Assessment of the Tabor Lake Estates Drinking Water Supply: Source Water Characteristics

James Jacklin, March 2004[1]

Introduction

In British Columbia, drinking water quality is becoming a significant public issue. We all want to have confidence in the quality of the water we consume. Its protection is also important to local purveyors, who act as our water suppliers, and to provincial government ministries responsible for water management. Within the Omineca-Peace region of B.C., our most common potable source is ground water, although many communities do make use of rivers, streams or lakes. Our basic drinking water quality is determined by a number of factors including local geology, climate and hydrology. In addition to these, human land use activities such as urbanization, agriculture and forestry, and the pollution they may cause, are becoming increasingly important influences. Environmental managers have a responsibility to control land use development so as to minimise the effects of these activities on source water quality.

The province's Drinking Water Protection Act, enacted in October, 2002, places the responsibility for drinking water quality protection with the B.C. Ministry of Health and local water purveyors. However, through the B.C. Environmental Management Act, the British Columbia Ministry of Environment (MOE) is responsible for managing and regulating activities in watersheds that have a potential to affect water quality. Accordingly, the Ministry plans to take an active role in protecting drinking water quality at its source.

Plate 1. A view of the north end of Tabor Lake with the Tabor Lake Estates pump house in the center of the photo.

MOE implemented a raw water quality and stream sediment monitoring program at selected communities in the Omineca-Peace region in 2002. Community sites were selected using a risk assessment process that considered:

