at 52nd St.	Oct 31 - Nov 28	2	11.2 - 11.73 mg/L	Objective met
					3	Nov 6 - Nov 21	8.7 - 9.54 mg/L
			0110065 Latimer Creek	Oct 31 - Nov 28	2	11.32 - 11.9 mg/L	Objective met
					3	Nov 6 - Nov 21	8.93 - 9.89 mg/L
			E207718 Hyland Creek	Oct 31 - Nov 28	5	8.4 - 10.38 mg/L	Objective not met
					0300063 Anderson Creek at Colebrook Road	Oct 31 - Nov 28	2
3	Nov 6 - Nov 21	9.3 - 10.62 mg/L					Objective not met
0300064 Murray Creek at 48th Avenue	Oct 31 - Nov 28	2	12.24 - 13.29 mg/L	Objective met			
		3	Nov 6 - Nov 21	9.57 - 9.81 mg/L	Objective not met		

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Dissolved Oxygen 6 mg/L min 11 mg/L min when salmonid eggs, larvae or alevin present	0300057 Serpentine River at Hwy. 99A	Oct 31 - Nov 28	5	7.04 - 10.28 mg/L	Objective not met
	0300059 Serpentine River at 80th Avenue	Oct 31 - Nov 28	5	7.87 - 10.28 mg/L	Objective not met
	0300062 Nicomekl River at 64th Ave	Oct 31 - Nov 28	2	11.02 - 12.04 mg/L	Objective met
		Nov 6 - Nov 21	3	9.19 - 10.88 mg/L	Objective not met
	0300061 Nicomekl River at 192nd Street	Oct 31 - Nov 28	2	11.86 - 11.87 mg/L	Objective met
		Nov 6 - Nov 21	3	8.16 - 10.21 mg/L	Objective not met
	0300060 Nicomekl River downstream	Oct 31 - Nov 28	5	6.37 - 9.98 mg/L	Objective not met
	0300066 Little Campbell River upstream	Oct 31 - Nov 28	5	0.12 - 3.15 mg/L	Objective not met
0300065 Little Campbell River downstream	Oct 31 - Nov 28	2	12.23 - 13.14 mg/L	Objective met	
	Nov 6 - Nov 21	3	9.09 - 10.75 mg/L	Objective not met	
pH 6.5 - 8.5 or 0.2 max increase	0300056 Mahood Creek at 52nd St.	Oct 31 - Nov 28	5	7.5 - 7.8	Objective met
	0300059 Serpentine River at 80th Avenue	Oct 31 - Nov 28	5	7.5 - 7.8	Objective met
	0300057 Serpentine River at Hwy. 99A	Oct 31 - Nov 28	5	6.9 - 7.8	Objective met
	0110065 Latimer Creek	Oct 31 - Nov 28	5	7.0 - 7.8	Objective met
	E207718 Hyland Creek	Oct 31 - Nov 28	5	7.3 - 7.8	Objective met
	0300062 Nicomekl River at 64th Ave	Oct 31 - Nov 28	5	7.3 - 7.7	Objective met
	0300061 Nicomekl River at 192nd Street	Oct 31 - Nov 28	5	7.3 - 7.8	Objective met
	0300060 Nicomekl River downstream	Oct 31 - Nov 28	5	7.1 - 7.7	Objective met
	0300063 Anderson Creek at Colebrook Road	Oct 31 - Nov 28	5	7.4 - 7.9	Objective met

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
pH 6.5 - 8.5 or 0.2 max increase	0300064 Murray Creek at 48th Avenue	Oct 31 - Nov 28	5	7.5 - 7.7	Objective met
	0300066 Little Campbell River upstream	Oct 31 - Nov 28	5	6.7 - 7.6	Objective met
	0300065 Little Campbell River downstream	Oct 31 - Nov 28	5	7.4 - 8.0	Objective met
Total Lead < 0.005 mg/L av 0.010 mg/L max	0300062 Nicomekl River at 64th Ave	Oct 31 - Nov 28	5	0.00005 - 0.00032 mg/L	Max objective met
			1	av = 0.00037 mg/L	Av. Obj. met
	0300061 Nicomekl River at 192nd Street	Oct 31 - Nov 28	5	0.00037 - 0.00215 mg/L	Max objective met
			1	av = 0.00010 mg/L	Av. Obj. met
0300060 Nicomekl River downstream	Oct 31 - Nov 28	5	0.00022 - 0.00074 mg/L	Max objective met	
		1	av = 0.0005 mg/L	Av. Obj. met	
PCBs 0.001 ug/L max in water	Serpentine River Mahood Creek Latimer Creek Hyland Creek	2002	0	no data collected	Omitted 2002
PCBs <0.1-0.5 ug/g wet weight in fish	Serpentine River Mahood Creek Latimer Creek Hyland Creek	2002	0	no data collected	Omitted 2002
PCBs <0.03 ug/g dry weight in sediments	Serpentine River Mahood Creek Latimer Creek Hyland Creek	2002	0	no data collected	Omitted 2002

Table 24. Burrard Inlet Water Quality Objectives – 2002.

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliforms < 200 /100 mL geometric mean (gm) Apr - Oct	English Bay: 0300076	Oct 2 - Nov 21	5	1 - 110 CFU / 100 mL	
	English Bay Centre		1	gm = 8 CFU / 100 mL	Indefinite result
	GVRD 101 Third Beach below concession area	Jan 14 - Dec 5	64	20 - 800 MPN/100 mL	
		Apr 4 - Oct 8	10	geomean = 20 - 57 MPN/100 mL	Objective met
	GVRD 200	Jan 14 - Dec 5	64	20 - 5000 MPN/100 mL	
	Second Beach at north end	Apr 4 - Oct 8	9	geomean = 23 - 108 MPN/100 mL	Objective met
		Jun 25 - Jul 9	1	geomean = 370 MPN/100 mL	Objective not met
	GVRD 304 English Bay Beach at north end of bath house	Jan 14 - Dec 27	65	20 - 2400 MPN/100 mL	
		Apr 4 - Oct 8	10	geomean = 23 - 80 MPN/100 mL	Objective met
	GVRD 703 Locarno Beach at bath house	Jan 16 - Dec 9	61	20 - 800 MPN/100 mL	
		Apr 3 - Oct 15	10	geomean = 20 - 57 MPN/100 mL	Objective met
	False Creek: E207815	Oct 2 - Nov 21	5	9 - 780 CFU / 100 mL	
	False Creek West End		1	gm = 56 CFU / 100 mL	Indefinite result
	1st-2nd Narrows: E207816	Oct 2 - Nov 21	5	17 - 870 CFU / 100 mL	
	Vancouver Wharves		1	gm = 142 CFU / 100 mL	Indefinite result
	E207813 Coal Harbour	Oct 2 - Nov 21	5	16 - 660 CFU / 100 mL	
			1	gm = 112 CFU / 100 mL	Indefinite result
	E207818 Clarke Drive	Oct 2 - Nov 21	5	18 - 230 CFU / 100 mL	
			1	gm = 96 CFU / 100 mL	Indefinite result
	E207819 Loch Katrine	Oct 2 - Nov 21	5	1 - 330 CFU / 100 mL	
			1	gm = 32 CFU / 100 mL	Indefinite result
	2nd Narrows - Roche Pt. E207822	Oct 2 - Nov 14	4	1 - 30 CFU / 100 mL	
	Shellburn		1	gm = 6 CFU / 100 mL	Indefinite result
	Port Moody: E207823	Oct 2 - Nov 21	5	2 - 160 CFU / 100 mL	
	Port Moody IOCO		1	gm = 18 CFU / 100 mL	Indefinite result
	E207698 Pacific Coast Terminal	Oct 2 - Nov 21	5	3 - 180 CFU / 100 mL	
			1	gm = 23 CFU / 100 mL	Indefinite result
	Indian Arm: 0300080	Oct 2 - Nov 21	5	1 - 34 CFU / 100 mL	
	at Cable Crossing		1	gm = 4 CFU / 100 mL	Indefinite result

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Enterococci <200 /100 mL geometric mean (gm) Apr - Oct	Outer Burrard: 0300076 English Bay Centre	Oct 2 - Nov 21	5	1 - 55 CFU / 100 mL	
			1	gm = 5 CFU / 100 mL	Indefinite result
	False Creek: E207815 False Creek West End	Oct 2 - Nov 21	5	1 - 880 CFU / 100 mL	
			1	gm = 23 CFU / 100 mL	Indefinite result
	1st-2nd Narrows: E207816 Vancouver Wharves	Oct 2 - Nov 21	5	8 - 94 CFU / 100 mL	
			1	gm = 30 CFU / 100 mL	Indefinite result
	E207813 Coal Harbour	Oct 2 - Nov 21	5	38 - 290 CFU / 100 mL	
			1	gm = 104 CFU / 100 mL	Indefinite result
	E207818 Clarke Drive	Oct 2 - Nov 21	5	4 - 290 CFU / 100 mL	
			1	gm = 41 CFU / 100 mL	Indefinite result
	E207819 Loch Katrine	Oct 2 - Nov 21	5	2 - 260 CFU / 100 mL	
			1	gm = 38 CFU / 100 mL	Indefinite result
	2nd Narrows - Roche Pt. E207822 Shellburn	Oct 2 - Nov 14	4	1 - 14 CFU / 100 mL	
			1	gm = 5 CFU / 100 mL	Indefinite result
	Port Moody: E207823 Port Moody IOCO	Oct 2 - Nov 21	5	1 - 210 CFU / 100 mL	
			1	gm = 9 CFU / 100 mL	Indefinite result
E207698 Pacific Coast Terminal	Oct 2 - Nov 21	5	6 - 190 CFU / 100 mL		
		1	gm = 24 CFU / 100 mL	Indefinite result	
Indian Arm: 0300080 at Cable Crossing	Oct 2 - Nov 21	5	1 - 18 CFU / 100 mL		
		1	gm = 3 CFU / 100 mL	Indefinite result	
Suspended Solids 10 mg/L max. increase	Outer Burrard: 0300076 English Bay Centre	Oct 2 - Nov 21	5	< 4 - 12 mg/L	Control Site
	False Creek: E207814 False Creek East End	Oct 2 - Nov 21	5	inc = 0 - 2 mg/L	Objective met
	E207815 False Creek West End	Oct 2 - Nov 21	5	inc = 0 mg/L	Objective met
	1st-2nd Narrows: E207816 Vancouver Wharves	Oct 2 - Nov 21	10	inc = 0 - 10 mg/L	Objective met
	E207813 Coal Harbour	Oct 2 - Nov 21	4	inc = 0 - 3 mg/L	Objective met
	E207818 Clarke Drive	Oct 2 - Nov 21	5	inc = 0 - 2 mg/L	Objective met

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Suspended Solids 10 mg/L max. increase	E207819 Loch Katrine	Oct 2 - Nov 21	5	inc = 0 - 6 mg/L	Objective met
	2nd Narrows - Roche Pt. E207822 Shellburn	Oct 2 - Nov 21 Oct 16	4 1	inc = 0 - 4 mg/L inc = 12 mg/L	Objective met Objective not met
	Port Moody: E207823 Port Moody IOCO	Oct 2 - Nov 21	5	inc = 0 - 9 mg/L	Objective met
	E207698 Pacific Coast Terminal	Oct 2 - Nov 21	5	inc = 0 - 9 mg/L	Objective met
	Indian Arm: 0300080 at Cable Crossing	Oct 2 - Nov 21	5	inc = 0 mg/L	Objective met
Turbidity 5 NTU max. increase geometric mean	Port Moody Arm 2nd Narrows-Roche Pt. 1st-2nd Narrows Outer Burrard False Creek	2002	0	no data collected	Omitted 2002
<i>Cl2-Produced Oxidants</i> 3 ug/L av	Port Moody Arm 2nd Narrows-Roche Pt.	2002	0	no data collected	Omitted 2002
Ammonia-N <1.0 mg/L av 2.5 mg/L max.	Outer Burrard: 0300076 English Bay Centre	Oct 2 - Nov 21	5	< 0.005 - 0.02 mg/L	Objective met
			1	av = 0.008 mg/L	Indefinite result
	False Creek: E207814 False Creek East End	Oct 2 - Nov 21	5	< 0.005 - 0.098 mg/L	Objective met
			1	av = 0.053 mg/L	Indefinite result
	E207815 False Creek West End	Oct 2 - Nov 21	5	< 0.005 - 0.048 mg/L	Objective met
			1	av = 0.021 mg/L	Indefinite result
	1st-2nd Narrows: E207816 Vancouver Wharves	Oct 2 - Nov 21	10	< 0.005 - 0.069 mg/L	Objective met
			1	av = 0.014 mg/L	Indefinite result
	E207813 Coal Harbour	Oct 2 - Nov 21	6	0.01 - 0.076 mg/L	Objective met
			1	av = 0.046 mg/L	Indefinite result
	E207818 Clarke Drive	Oct 2 - Nov 21	5	< 0.005 - 0.017 mg/L	Objective met
			1	av = 0.010 mg/L	Indefinite result
E207819 Loch Katrine	Oct 2 - Nov 21	5	< 0.005 - 0.014 mg/L	Objective met	
		1	av = 0.008 mg/L	Indefinite result	
2nd Narrows - Roche Pt. E207822 Shellburn	Oct 2 - Nov 21	5	< 0.005 - 0.009 mg/L	Objective met	
		1	av = 0.006 mg/L	Indefinite result	

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Ammonia-N <1.0 mg/L av 2.5 mg/L max.	Port Moody: E207823	Oct 2 - Nov 21	5	< 0.005 - 0.042 mg/L	Objective met
	Port Moody IOCO		1	av = 0.016 mg/L	Indefinite result
	E207698	Oct 2 - Nov 21	5	< 0.005 - 0.055 mg/L	Objective met
	Pacific Coast Terminal		1	av = 0.015 mg/L	Indefinite result
	Indian Arm: 0300080	Oct 2 - Nov 21	5	< 0.005 - 0.054 mg/L	Objective met
	at Cable Crossing		1	av = 0.015 mg/L	Indefinite result
Dissolved Oxygen 6.5 mg/L min.	Indian Arm Port Moody Arm 2nd Narrows-Roche Pt. 1st-2nd Narrows Outer Burrard False Creek	2002	0	no data collected	Omitted 2002
WAD - CN 0.001 mg/L max	Port Moody Arm	2002	0	no data collected	Omitted 2002
H ₂ S 0.002 mg/L max	Port Moody Arm 1st-2nd Narrows	2002	0	no data collected	Omitted 2002
pH 6.5 - 8.5	2nd Narrows-Roche Pt. E207822 Shellburn	Oct 2 - Nov 21	4	7.5 - 7.7	Objective met
Total As 0.010 mg/L max	1st-2nd Narrows: E207816	Oct 9 - Nov 21	8	0.0001 - 0.0008 mg/L	Objective met
	Vancouver Wharves		4	0.0001 - 0.0006 mg/L	Objective met
	E207818	Oct 9 - Nov 21	3	0.0001 - 0.0005 mg/L	Objective met
	Clarke Drive		3	0.0002 - 0.0007 mg/L	Objective met
	E207819	Loch Katrine	Oct 9 - Nov 21	3	0.0002 - 0.0007 mg/L
2nd Narrows - Roche Pt. E207822 Shellburn	Oct 9 - Nov 21	3	0.0001 - 0.0004 mg/L	Objective met	
Total As <20 ug/g max. in sediment (long term)	Outer Burrard: 0300076	Oct 9	1	7.7 ug/g	Objective met
	English Bay Centre				
	1st-2nd Narrows: E207816	Oct 9	2	11.3 - 12.1 ug/g	Objective met
Vancouver Wharves					
E207813	Coal Harbour	Oct 16	1	10.5 ug/g	Objective met

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Total As <20 ug/g max. in sediment (long term)	E207818 Clarke Drive	Oct 16	1	5.9 ug/g	Objective met
	E207819 Loch Katrine	Nov 14	1	9.5 ug/g	Objective met
	2nd Narrows - Roche Pt. E207822 Shellburn	Nov 21	1	7.7 ug/g	Objective met
	Port Moody: E207823 Port Moody IOCO	Nov 14	1	4.2 ug/g	Objective met
	E207698 Pacific Coast Terminal	Nov 21	1	11 ug/g	Objective met
Total Ba 0.5 mg/L max.	2nd Narrows - Roche Pt.	2002	0	no data collected	Omitted 2002
Total Cd <0.009 mg/L av 0.043 mg/L max. in water	1st-2nd Narrows: E207816 Vancouver Wharves	Oct 9 - Nov 21	8	< 0.0001 - 0.0001 mg/L	Objective met
			1	av = 0.0001 mg/L	Objective met
	E207813 Coal Harbour	Oct 9 - Nov 21	4	< 0.0001 - 0.0001 mg/L	Objective met
			1	av = 0.0001 mg/L	Indefinite result
	E207818 Clarke Drive	Oct 9 - Nov 21	3	< 0.0001 - 0.0001 mg/L	Objective met
			1	av = 0.0001 mg/L	Indefinite result
	E207819 Loch Katrine	Oct 9 - Nov 21	3	< 0.0001 - 0.0001 mg/L	Objective met
			1	av = 0.0001 mg/L	Indefinite result
	2nd Narrows - Roche Pt. E207822 Shellburn	Oct 9 - Nov 21	3	< 0.0001 - 0.0001 mg/L	Objective met
			1	av = 0.0001 mg/L	Indefinite result
	Port Moody: E207823 Port Moody IOCO	Oct 9 - Nov 21	3	< 0.0001 - 0.0001 mg/L	Objective met
			1	av = 0.0001 mg/L	Indefinite result
	E207698 Pacific Coast Terminal	Oct 9 - Nov 21	3	< 0.0001 - 0.0001 mg/L	Objective met
			1	av = 0.0001 mg/L	Indefinite result
Indian Arm: 0300080 at Cable Crossing	Oct 9 - Nov 21	3	< 0.0001 - 0.0001 mg/L	Objective met	
		1	av = 0.0001 mg/L	Indefinite result	
Total Cd <1.0 ug/g max. in sediment	Outer Burrard: 0300076 English Bay Centre	Oct 9	1	0.17 ug/g	Objective met
	1st-2nd Narrows: E207816 Vancouver Wharves	Oct 9	2	1.9 - 2.18 ug/g	Objective not met

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Total Cd <1.0 ug/g max. in sediment	E207813 Coal Harbour	Oct 16	1	0.83 ug/g	Objective met
	E207818 Clarke Drive	Oct 16	1	1.34 ug/g	Objective not met
	E207819 Loch Katrine	Nov 14	1	1.64 ug/g	Objective not met
	2nd Narrows - Roche Pt. E207822 Shellburn	Nov 21	1	0.57 ug/g	Objective met
	Port Moody: E207823 Port Moody IOCO	Nov 14	1	0.29 ug/g	Objective met
	E207698 Pacific Coast Terminal	Nov 21	1	1.79 ug/g	Objective not met
Total Cd < 9 ug/g av < 43 ug/g max. in sediment	Indian Arm: 0300080 at Cable Crossing	Oct 15	1	0.5 mg/L	Objective met
			1	av = 0.5 mg/L	Indefinite result
Total Cr <0.050 mg/L max. in water	False Creek: E207814 False Creek East End	Oct 9 - Nov 21	6	all < 0.0005 mg/L	Objective met
	E207815 False Creek West End	Oct 9 - Nov 21	3	all < 0.0005 mg/L	Objective met
	2nd Narrows - Roche Pt. E207822 Shellburn	Oct 9 - Nov 21	3	all < 0.0005 mg/L	Objective met
	Port Moody: E207823 Port Moody IOCO	Nov 14	3	all < 0.0005 mg/L	Objective met
	E207698 Pacific Coast Terminal	Nov 21	3	all < 0.0005 mg/L	Objective met
Total Cr < 60 ug/g max. in sediment (long term)	Outer Burrard: 0300076 English Bay Centre	Oct 9	1	37.3 ug/g	Objective met
	1st-2nd Narrows: E207816 Vancouver Wharves	Oct 9	2	31.3 - 34.4 ug/g	Objective met
	E207813 Coal Harbour	Oct 16	1	26.8 ug/g	Objective met
	E207818 Clarke Drive	Oct 16	1	33.4 ug/g	Objective met

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Total Cr < 60 ug/g max. in sediment (long term)	E207819 Loch Katrine	Nov 14	1	41.1 ug/g	Objective met
	2nd Narrows - Roche Pt. E207822 Shellburn	Nov 21	1	19 ug/g	Objective met
	Port Moody: E207823 Port Moody IOCO	Nov 14	1	10.2 ug/g	Objective met
	E207698 Pacific Coast Terminal	Nov 21	1	36.4 ug/g	Objective met
Total Cu <0.002 mg/L av 0.003 mg/L max. in water	Outer Burrard: 0300076 English Bay Centre	Oct 9 - Nov 21	3	0.3 - 0.8 mg/L	Objective met
			1	av = 0.008 mg/L	Indefinite result
	False Creek: E207814 False Creek East End	Oct 9 - Nov 21	6	0.0005 - 0.0021 mg/L	Objective met
			1	av = 0.0014 mg/L	Objective met
	E207815 False Creek West End	Oct 9 - Nov 21	3	0.0019 - 0.003 mg/L	Objective met
			1	av = 0.0020 mg/L	Indefinite result
	1st-2nd Narrows: E207816 Vancouver Wharves	Oct 9 - Nov 21	8	0.0004 - 0.0016 mg/L	Objective met
			1	av = 0.00069 mg/L	Objective met
	E207813 Coal Harbour	Oct 9 - Nov 14 Nov 21	2	0.0001 - 0.0008 mg/L	Objective met
			2	0.0052 - 0.0054 mg/L	Objective not met
			1	av = 0.0029 mg/L	Indefinite result
	E207818 Clarke Drive	Oct 9 - Nov 21	3	0.0004 - 0.0008 mg/L	Objective met
			1	av = 0.0006 mg/L	Indefinite result
	E207819 Loch Katrine	Oct 9 - Nov 21	3	0.0004 - 0.0005 mg/L	Objective met
			1	av = 0.00047 mg/L	Indefinite result
	2nd Narrows - Roche Pt. E207822 Shellburn	Oct 9 - Nov 21	3	0.0002 - 0.0005 mg/L	Objective met
			1	av = 0.00033 mg/L	Indefinite result
	Port Moody: E207823 Port Moody IOCO	Oct 9 - Nov 21	3	0.0006 - 0.0009 mg/L	Objective met
			1	av = 0.00073 mg/L	Indefinite result
	E207698 Pacific Coast Terminal	Oct 9 - Nov 21	3	0.0005 - 0.0012 mg/L	Objective met
	1		av = 0.0010 mg/L	Indefinite result	
Indian Arm: 0300080 at Cable Crossing	Oct 9 - Nov 21	3	0.0001 - 0.0004 mg/L	Objective met	
		1	av = 0.00027 mg/L	Indefinite result	

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Total Cu < 100 ug/g max. in sediment (long term)	Outer Burrard: 0300076 English Bay Centre	Oct 9	1	44.1 ug/g	Objective met
	1st-2nd Narrows: E207816 Vancouver Wharves	Oct 9	2	436 - 450 ug/g	Objective not met
	E207813 Coal Harbour	Oct 16	1	155 ug/g	Objective not met
	E207818 Clarke Drive	Oct 16	1	157 ug/g	Objective not met
	E207819 Loch Katrine	Nov 14	1	84.2 ug/g	Objective met
	2nd Narrows - Roche Pt. E207822 Shellburn	Nov 21	1	86.5 ug/g	Objective met
	Port Moody: E207823 Port Moody IOCO	Nov 14	1	45.2 ug/g	Objective met
	E207698 Pacific Coast Terminal	Nov 21	1	48.5 ug/g	Objective met
	Total Pb < 0.002 mg/L av. 0.140 mg/L max. in water	Outer Burrard: 0300076 English Bay Centre	Oct 9 - Nov 21	3	< 0.0001 - 0.0002 mg/L
		1		av = 0.00013 mg/L	Indefinite result
False Creek: E207814 False Creek East End		Oct 9 - Nov 21	6	< 0.0001 - 0.0006 mg/L	Objective met
			1	av = 0.0004 mg/L	Objective met
E207815 False Creek West End		Oct 9 - Nov 21	3	< 0.0001 - 0.0004 mg/L	Objective met
			1	av = 0.0002 mg/L	Indefinite result
1st-2nd Narrows: E207816 Vancouver Wharves		Oct 9 - Nov 21	8	< 0.0001 - 0.0009 mg/L	Objective met
			1	av = 0.00021 mg/L	Objective met
E207813 Coal Harbour		Oct 9 - Nov 21	4	< 0.0001 - 0.0007 mg/L	Objective met
			1	av = 0.00035 mg/L	Indefinite result
E207818 Clarke Drive		Oct 9 - Nov 21	3	< 0.0001 - 0.0002 mg/L	Objective met
			1	av = 0.0001 mg/L	Indefinite result
E207819 Loch Katrine		Oct 9 - Nov 21	3	< 0.0001 - 0.0002 mg/L	Objective met
			1	av = 0.0001 mg/L	Indefinite result
2nd Narrows - Roche Pt. E207822 Shellburn		Oct 9 - Nov 21	3	0.0001 - 0.0009 mg/L	Objective met
	1		av = 0.00037 mg/L	Indefinite result	

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Total Pb < 0.002 mg/L av. 0.140 mg/L max. in water	Port Moody: E207823	Oct 9 - Nov 21	3	0.0001 - 0.0012 mg/L	Objective met
	Port Moody IOCO		1	av = 0.0005 mg/L	Indefinite result
	E207698 Pacific Coast Terminal	Oct 9 - Nov 21	3	0.0001 - 0.0013 mg/L	Objective met
			1	av = 0.00057 mg/L	Indefinite result
	Indian Arm: 0300080 at Cable Crossing	Oct 9 - Nov 21	3	0.0001 - 0.0003 mg/L	Objective met
			1	av = 0.00017 mg/L	Indefinite result
Total Pb 0.8 µg/g max. (wet weight) in fish	Outer Burrard: 0300076 English Bay Centre	Jan 23	1	< 0.1 ug/g	Objective met
	1st-2nd Narrows: E207816 Vancouver Wharves	Jan 23	1	< 0.1 ug/g	Objective met
	E207813 Coal Harbour	Jan 24	1	< 0.1 ug/g	Objective met
	E207818 Clarke Drive	Jan 24	1	< 0.1 ug/g	Objective met
	E207819 Loch Katrine	Jan 24	1	< 0.1 ug/g	Objective met
	2nd Narrows - Roche Pt. E207822 Shellburn	Jan 23	1	< 0.1 ug/g	Objective met
	Port Moody: E207823 Port Moody IOCO	Jan 23	1	< 0.1 ug/g	Objective met
	E207698 Pacific Coast Terminal	Jan 19	1	< 0.1 ug/g	Objective met
	Indian Arm: 0300080 at Cable Crossing	Jan 22	1	< 0.1 ug/g	Objective met
	Total Pb < 30 ug/g max. in sediment (long term)	Outer Burrard: 0300076 English Bay Centre	Oct 9	1	18.6 ug/g
1st-2nd Narrows: E207816 Vancouver Wharves		Oct 9	2	72.5 - 92.3 ug/g	Objective not met
E207813 Coal Harbour		Oct 16	1	57.1 ug/g	Objective not met
E207818 Clarke Drive		Oct 16	1	61.1 ug/g	Objective not met

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Total Pb < 30 ug/g max. in sediment (long term)	E207819 Loch Katrine	Nov 14	1	63.7 ug/g	Objective not met
	2nd Narrows - Roche Pt. E207822 Shellburn	Nov 21	1	28.5 ug/g	Objective met
	Port Moody: E207823 Port Moody IOCO	Nov 14	1	12.8 ug/g	Objective met
	E207698 Pacific Coast Terminal	Nov 21	1	69.4 ug/g	Objective not met
Total Hg 0.02 µg/L av. 2.0 µg/L max. in water	2nd Narrows-Roche Pt. 1st-2nd Narrows Outer Burrard False Creek	2002	0	no data collected	Omitted 2002
Total Hg 0.5 µg/g max. wet weight in fish	1st-2nd Narrows E207813 Coal Harbour	Jan 24	1	< 0.05 ug/g	Objective met
	E207818 Clarke Drive	Jan 24	1	< 0.05 ug/g	Objective met
	2nd Narrows - Roche Pt. E207822 Shellburn	Jan 23	1	0.02 ug/g	Objective met
	Indian Arm: 0300080 at Cable Crossing	Jan 22	1	< 0.05 ug/g	Objective met
Total Hg 0.15 µg/g max. dry weight in sediment	Outer Burrard: 0300076 English Bay Centre	Oct 9	1	0.06 ug/g	Objective met
	1st-2nd Narrows: E207816 Vancouver Wharves	Oct 9	2	0.13 - 0.14 ug/g	Objective met
	E207813 Coal Harbour	Oct 16	1	0.36 ug/g	Objective not met
	E207818 Clarke Drive	Oct 16	1	1.23 ug/g	Objective not met
	E207819 Loch Katrine	Nov 14	1	0.18 ug/g	Objective not met
	2nd Narrows - Roche Pt. E207822 Shellburn	Nov 21	1	0.11 ug/g	Objective met

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION	
	SITE	DATE	n	VALUE		
Total Hg 0.15 µg/g max. dry weight in sediment	Port Moody: E207823 Port Moody IOCO	Nov 14	1	0.62 ug/g	Objective not met	
	E207698 Pacific Coast Terminal	Nov 21	1	0.07 ug/g	Objective met	
Total Ni < 0.008 mg/L av. 0.075 mg/L max. in water	False Creek: E207814 False Creek East End	Oct 9 - Nov 21	6	0.0003 - 0.0013 mg/L	Objective met	
	E207815 False Creek West End		1	av = 0.00077 mg/L	Objective met	
	1st-2nd Narrows: E207816 Vancouver Wharves	Oct 9 - Nov 21	3	0.0005 - 0.0009 mg/L	Objective met	
			1	av = 0.0006 mg/L	Indefinite result	
	E207813 Coal Harbour	Oct 9 - Nov 21	8	< 0.0005 - 0.0009 mg/L	Objective met	
			1	av = 0.00055 mg/L	Objective met	
	E207818 Clarke Drive	Oct 9 - Nov 21	4	< 0.0005 - 0.0009 mg/L	Objective met	
			1	av = 0.00063 mg/L	Indefinite result	
	E207819 Loch Katrine	Oct 9 - Nov 21	3	< 0.0005 - 0.002 mg/L	Objective met	
			1	av = 0.001 mg/L	Indefinite result	
	2nd Narrows - Roche Pt. E207822 Shellburn	Oct 9 - Nov 21	3	< 0.0005 - 0.0005 mg/L	Objective met	
			1	av = 0.0005 mg/L	Indefinite result	
	Total Ni < 45 ug/g max. in sediment	Outer Burrard: 0300076 English Bay Centre	Oct 9	1	38.4 ug/g	Objective met
		1st-2nd Narrows: E207816 Vancouver Wharves	Oct 9	2	29.5 - 30.1 ug/g	Objective met
E207813 Coal Harbour		Oct 16	1	23.1 ug/g	Objective met	
E207818 Clarke Drive		Oct 16	1	20.9 ug/g	Objective met	
E207819 Loch Katrine		Nov 14	1	21.8 ug/g	Objective met	
2nd Narrows - Roche Pt. E207822 Shellburn		Nov 21	1	18.3 ug/g	Objective met	
Port Moody: E207823 Port Moody IOCO		Nov 14	1	11.8 ug/g	Objective met	

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Total Ni < 45 ug/g max. in sediment	E207698 Pacific Coast Terminal	Nov 21	1	30.8 ug/g	Objective met
Total Zn < 0.086 mg/L av. 0.095 mg/L max. in water	Outer Burrard: 0300076 English Bay Centre	Oct 9 - Nov 21	3	< 0.001 - 0.001 mg/L	Objective met
			1	av = 0.001 mg/L	Indefinite result
	False Creek: E207814 False Creek East End	Oct 9 - Nov 21	6	0.004 - 0.0013 mg/L	Objective met
			1	av = 0.007 mg/L	Objective met
	E207815 False Creek West End	Oct 9 - Nov 21	3	0.001 - 0.007 mg/L	Objective met
			1	av = 0.003 mg/L	Indefinite result
	1st-2nd Narrows: E207816 Vancouver Wharves	Oct 9 - Nov 21	8	0.001 - 0.004 mg/L	Objective met
			1	av = 0.002 mg/L	Objective met
	E207813 Coal Harbour	Oct 9 - Nov 21	4	0.003 - 0.009 mg/L	Objective met
			1	av = 0.007 mg/L	Indefinite result
	E207818 Clarke Drive	Oct 9 - Nov 21	3	0.001 - 0.003 mg/L	Objective met
			1	av = 0.002 mg/L	Indefinite result
	E207819 Loch Katrine	Oct 9 - Nov 21	3	0.001 - 0.002 mg/L	Objective met
			1	av = 0.0001 mg/L	Indefinite result
	2nd Narrows - Roche Pt. E207822 Shellburn	Oct 9 - Nov 21	3	< 0.001 - 0.001 mg/L	Objective met
			1	av = 0.001 mg/L	Indefinite result
Port Moody: E207823 Port Moody IOCO	Oct 9 - Nov 21	3	0.003 - 0.007 mg/L	Objective met	
		1	av = 0.0005 mg/L	Indefinite result	
E207698 Pacific Coast Terminal	Oct 9 - Nov 21	3	0.004 - 0.012 mg/L	Objective met	
		1	av = 0.004 mg/L	Indefinite result	
Indian Arm: 0300080 at Cable Crossing	Oct 9 - Nov 21	3	all 0.001mg/L	Objective met	
		1	av = 0.001 mg/L	Indefinite result	
Total Zn < 150 ug/g max. in sediment (long-term)	Outer Burrard: 0300076 English Bay Centre	Oct 9	1	92.4 ug/g	Objective met
	1st-2nd Narrows: E207816 Vancouver Wharves	Oct 9	2	353- 398 ug/g	Objective not met
	E207813 Coal Harbour	Oct 16	1	137 ug/g	Objective met
	E207818 Clarke Drive	Oct 16	1	216 ug/g	Objective not met

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Total Zn < 150 ug/g max. in sediment (long-term)	E207819 Loch Katrine	Nov 14	1	165 ug/g	Objective not met
	2nd Narrows - Roche Pt. E207822 Shellburn	Nov 21	1	100 ug/g	Objective met
	Port Moody: E207823 Port Moody IOCO	Nov 14	1	61.4 ug/g	Objective met
	E207698 Pacific Coast Terminal	Nov 21	1	119 ug/g	Objective met
Chlorophenols (tri + tetra + penta - CP) 0.2 µg/L max. in water	1st-2nd Narrows	2002	0	no data collected	Omitted 2002
Chlorophenols (tri + tetra + penta - CP) in sediments 0.01 ug/g max. av of replicates (dry weight)	1st-2nd Narrows: E207816 Vancouver Wharves	Oct 9	1	< 0.225 ug/g	Indefinite result
	E207813 Coal Harbour	Oct 16	1	< 0.45 ug/g	Indefinite result
	E207818 Clarke Drive	Oct 16	1	< 0.45 ug/g	Indefinite result
Chlorophenols (tri+ tetra+ penta) in fish 0.10 ug/g max. (wet weight)	1st to 2nd Narrows	2002	0	no data collected	Omitted 2002
PCBs in sediments < 0.03 ug/g max. (dry weight)	Outer Burrard: 0300076 English Bay Centre	Oct 9	1	< 0.02 ug/g	Objective met
	1st-2nd Narrows: E207816 Vancouver Wharves	Oct 9	2	< 0.02 ug/g	Objective met
	E207813 Coal Harbour	Oct 16	1	0.15 ug/g	Objective not met
	E207818 Clarke Drive	Oct 16	1	< 0.02 ug/g	Objective met
	E207819 Loch Katrine	Nov 14	1	< 0.02 ug/g	Objective met
	2nd Narrows - Roche Pt. E207822 Shellburn	Nov 21	1	< 0.02 ug/g	Objective met

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
PCBs in sediments < 0.03 ug/g max. (dry weight)	Port Moody: E207823 Port Moody IOCO	Nov 14	1	< 0.02 ug/g	Objective met
	E207698 Pacific Coast Terminal	Nov 21	1	0.2 ug/g	Objective not met
PCBs in fish 0.1 ug/g max. (wet weight)	Port Moody Arm 2nd Narrows-Roche Pt. 1st-2nd Narrows Outer Burrard False Creek	2002	0	no data collected	Omitted 2002
PCBs in fish 0.1 ug/g max. (wet weight) in fish	Outer Burrard: 0300076 English Bay Centre	Jan 23	1	< 0.2 ug/g	Indefinite result
	1st-2nd Narrows: E207816 Vancouver Wharves	Jan 23	1	< 0.2 ug/g	Indefinite result
	E207813 Coal Harbour	Jan 24	1	< 0.2 ug/g	Indefinite result
	E207818 Clarke Drive	Jan 24	1	< 0.2 ug/g	Indefinite result
	E207819 Loch Katrine	Jan 24	1	< 0.2 ug/g	Indefinite result
	2nd Narrows - Roche Pt. E207822 Shellburn	Jan 23	1	< 0.2 ug/g	Indefinite result
	Port Moody: E207823 Port Moody IOCO	Jan 23	1	< 0.2 ug/g	Indefinite result
	E207698 Pacific Coast Terminal	Jan 19	1	< 0.2 ug/g	Indefinite result
	Tributyl tin in sediment 0.03 ug/g max. (dry weight)	Port Moody Arm 2nd Narrows-Roche Pt. 1st-2nd Narrows Outer Burrard False Creek	2002	0	no data collected
Tributyl tin in fish 0.5 ug/g max. (wet weight)	Port Moody Arm 2nd Narrows-Roche Pt. 1st-2nd Narrows Outer Burrard False Creek	2002	0	no data collected	Omitted 2002

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Phenols 1 µg/L max. in water	Port Moody Arm 2nd Narrows-Roche Pt.	2002	0	no data collected	Omitted 2002
Styrene 0.05 mg/L max. in water	Port Moody Arm	2002	0	no data collected	Omitted 2002
PAHs acenaphthene in sediment < 0.05 µg/g max. (dry weight) (long-term)	Outer Burrard: 0300076 English Bay Centre	Oct 9	1	< 0.01 µg/g	Objective met
	1st-2nd Narrows: E207816 Vancouver Wharves	Oct 9	2	< 0.01 - 0.04 µg/g	Objective met
	E207813 Coal Harbour	Oct 16	1	< 0.01 µg/g	Objective met
	E207818 Clarke Drive	Oct 16	1	< 0.01 µg/g	Objective met
	E207819 Loch Katrine	Nov 14	1	< 0.01 µg/g	Objective met
	2nd Narrows - Roche Pt. E207822 Shellburn	Nov 21	1	< 0.01 µg/g	Objective met
	Port Moody: E207823 Port Moody IOCO	Nov 14	1	< 0.01 µg/g	Objective met
	E207698 Pacific Coast Terminal	Nov 21	1	0.04 µg/g	Objective met
PAHs acenaphthylene in sediment < 0.06 µg/g max. (dry weight) (long-term)	Outer Burrard: 0300076 English Bay Centre	Oct 9	1	< 0.01 µg/g	Objective met
	1st-2nd Narrows: E207816 Vancouver Wharves	Oct 9	2	< 0.01 µg/g	Objective met
	E207813 Coal Harbour	Oct 16	1	0.03 µg/g	Objective met
	E207818 Clarke Drive	Oct 16	1	< 0.01 µg/g	Objective met
	E207819 Loch Katrine	Nov 14	1	0.04 µg/g	Objective met

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
PAHs acenaphthylene in sediment < 0.06 ug/g max. (dry weight) (long-term)	2nd Narrows - Roche Pt. E207822 Shellburn	Nov 21	1	< 0.01 ug/g	Objective met
	Port Moody: E207823 Port Moody IOCO	Nov 14	1	0.02 ug/g	Objective met
	E207698 Pacific Coast Terminal	Nov 21	1	< 0.01 ug/g	Objective met
PAHs anthracene in sediment < 0.1 ug/g max. (dry weight) (long-term)	Outer Burrard: 0300076 English Bay Centre	Oct 9	1	< 0.01 ug/g	Objective met
	1st-2nd Narrows: E207816 Vancouver Wharves	Oct 9	1	0.1 ug/g	Objective met
		Oct 9	1	0.12 ug/g	Objective not met
	E207813 Coal Harbour	Oct 16	1	0.07 ug/g	Objective met
	E207818 Clarke Drive	Oct 16	1	0.07 ug/g	Objective met
	E207819 Loch Katrine	Nov 14	1	0.14 ug/g	Objective not met
	2nd Narrows - Roche Pt. E207822 Shellburn	Nov 21	1	0.03 ug/g	Objective met
	Port Moody: E207823 Port Moody IOCO	Nov 14	1	0.03 ug/g	Objective met
	E207698 Pacific Coast Terminal	Nov 21	1	0.07 ug/g	Objective met
	PAHs benzo(a)anthracene in sediment < 0.13 ug/g max. (dry weight) (long-term)	Outer Burrard: 0300076 English Bay Centre	Oct 9	1	0.04 ug/g
1st-2nd Narrows: E207816 Vancouver Wharves		Oct 9	2	0.17 - 0.24 ug/g	Objective not met
		E207813 Coal Harbour	Oct 16	1	0.19 ug/g
E207818 Clarke Drive		Oct 16	1	0.22 ug/g	Objective not met
E207819 Loch Katrine		Nov 14	1	0.20 ug/g	Objective not met

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
PAHs benzo(a)anthracene in sediment < 0.13 ug/g max. (dry weight) (long-term)	2nd Narrows - Roche Pt. E207822 Shellburn	Nov 21	1	0.08 ug/g	Objective met
	Port Moody: E207823 Port Moody IOCO	Nov 14	1	0.05 ug/g	Objective met
	E207698 Pacific Coast Terminal	Nov 21	1	0.16 ug/g	Objective not met
PAHs benzo(a)pyrene in sediment < 0.16 ug/g max. (dry weight) (long-term)	Outer Burrard: 0300076 English Bay Centre	Oct 9	1	0.04 ug/g	Objective met
	1st-2nd Narrows: E207816 Vancouver Wharves	Oct 9	2	0.17 ug/g	Objective not met
	E207813 Coal Harbour	Oct 16	1	0.21 ug/g	Objective not met
	E207818 Clarke Drive	Oct 16	1	0.20 ug/g	Objective not met
	E207819 Loch Katrine	Nov 14	1	0.27 ug/g	Objective not met
	2nd Narrows - Roche Pt. E207822 Shellburn	Nov 21	1	0.09 ug/g	Objective met
	Port Moody: E207823 Port Moody IOCO	Nov 14	1	0.05 ug/g	Objective met
	E207698 Pacific Coast Terminal	Nov 21	1	0.10 ug/g	Objective met
PAHs benzo-fluoranthenes in sediment < 0.32 ug/g max. (dry weight) (long-term)	Outer Burrard: 0300076 English Bay Centre	Oct 9	1	< 0.06 ug/g	Objective met
	1st-2nd Narrows: E207816 Vancouver Wharves	Oct 9 Oct 9	1 1	0.27 ug/g 0.37	Objective met Objective not met
	E207813 Coal Harbour	Oct 16	1	0.45 ug/g	Objective not met
	E207818 Clarke Drive	Oct 16	1	0.40 ug/g	Objective not met
	E207819 Loch Katrine	Nov 14	1	0.67 ug/g	Objective not met

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION	
	SITE	DATE	n	VALUE		
PAHs benzo-fluoranthenes in sediment < 0.32 ug/g max. (dry weight) (long-term)	2nd Narrows - Roche Pt. E207822 Shellburn	Nov 21	1	0.18 ug/g	Objective met	
	Port Moody: E207823 Port Moody IOCO	Nov 14	1	0.11 ug/g	Objective met	
	E207698 Pacific Coast Terminal	Nov 21	1	0.23 ug/g	Objective met	
PAHs benzo(g,h,i)perylene in sediment < 0.07 ug/g max. (dry weight) (long-term)	Outer Burrard: 0300076 English Bay Centre	Oct 9	1	< 0.02 ug/g	Objective met	
	1st-2nd Narrows: E207816 Vancouver Wharves	Oct 9	2	0.09 ug/g	Objective not met	
	E207813 Coal Harbour	Oct 16	1	0.16 ug/g	Objective not met	
	E207818 Clarke Drive	Oct 16	1	0.17 ug/g	Objective not met	
	E207819 Loch Katrine	Nov 14	1	0.17 ug/g	Objective not met	
	2nd Narrows - Roche Pt. E207822 Shellburn	Nov 21	1	0.07 ug/g	Objective met	
	Port Moody: E207823 Port Moody IOCO	Nov 14	1	0.03 ug/g	Objective met	
	E207698 Pacific Coast Terminal	Nov 21	1	0.07 ug/g	Objective met	
	PAHs chrysene in sediment < 0.14 ug/g max. (dry weight) (long-term)	Outer Burrard: 0300076 English Bay Centre	Oct 9	1	0.04 ug/g	Objective met
		1st-2nd Narrows: E207816 Vancouver Wharves	Oct 9	2	0.21 - 0.4 ug/g	Objective not met
E207813 Coal Harbour		Oct 16	1	0.24 ug/g	Objective not met	
E207818 Clarke Drive		Oct 16	1	0.33 ug/g	Objective not met	
E207819 Loch Katrine		Nov 14	1	0.37 ug/g	Objective not met	

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
PAHs chrysene in sediment < 0.14 ug/g max. (dry weight) (long-term)	2nd Narrows - Roche Pt. E207822 Shellburn	Nov 21	1	0.09 ug/g	Objective met
	Port Moody: E207823 Port Moody IOCO	Nov 14	1	0.06 ug/g	Objective met
	E207698 Pacific Coast Terminal	Nov 21	1	0.22 ug/g	Objective not met
PAHs dibenzo(a,h)anthracene in sediment < 0.06 ug/g max. (dry weight) (long-term)	Outer Burrard: 0300076 English Bay Centre	Oct 9	1	< 0.02 ug/g	Objective met
	1st-2nd Narrows: E207816 Vancouver Wharves	Oct 9	2	< 0.02 ug/g	Objective met
	E207813 Coal Harbour	Oct 16	1	< 0.02 ug/g	Objective met
	E207818 Clarke Drive	Oct 16	1	< 0.02 ug/g	Objective met
	E207819 Loch Katrine	Nov 14	1	< 0.02 ug/g	Objective met
	2nd Narrows - Roche Pt. E207822 Shellburn	Nov 21	1	< 0.02 ug/g	Objective met
	Port Moody: E207823 Port Moody IOCO	Nov 14	1	< 0.02 ug/g	Objective met
	E207698 Pacific Coast Terminal	Nov 21	1	< 0.02 ug/g	Objective met
PAHs fluoranthene in sediment < 0.17 ug/g max. (dry weight) (long-term)	Outer Burrard: 0300076 English Bay Centre	Oct 9	1	0.06 ug/g	Objective met
	1st-2nd Narrows: E207816 Vancouver Wharves	Oct 9	2	0.38 - 0.44 ug/g	Objective not met
	E207813 Coal Harbour	Oct 16	1	0.31 ug/g	Objective not met
	E207818 Clarke Drive	Oct 16	1	0.52 ug/g	Objective not met
	E207819 Loch Katrine	Nov 14	1	0.23 ug/g	Objective not met

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
PAHs fluoranthene in sediment < 0.17 ug/g max. (dry weight) (long-term)	2nd Narrows - Roche Pt. E207822 Shellburn	Nov 21	1	0.14 ug/g	Objective met
	Port Moody: E207823 Port Moody IOCO	Nov 14	1	0.13 ug/g	Objective met
	E207698 Pacific Coast Terminal	Nov 21	1	0.39 ug/g	Objective not met
PAHs fluorene in sediment < 0.05 ug/g max. (dry weight) (long-term)	Outer Burrard: 0300076 English Bay Centre	Oct 9	1	< 0.01 ug/g	Objective met
	1st-2nd Narrows: E207816 Vancouver Wharves	Oct 9	2	0.03 ug/g	Objective met
	E207813 Coal Harbour	Oct 16	1	< 0.01 ug/g	Objective met
	E207818 Clarke Drive	Oct 16	1	0.04 ug/g	Objective met
	E207819 Loch Katrine	Nov 14	1	0.06 ug/g	Objective not met
	2nd Narrows - Roche Pt. E207822 Shellburn	Nov 21	1	< 0.01 ug/g	Objective met
	Port Moody: E207823 Port Moody IOCO	Nov 14	1	< 0.01 ug/g	Objective met
	E207698 Pacific Coast Terminal	Nov 21	1	0.07 ug/g	Objective not met
PAHs indeno(1,2,3- c,d)pyrene in sediment < 0.06 ug/g max. (dry weight) (long-term)	Outer Burrard: 0300076 English Bay Centre	Oct 9	1	< 0.02 ug/g	Objective met
	1st-2nd Narrows: E207816 Vancouver Wharves	Oct 9	2	0.09 ug/g	Objective not met
	E207813 Coal Harbour	Oct 16	1	0.16 ug/g	Objective not met
	E207818 Clarke Drive	Oct 16	1	0.15 ug/g	Objective not met
	E207819 Loch Katrine	Nov 14	1	0.15 ug/g	Objective not met

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
PAHs indeno(1,2,3- c,d)pyrene in sediment < 0.06 ug/g max. (dry weight) (long-term)	2nd Narrows - Roche Pt. E207822 Shellburn	Nov 21	1	0.06 ug/g	Objective met
	Port Moody: E207823 Port Moody IOCO	Nov 14	1	< 0.02 ug/g	Objective met
	E207698 Pacific Coast Terminal	Nov 21	1	< 0.02 ug/g	Objective met
PAHs naphthalene in sediment < 0.2 ug/g max. (dry weight) (long-term)	Outer Burrard: 0300076 English Bay Centre	Oct 9	1	< 0.01 ug/g	Objective met
	1st-2nd Narrows: E207816 Vancouver Wharves	Oct 9	2	0.04 ug/g	Objective met
	E207813 Coal Harbour	Oct 16	1	0.03 ug/g	Objective met
	E207818 Clarke Drive	Oct 16	1	0.03 ug/g	Objective met
	E207819 Loch Katrine	Nov 14	1	0.05 ug/g	Objective met
	2nd Narrows - Roche Pt. E207822 Shellburn	Nov 21	1	< 0.01 ug/g	Objective met
	Port Moody: E207823 Port Moody IOCO	Nov 14	1	0.07 ug/g	Objective met
	E207698 Pacific Coast Terminal	Nov 21	1	0.13 ug/g	Objective met
PAHs phenanthrene in sediment < 0.15 ug/g max. (dry weight) (long-term)	Outer Burrard: 0300076 English Bay Centre	Oct 9	1	0.04 ug/g	Objective met
	1st-2nd Narrows: E207816 Vancouver Wharves	Oct 9	2	0.16 - 0.19 ug/g	Objective not met
	E207813 Coal Harbour	Oct 16	1	0.16 ug/g	Objective not met
	E207818 Clarke Drive	Oct 16	1	0.23 ug/g	Objective not met
	E207819 Loch Katrine	Nov 14	1	0.2 ug/g	Objective not met

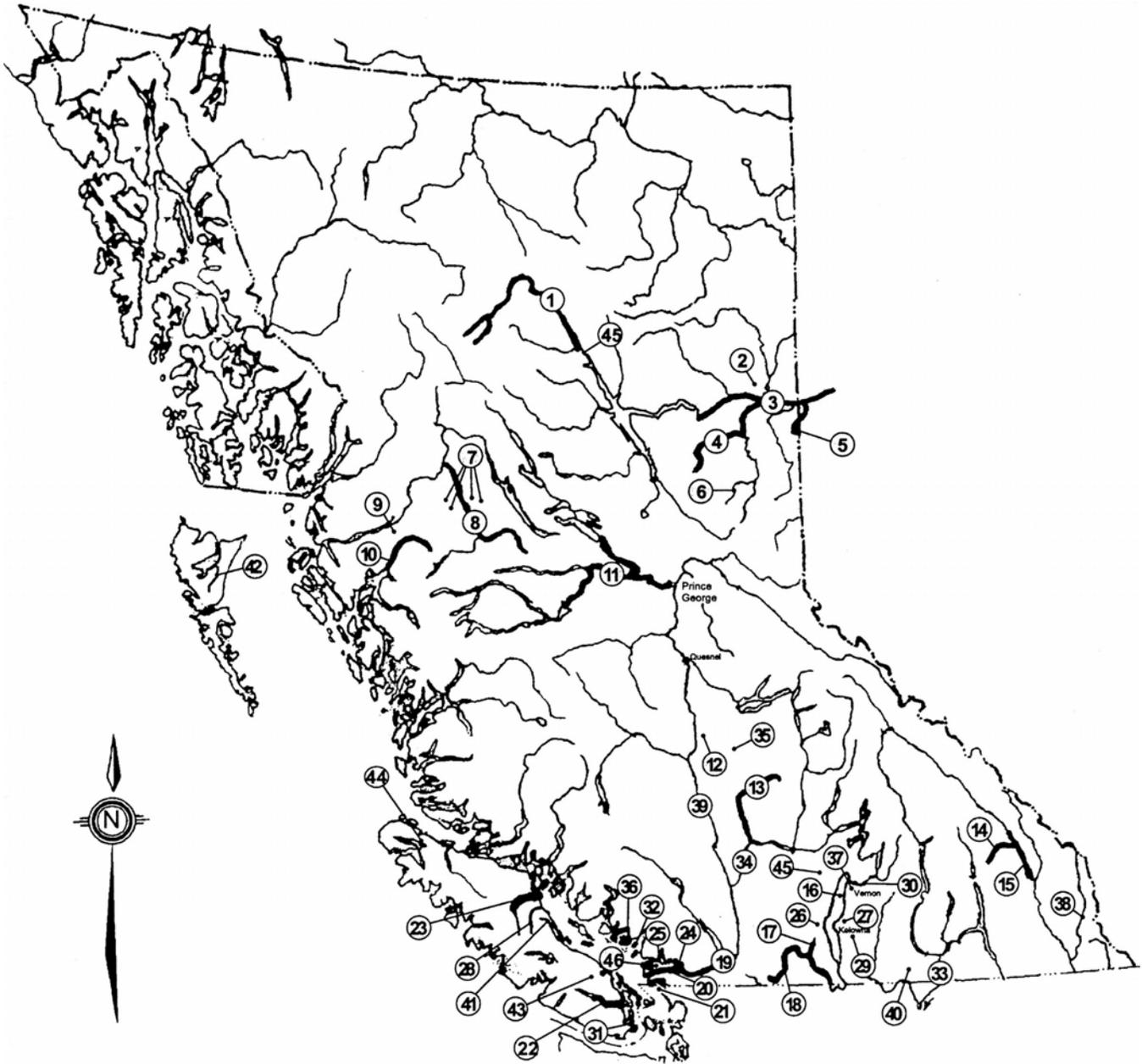
WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
PAHs phenanthrene in sediment < 0.15 ug/g max. (dry weight) (long-term)	2nd Narrows - Roche Pt. E207822 Shellburn	Nov 21	1	0.06 ug/g	Objective met
	Port Moody: E207823 Port Moody IOCO	Nov 14	1	0.07 ug/g	Objective met
	E207698 Pacific Coast Terminal	Nov 21	1	0.17 ug/g	Objective not met
PAHs pyrene in sediment < 0.26 ug/g max. (dry weight) (long-term)	Outer Burrard: 0300076 English Bay Centre	Oct 9	1	0.09 ug/g	Objective met
	1st-2nd Narrows: E207816 Vancouver Wharves	Oct 9	2	0.52 - 0.57 ug/g	Objective not met
	E207813 Coal Harbour	Oct 16	1	0.4 ug/g	Objective not met
	E207818 Clarke Drive	Oct 16	1	0.49 ug/g	Objective not met
	E207819 Loch Katrine	Nov 14	1	0.76 ug/g	Objective not met
	2nd Narrows - Roche Pt. E207822 Shellburn	Nov 21	1	0.25 ug/g	Objective met
	Port Moody: E207823 Port Moody IOCO	Nov 14	1	0.15 ug/g	Objective met
	E207698 Pacific Coast Terminal	Nov 21	1	0.33 ug/g	Objective not met
Total LPAH (naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene) in sediment < 0.5 ug/g max. (dry weight) (long-term)	Outer Burrard: 0300076 English Bay Centre	Oct 9	1	0.04 ug/g	Objective met
	1st-2nd Narrows: E207816 Vancouver Wharves	Oct 9	2	0.35 - 0.4 ug/g	Objective met
	E207813 Coal Harbour	Oct 16	1	0.29 ug/g	Objective met
	E207818 Clarke Drive	Oct 16	1	0.37 ug/g	Objective met

WATER QUALITY IN B.C. – OBJECTIVES ATTAINMENT IN 2002

VARIABLE & OBJECTIVE	MEASUREMENT				CONCLUSION
	SITE	DATE	n	VALUE	
Total LPAH (naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene) in sediment < 0.5 ug/g max. (dry weight) (long-term)	E207819 Loch Katrine	Nov 14	1	0.49 ug/g	Objective met
	2nd Narrows - Roche Pt. E207822 Shellburn	Nov 21	1	0.09 ug/g	Objective met
	Port Moody: E207823 Port Moody IOCO	Nov 14	1	0.19 ug/g	Objective met
	E207698 Pacific Coast Terminal	Nov 21	1	0.48 ug/g	Objective met
Total HPAH (fluoranthene pyrren, benzo(a)anthracene, chrysene, benzo-fluoranthenes, benzo(a)pyrene, indeno(1,2,3- c,d)pyrene dibenzo(a,h)anthracene benzo(g,h,i)perylene) in sediment < 1.2 ug/g max. (dry weight) (long-term)	Outer Burrard: 0300076 English Bay Centre	Oct 9	1	0.32 ug/g	Objective met
	1st-2nd Narrows: E207816 Vancouver Wharves	Oct 9	2	2.0 - 2.4 ug/g	Objective not met
	E207813 Coal Harbour	Oct 16	1	2.1 ug/g	Objective not met
	E207818 Clarke Drive	Oct 16	1	2.5 ug/g	Objective not met
	E207819 Loch Katrine	Nov 14	1	2.8 ug/g	Objective not met
	2nd Narrows - Roche Pt. E207822 Shellburn	Nov 21	1	0.96 ug/g	Objective met
	Port Moody: E207823 Port Moody IOCO	Nov 14	1	0.58 ug/g	Objective met
	E207698 Pacific Coast Terminal	Nov 21	1	1.5 ug/g	Objective not met

Figure 2. Map of British Columbia showing locations of watersheds with water quality objectives.



- | | | | |
|-------------------------------|----------------------------------|---------------------------------|-------------------------------|
| ① Upper Finlay River | ⑫ Williams Lake | ⑳ Lower Fraser River | ㉔ Sechelt Inlet |
| ② Charlie Lake | ⑬ Bonaparte River | ㉑ Tributaries | ㉕ Okanagan Tribs. Vernon |
| ③ Peace River | ⑭ Toby Creek | ㉒ Burrard Inlet | ㉖ Elk River |
| ④ Pine River | ⑮ Columbia and Windermere | ㉓ Okanagan Tribs., Westbank | ㉗ Fraser River (Prince George |
| ⑤ Pouce Coupe River | Lakes | ㉔ Okanagan Tribs., Kelowna | to Hope) |
| ⑥ Bullmoose Creek | ⑯ Okanagan Valley Lakes | ㉕ Oyster River | ㉘ Christina Lake |
| ⑦ Kathlyn, Seymour, Round, | ⑰ Cahill Creek | ㉖ Hydraulic Creek | ㉙ Tsolum River |
| and Tyhee Lakes | ⑱ Similkameen River | ㉗ Bessette Creek | ㉚ Yakoun River |
| ⑧ Bulkley River | ⑲ Fraser River (Hope to Kanaka) | ㉘ Elk and Beaver Lakes | ㉛ Holland Cr & Stocking Lk |
| ⑨ Lakelse Lake | ⑳ Fraser River (Kanaka to Mouth) | ㉙ Pender Harbour | ㉜ Quatse Lake |
| ⑩ Lower Kitimat River and Arm | ㉑ Boundary Bay | ㉚ Columbia River (to Birchbank) | ㉝ Lower Finlay River |
| ⑪ Nechako River | ㉒ Cowichan-Koksilah Rivers | ㉛ Thompson River | ㉞ Burrard Inlet Trib. |
| | ㉓ Quinsam River | ㉜ San José River | |

Figure 3 Cowichan - Koksilah Rivers

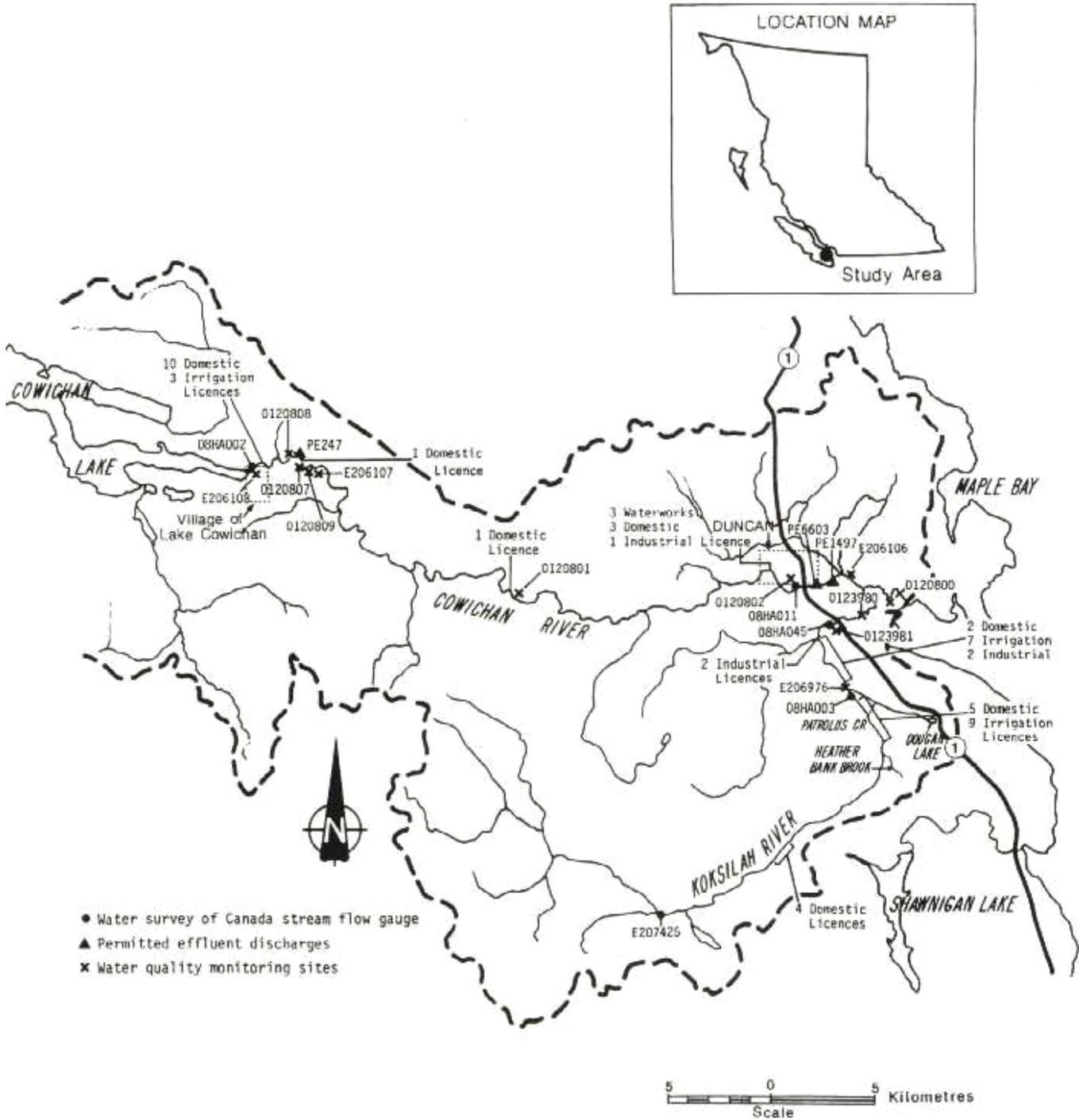


Figure 4. Quinsam River

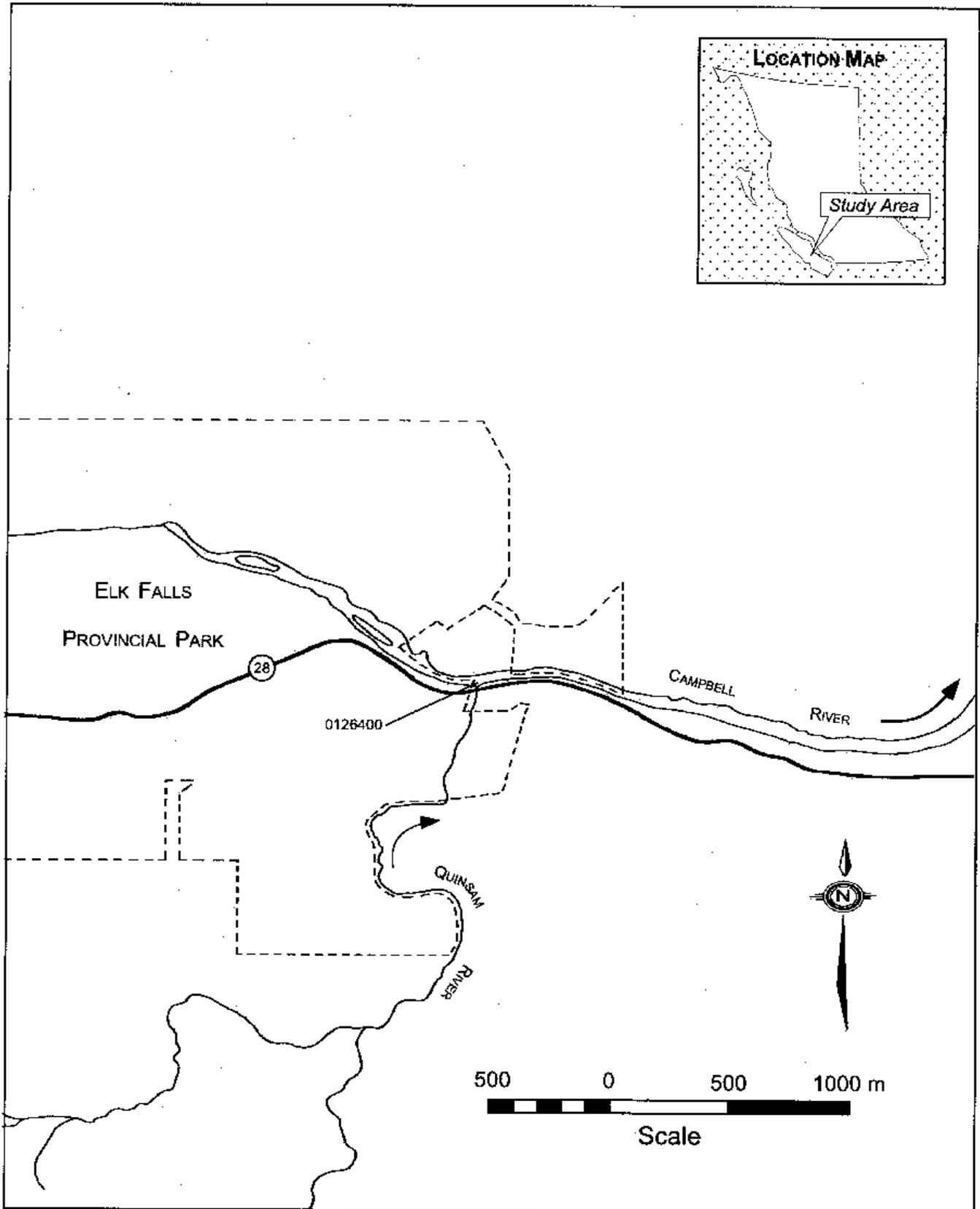


Figure 5. Middle Quinsam Lake.

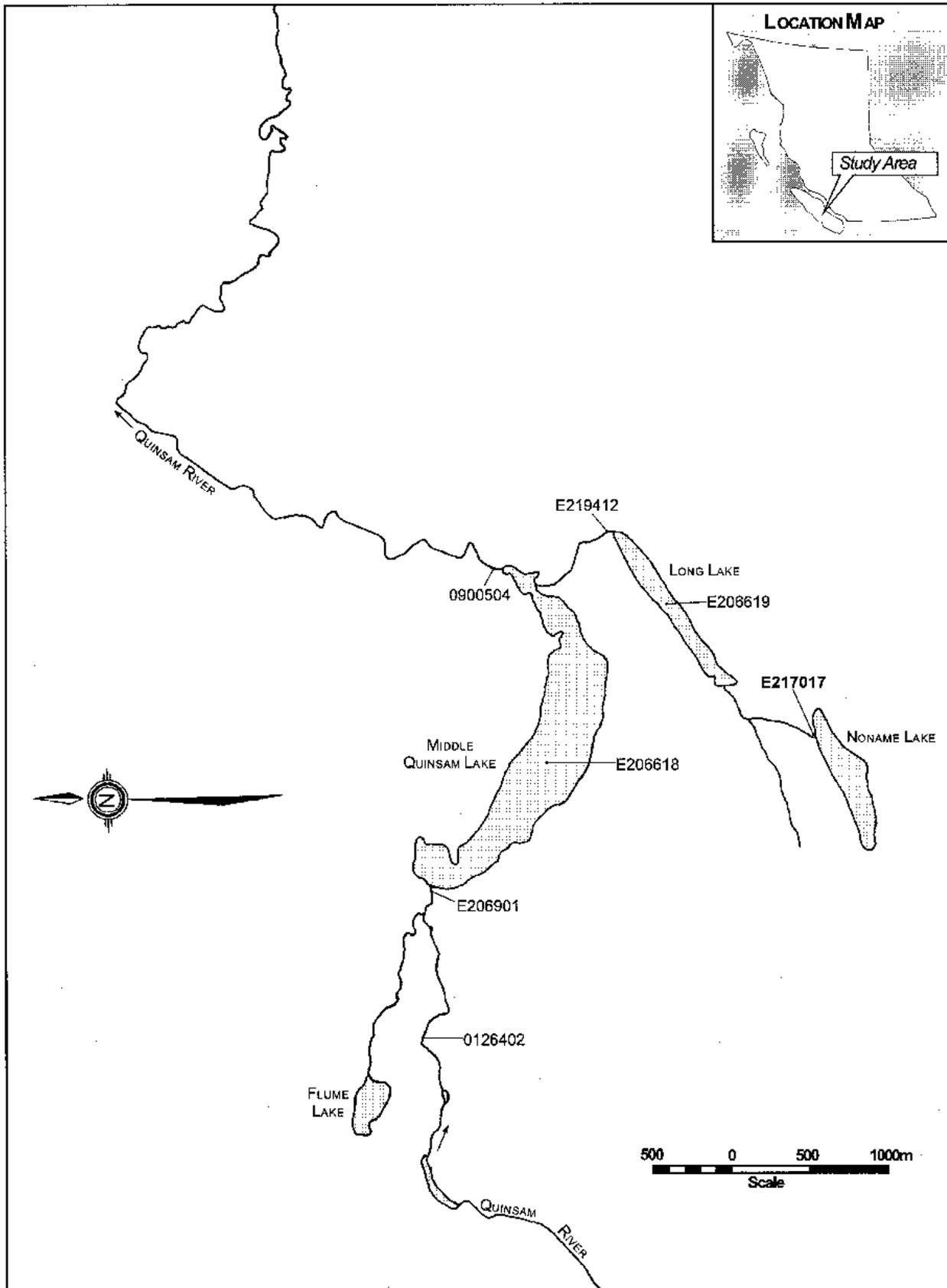


Figure 6. Oyster River Basin.

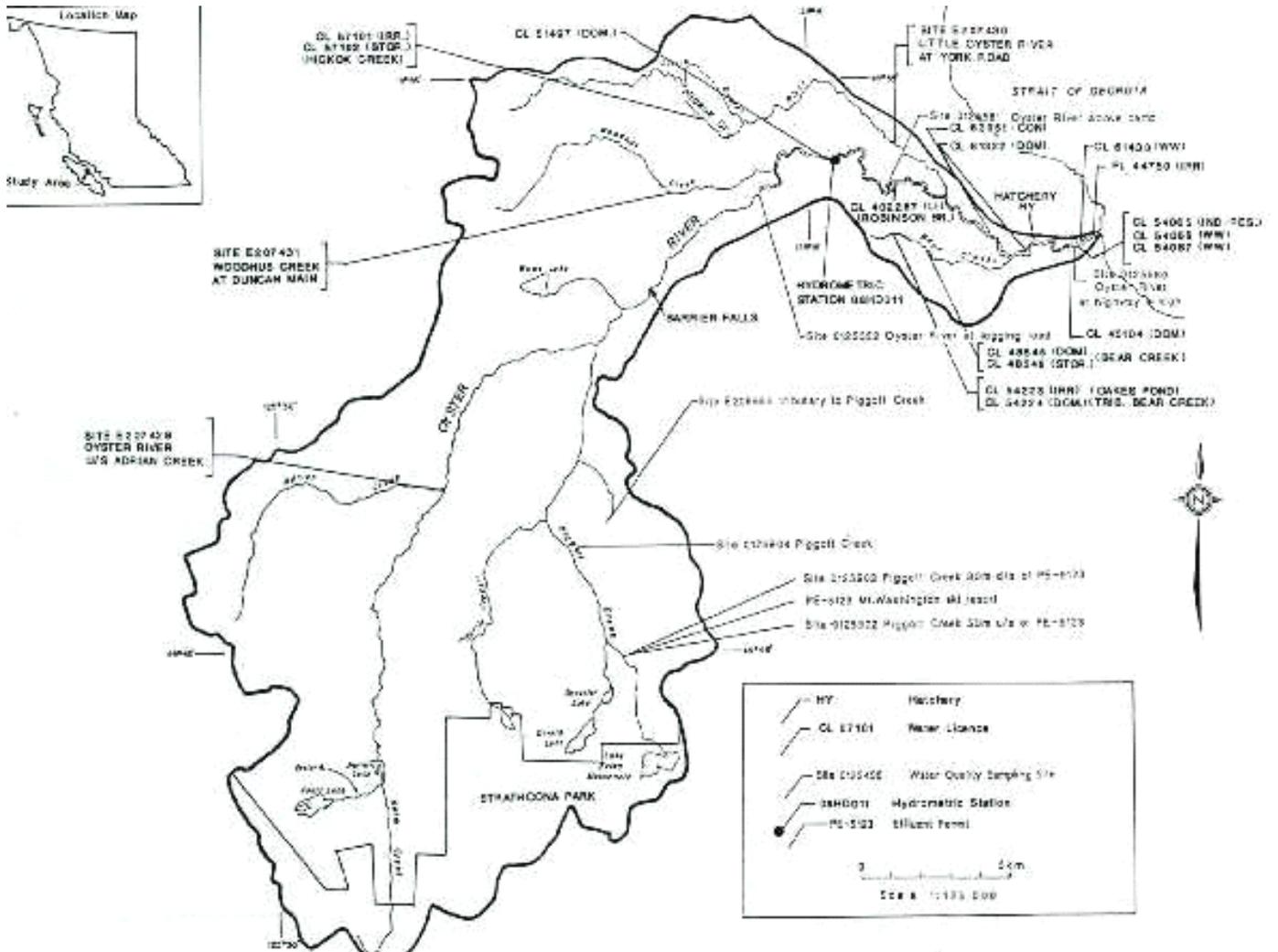


Figure 7. Tsolum River

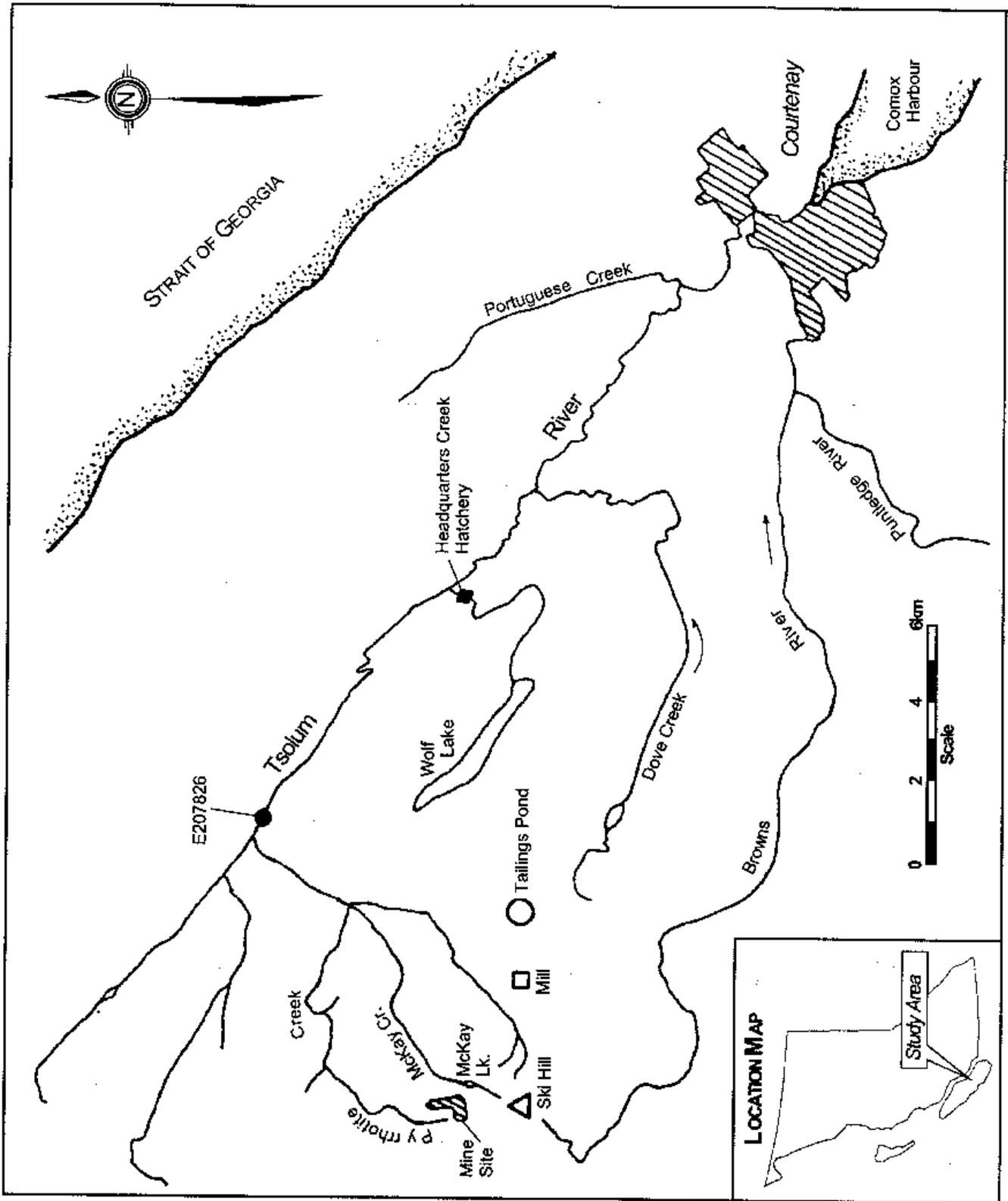


Figure 8. Holland Creek and Stocking Lake

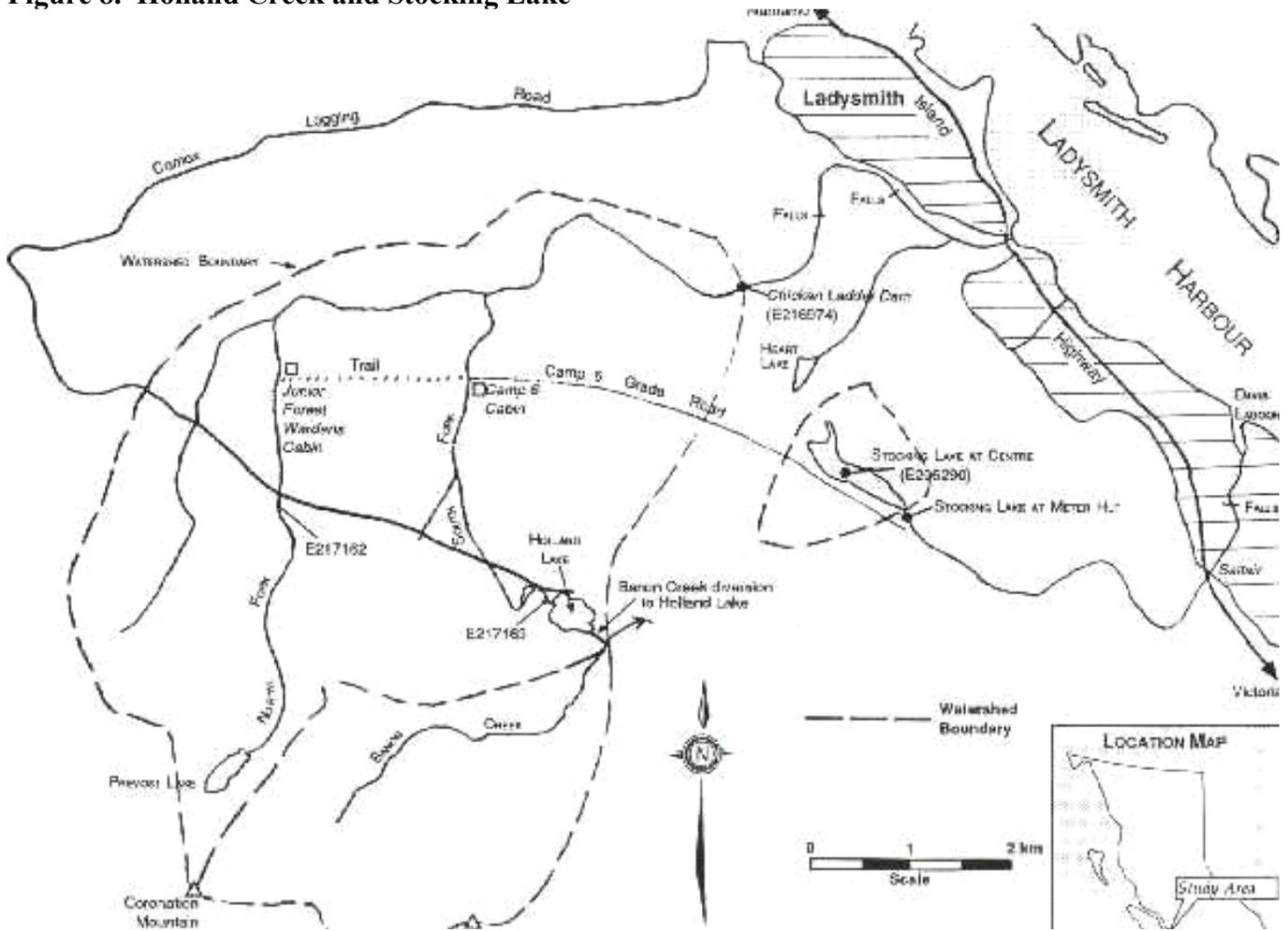


Figure 9. Kathlyn, Seymour, Round and Tyhee Lakes

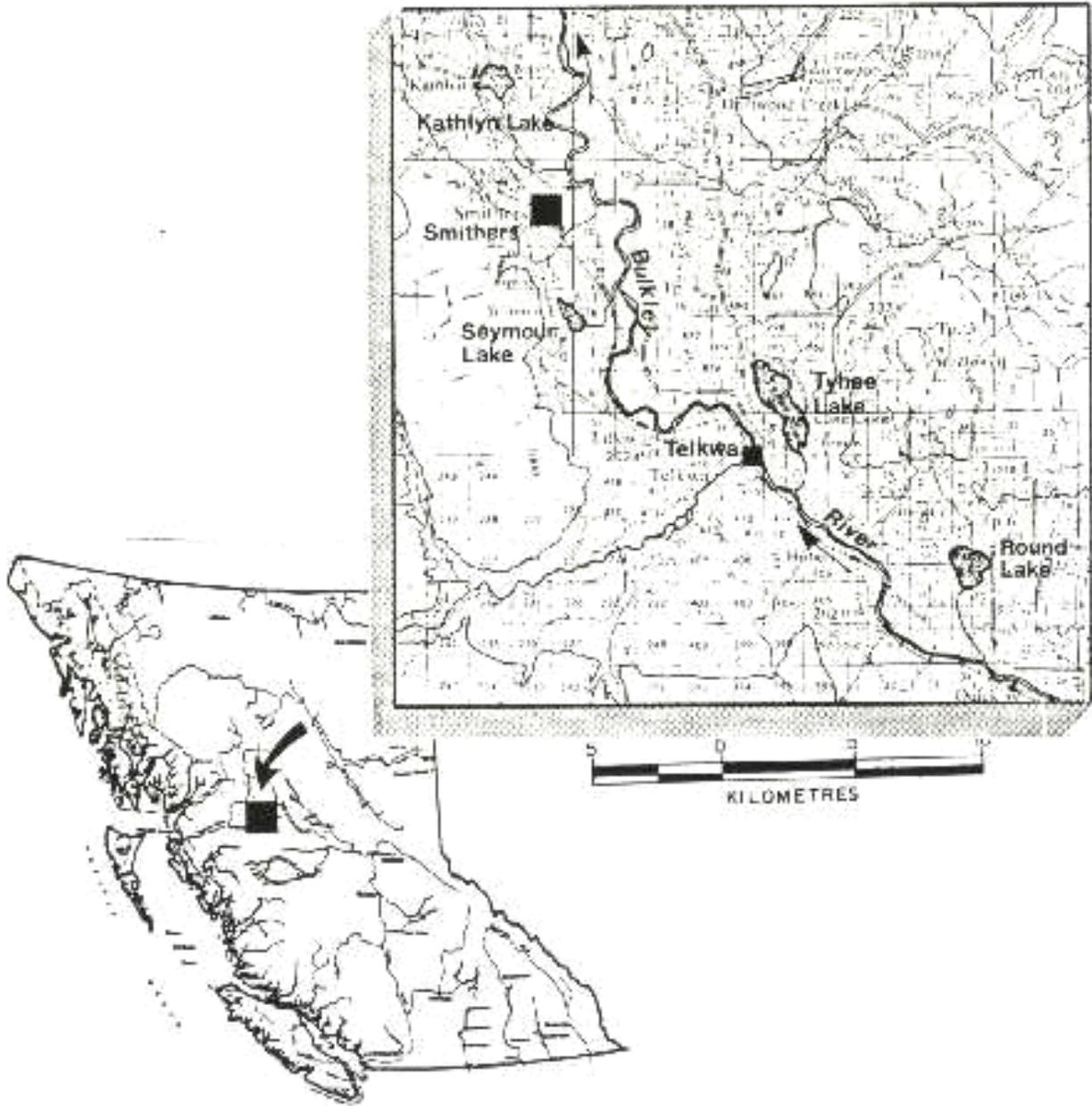


Figure 10. Lakelse Lake.

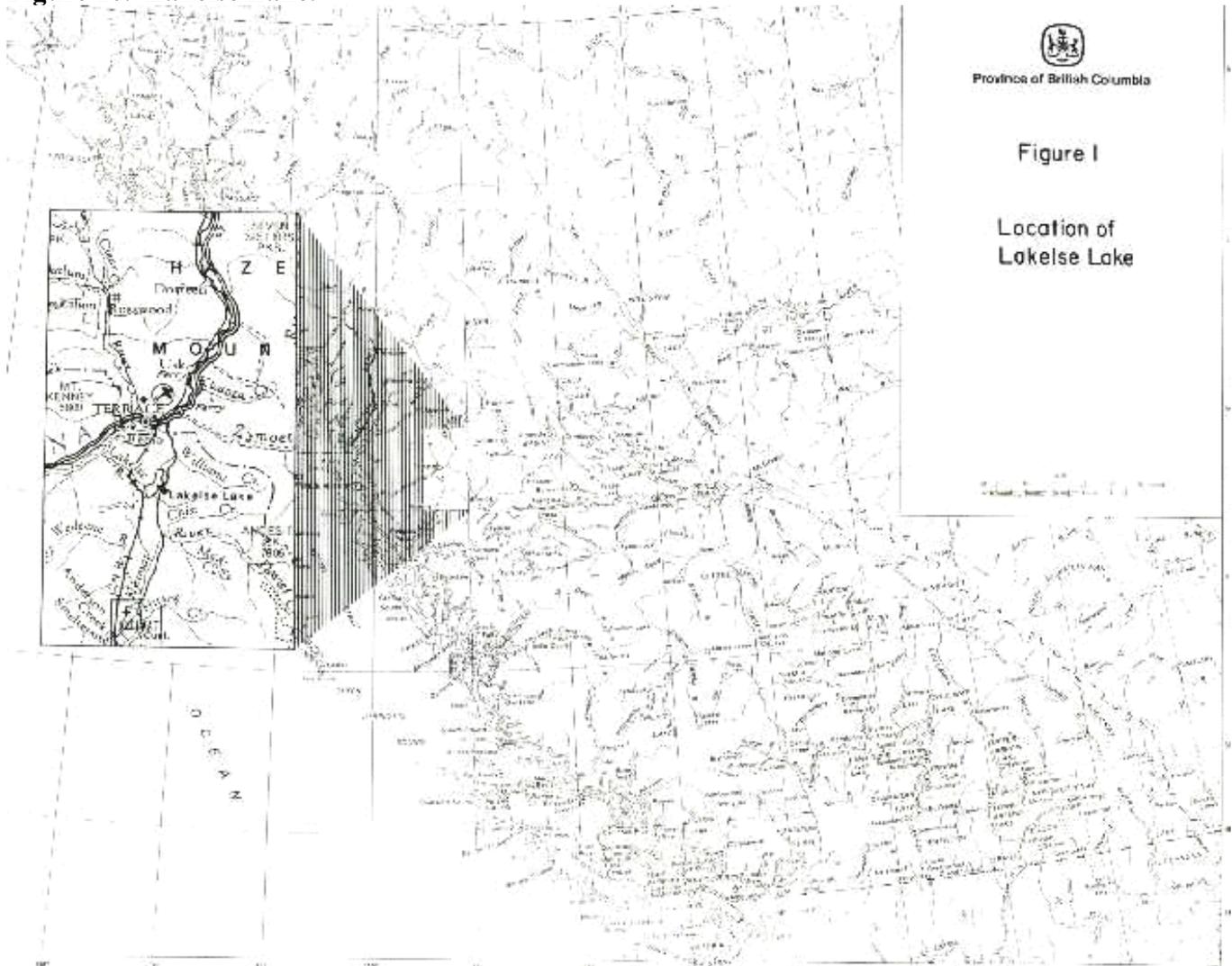


Figure 13. Upper Fraser River

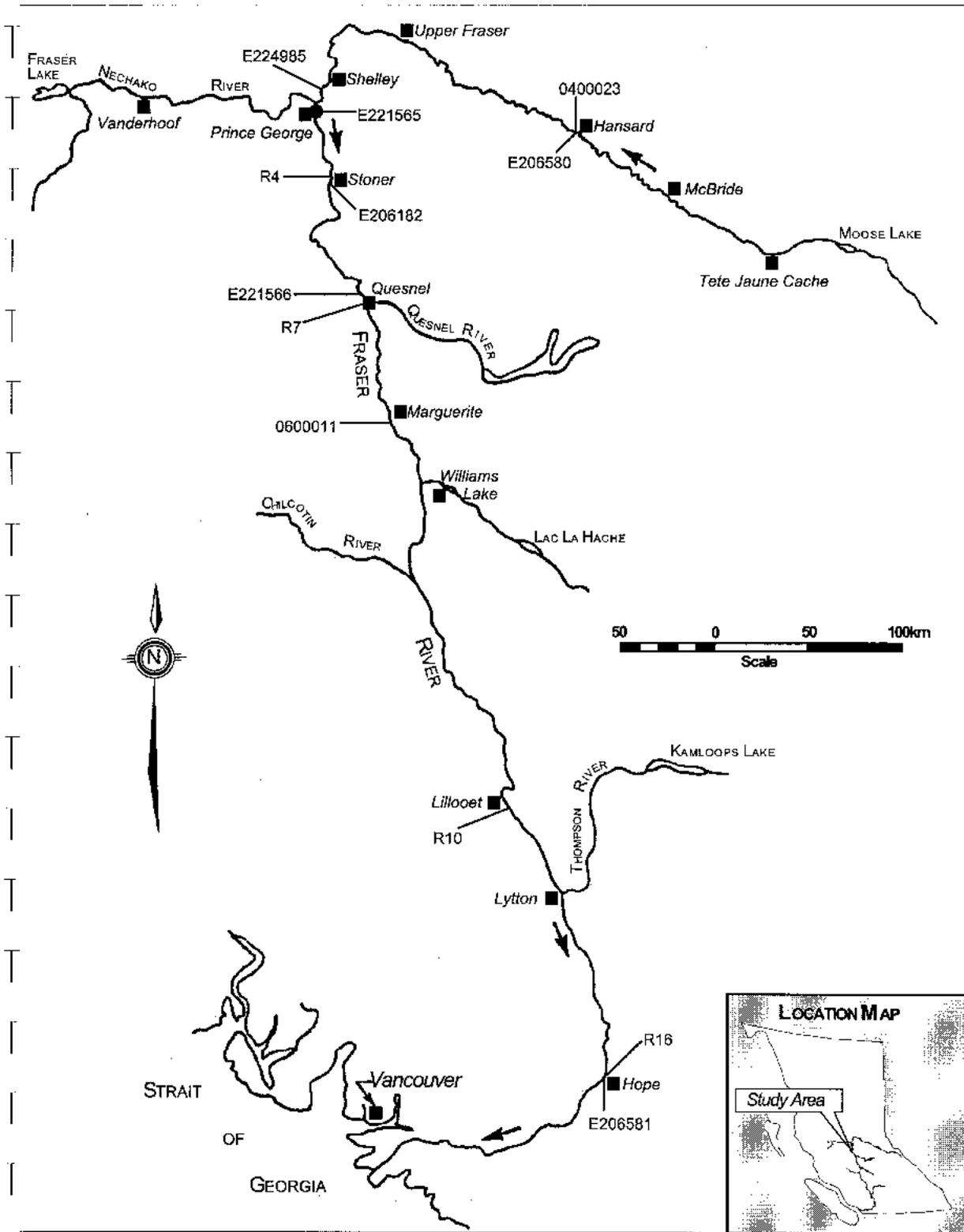


Figure 14. Williams Lake

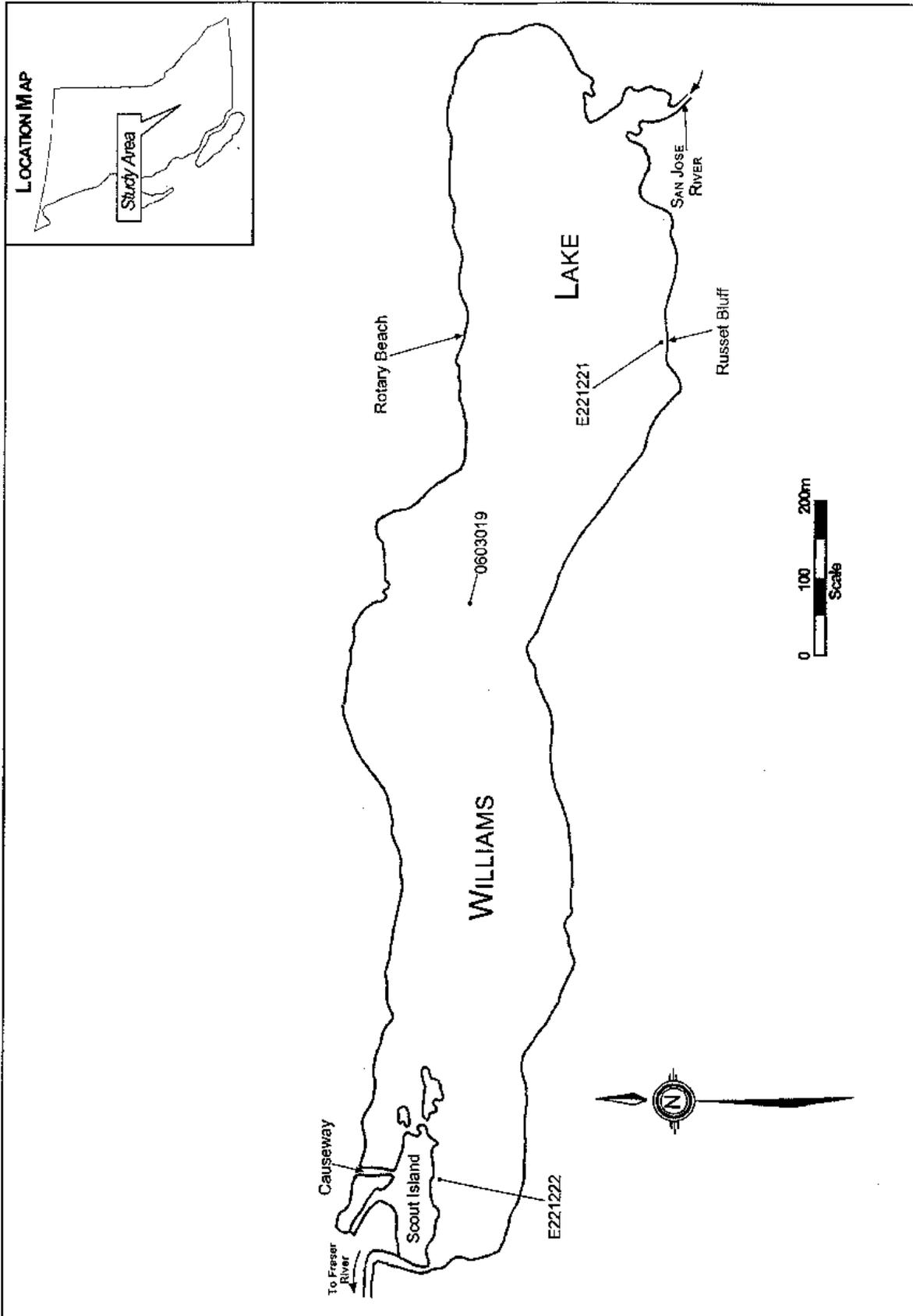


Figure 15. Okanagan Valley Lakes.

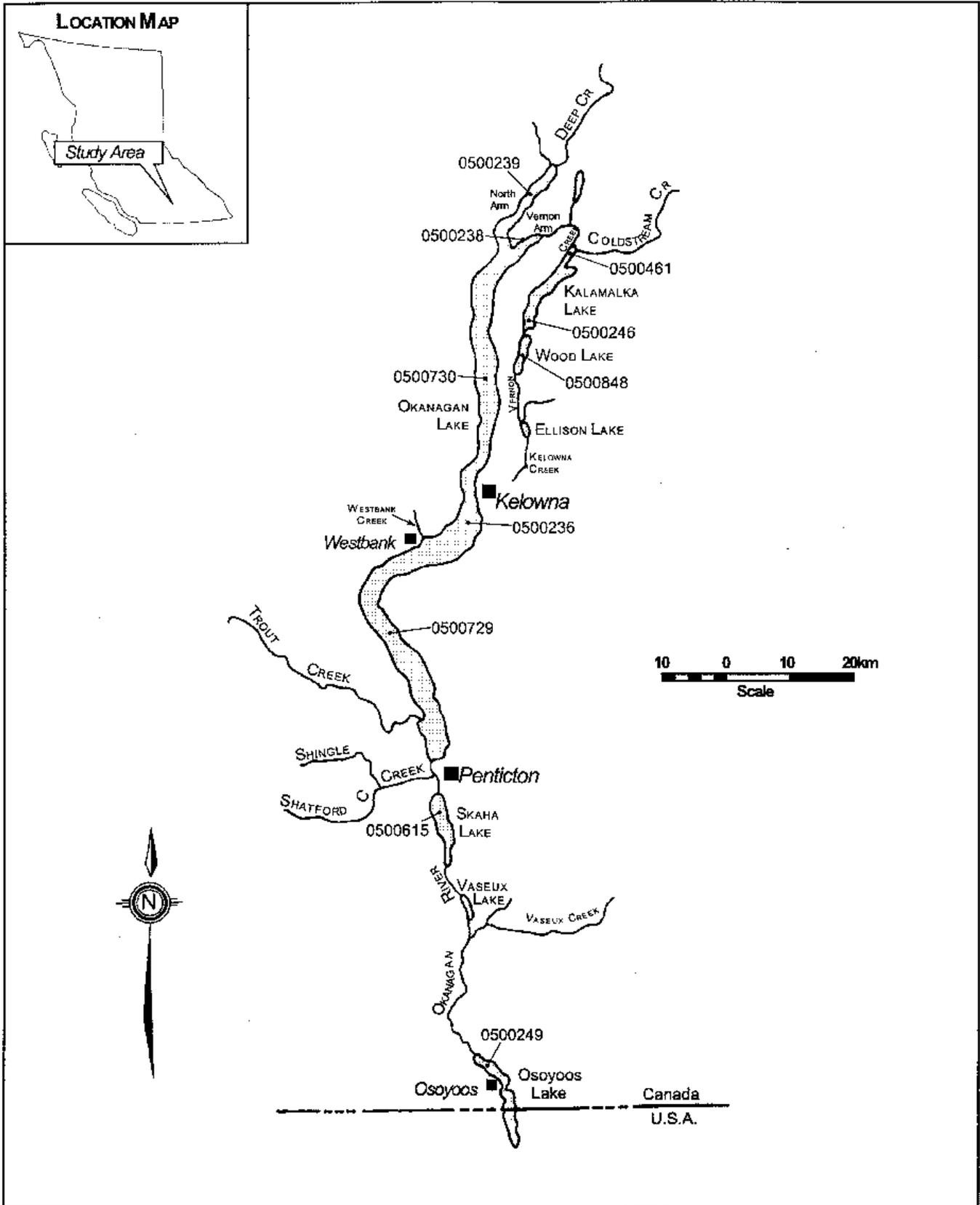


Figure 16. Similkameen River.

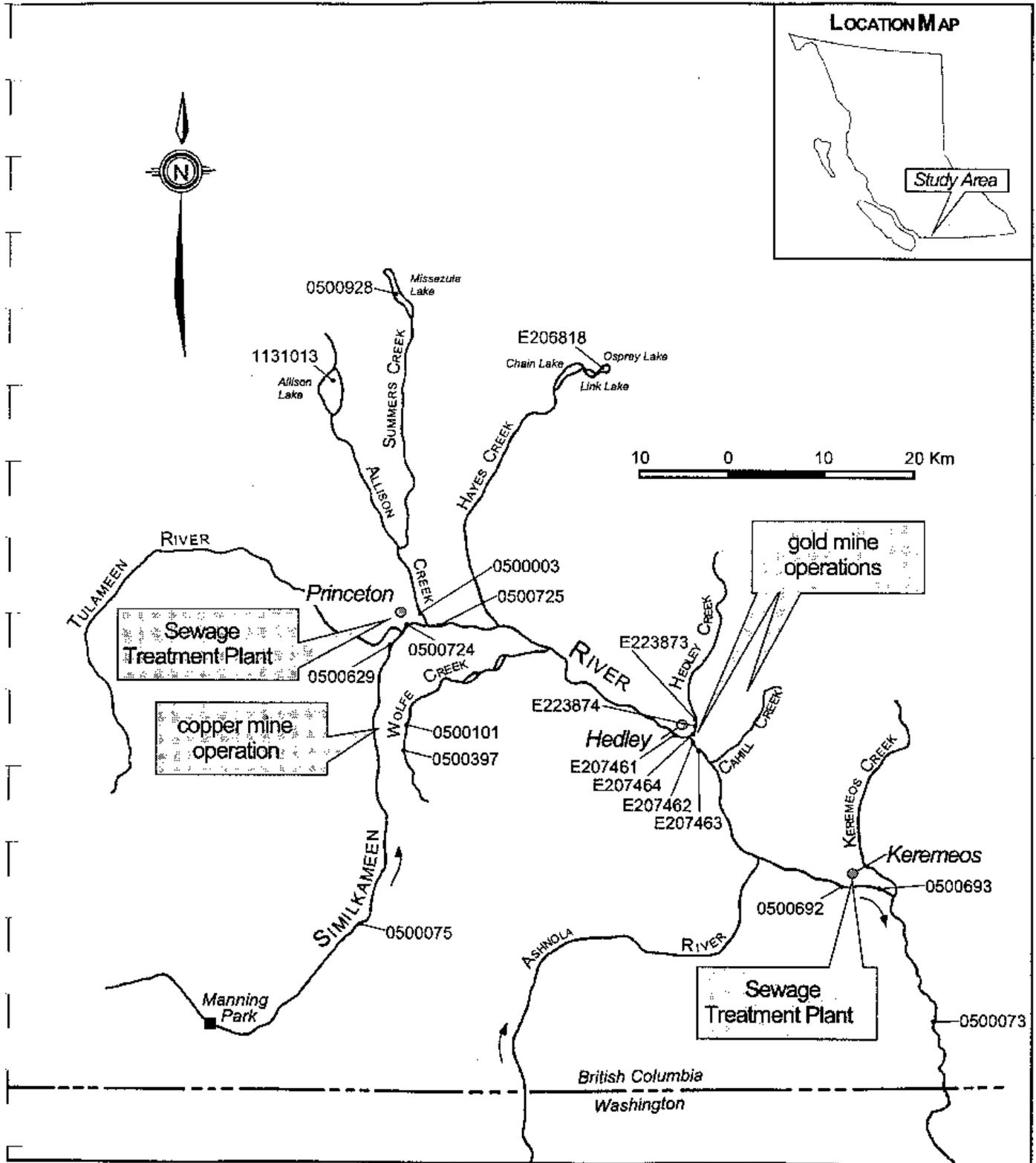


Figure 17. Cahill Creek.

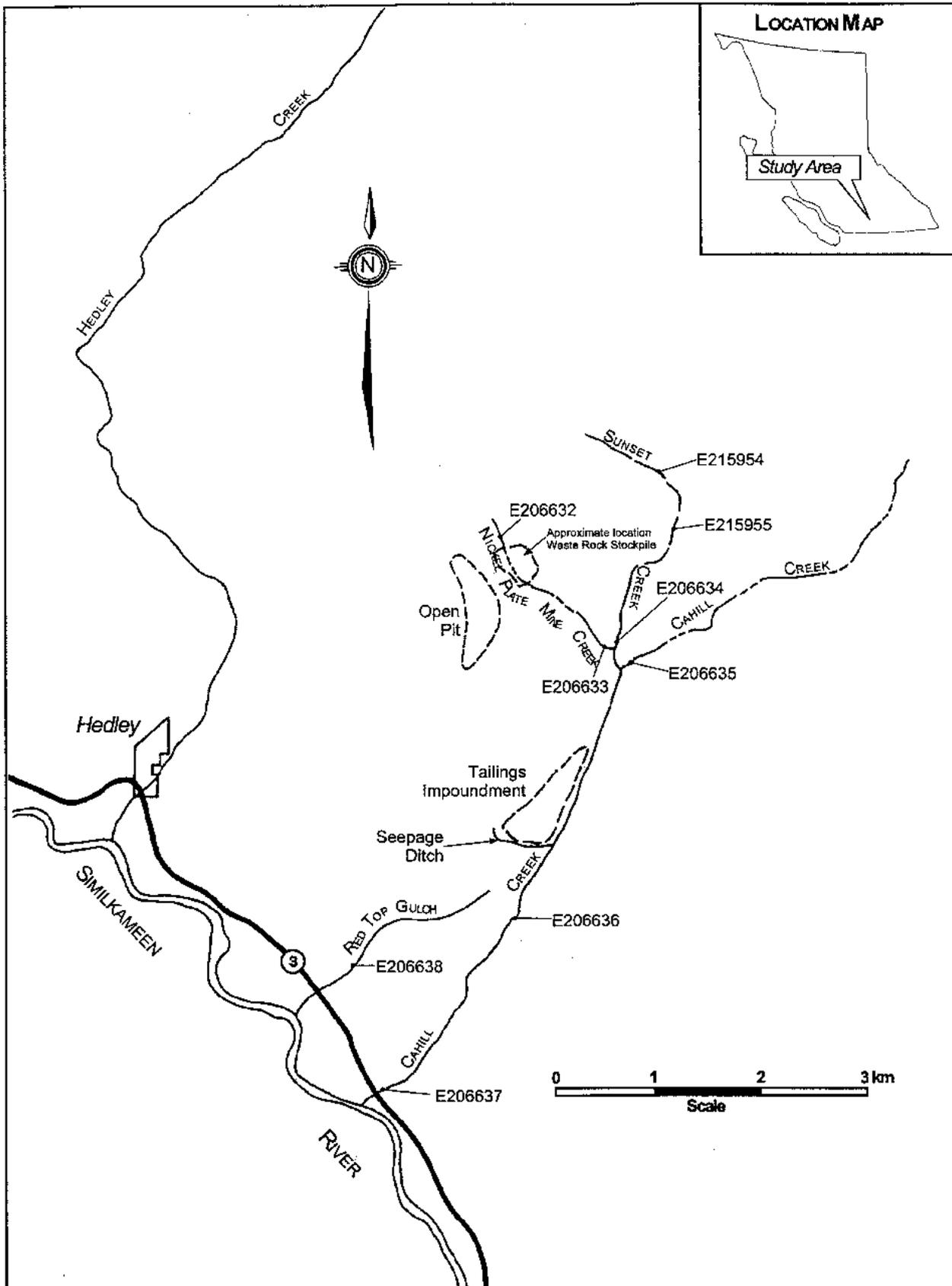


Figure 18. Christina Lake

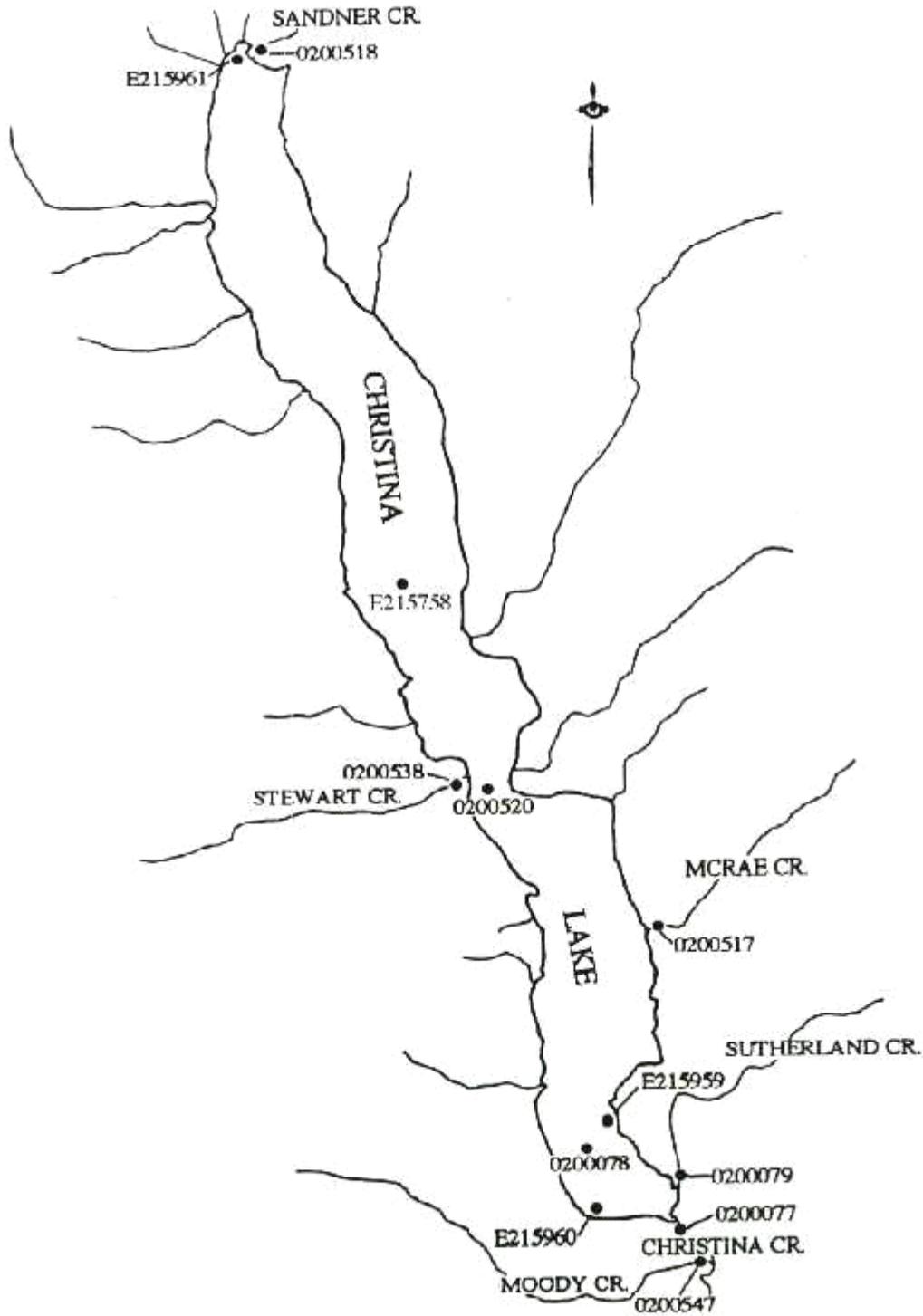


Figure 19. Thompson River.

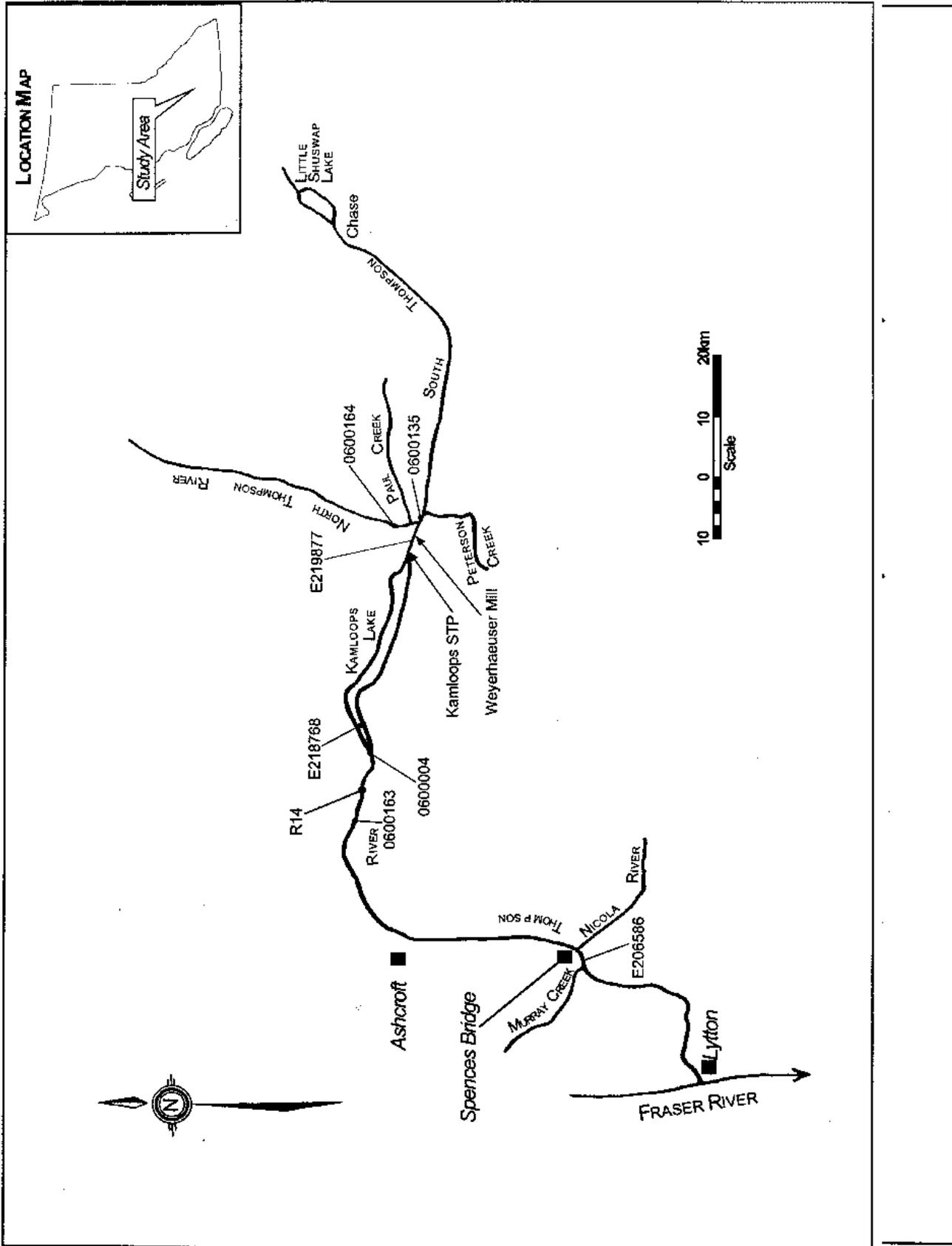


Figure 20. Keremeos Creek.

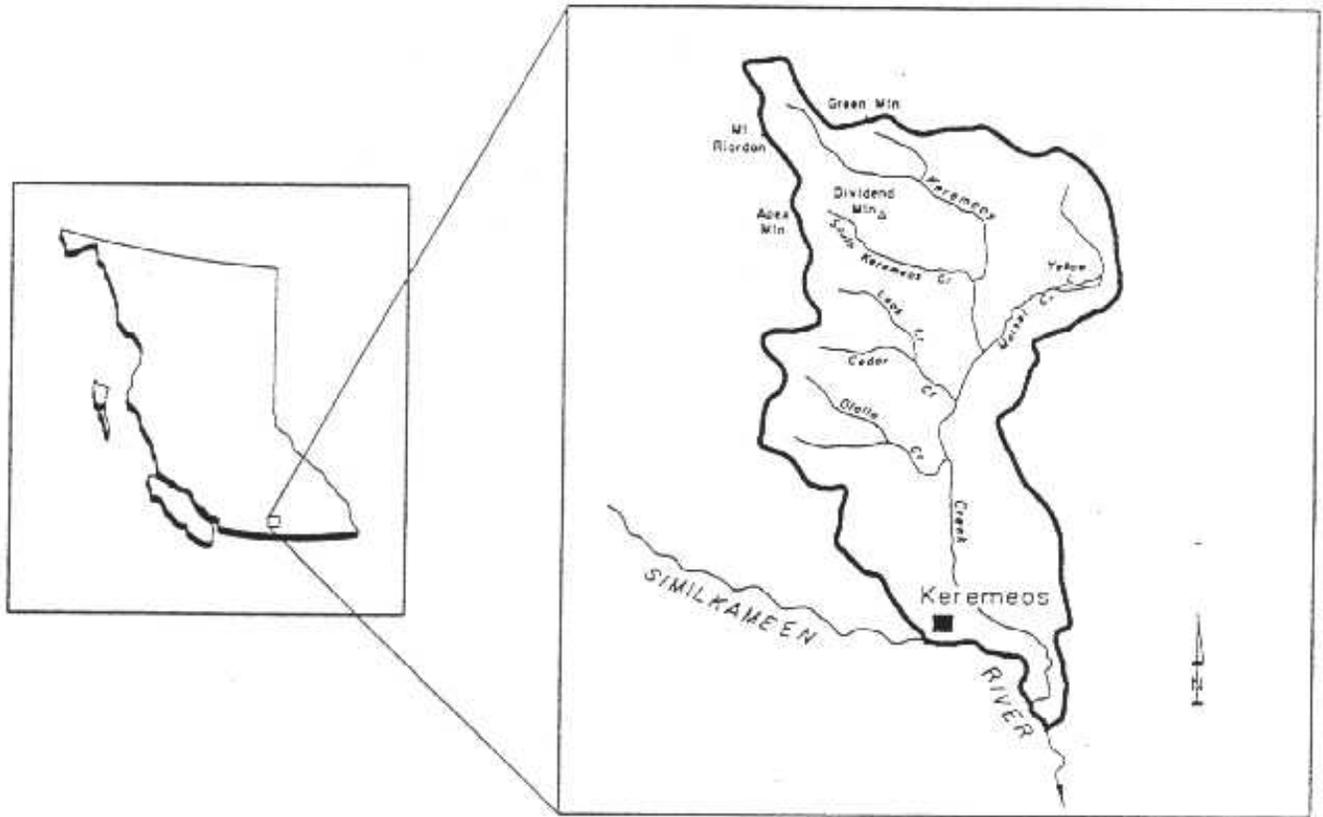


Figure 21. Columbia River - Keenleyside to Birchbank.

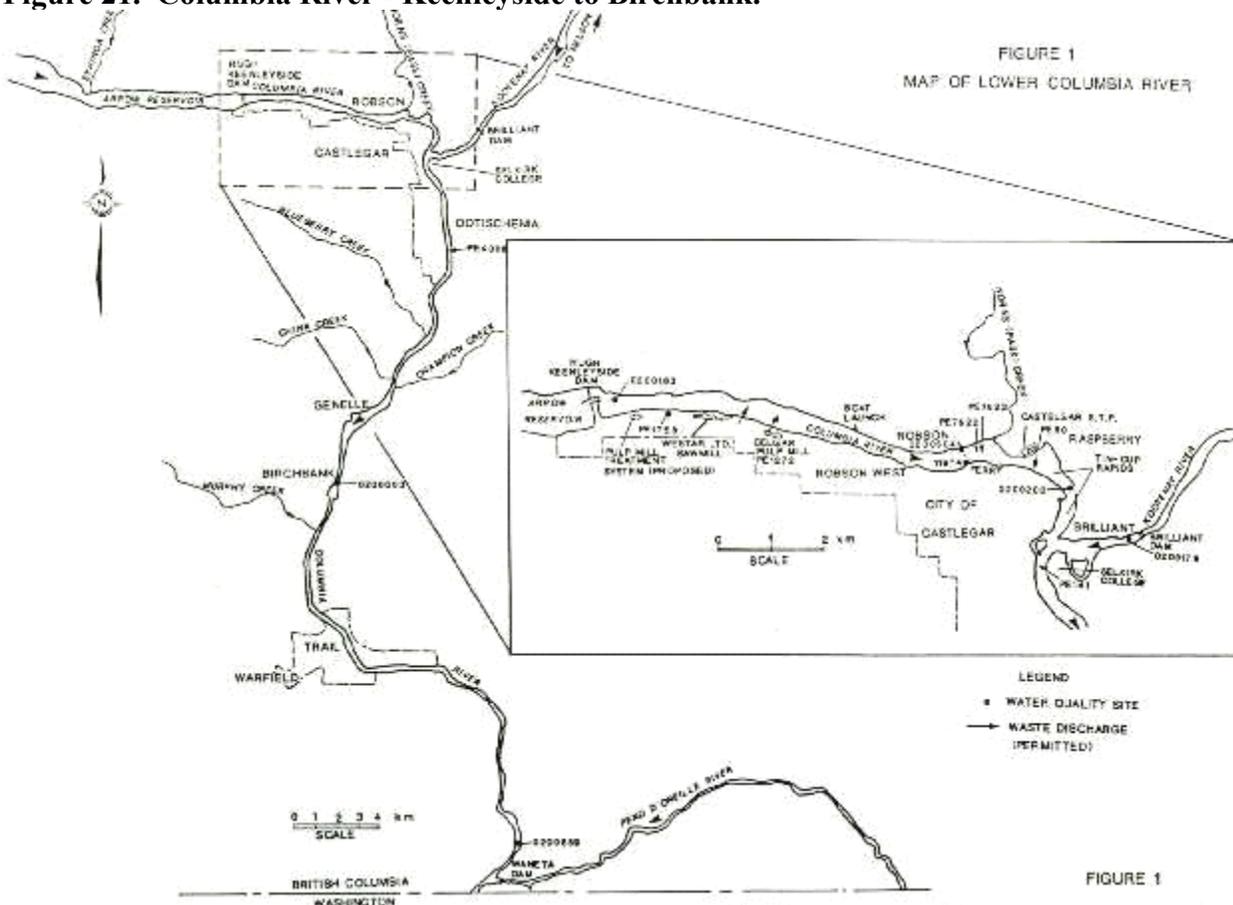


Figure 22. Columbia River from Birchbank to the International Border.

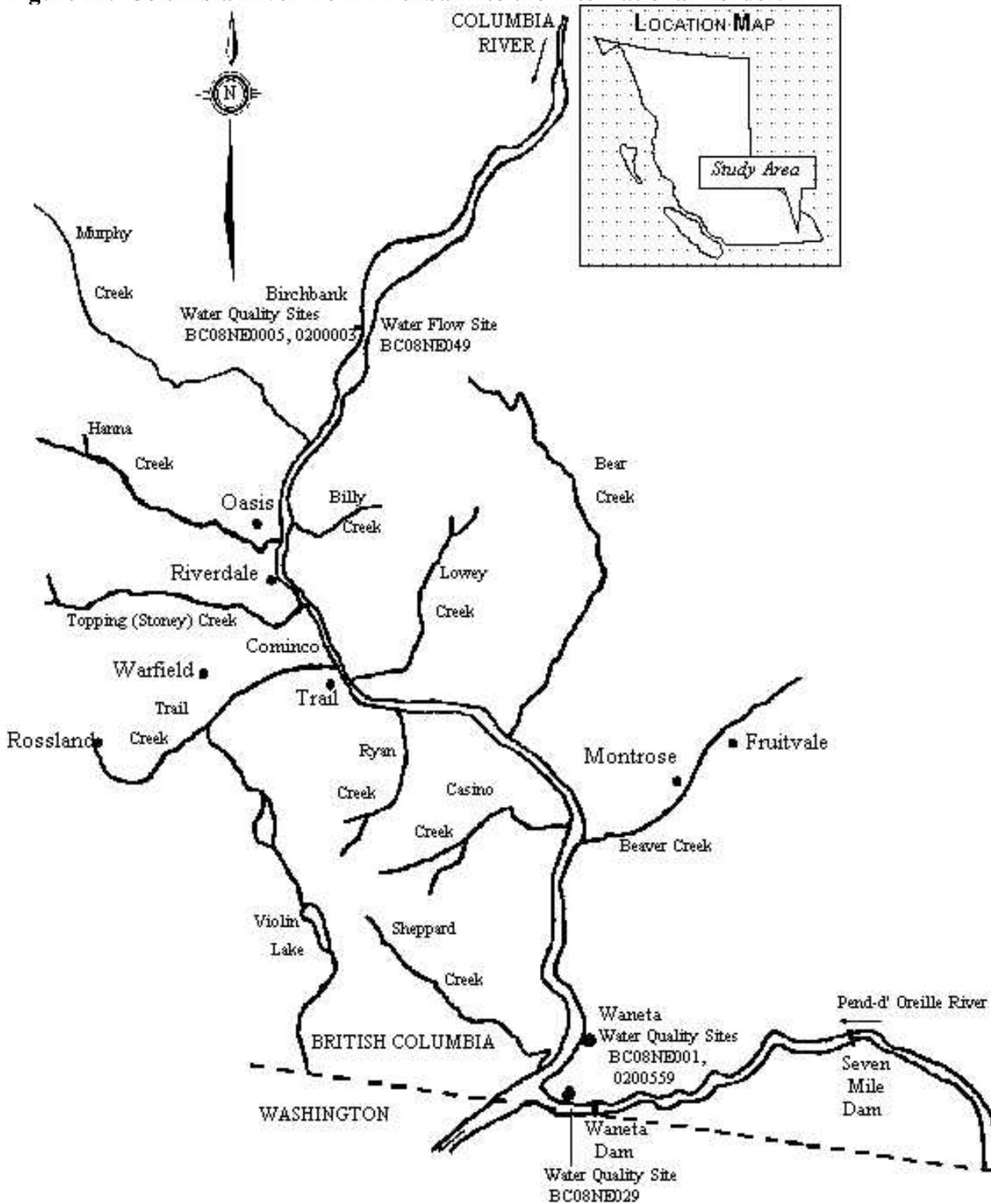


Figure 24. Boundary Bay.

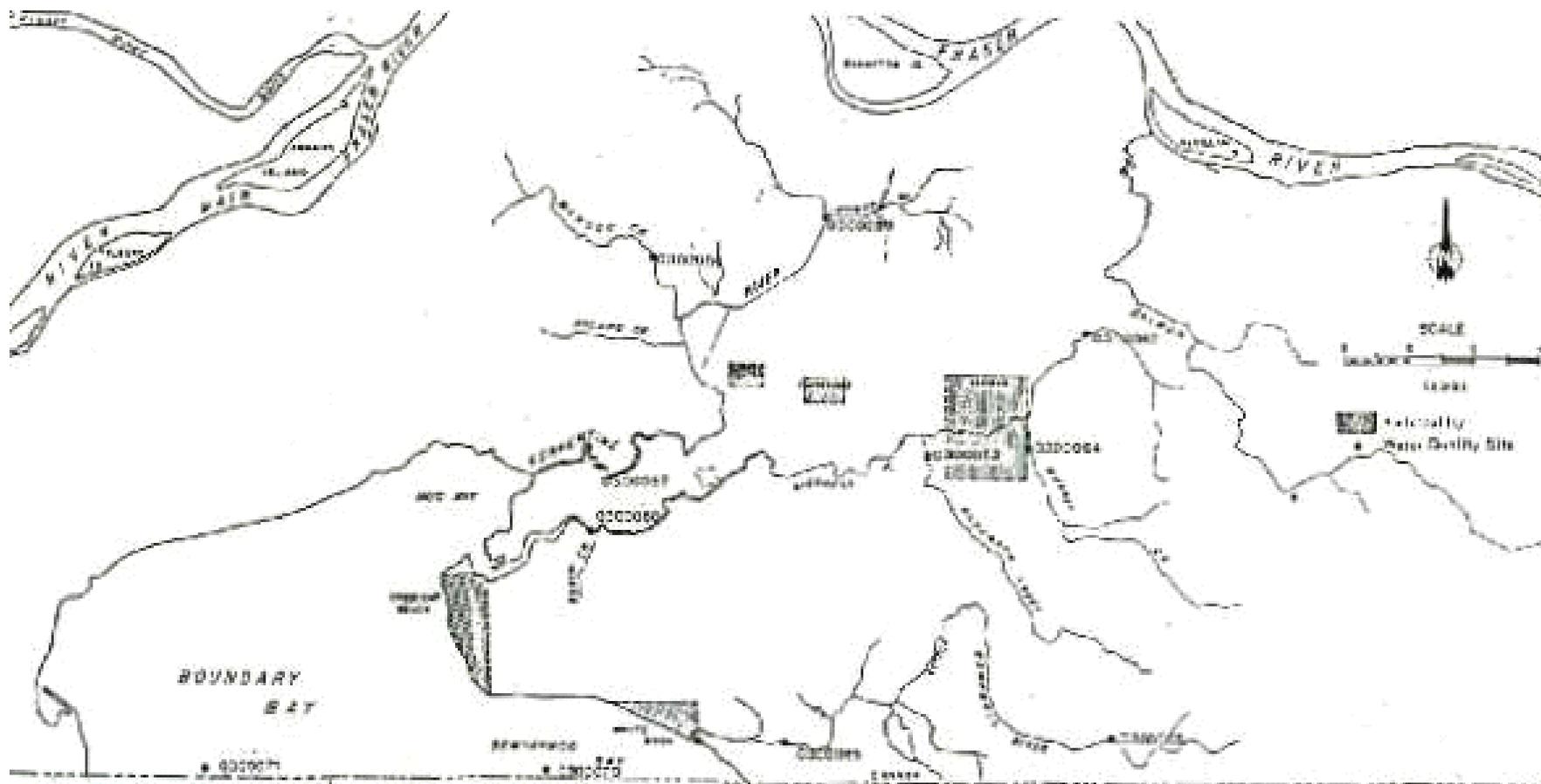


Figure 25. Burrard Inlet.

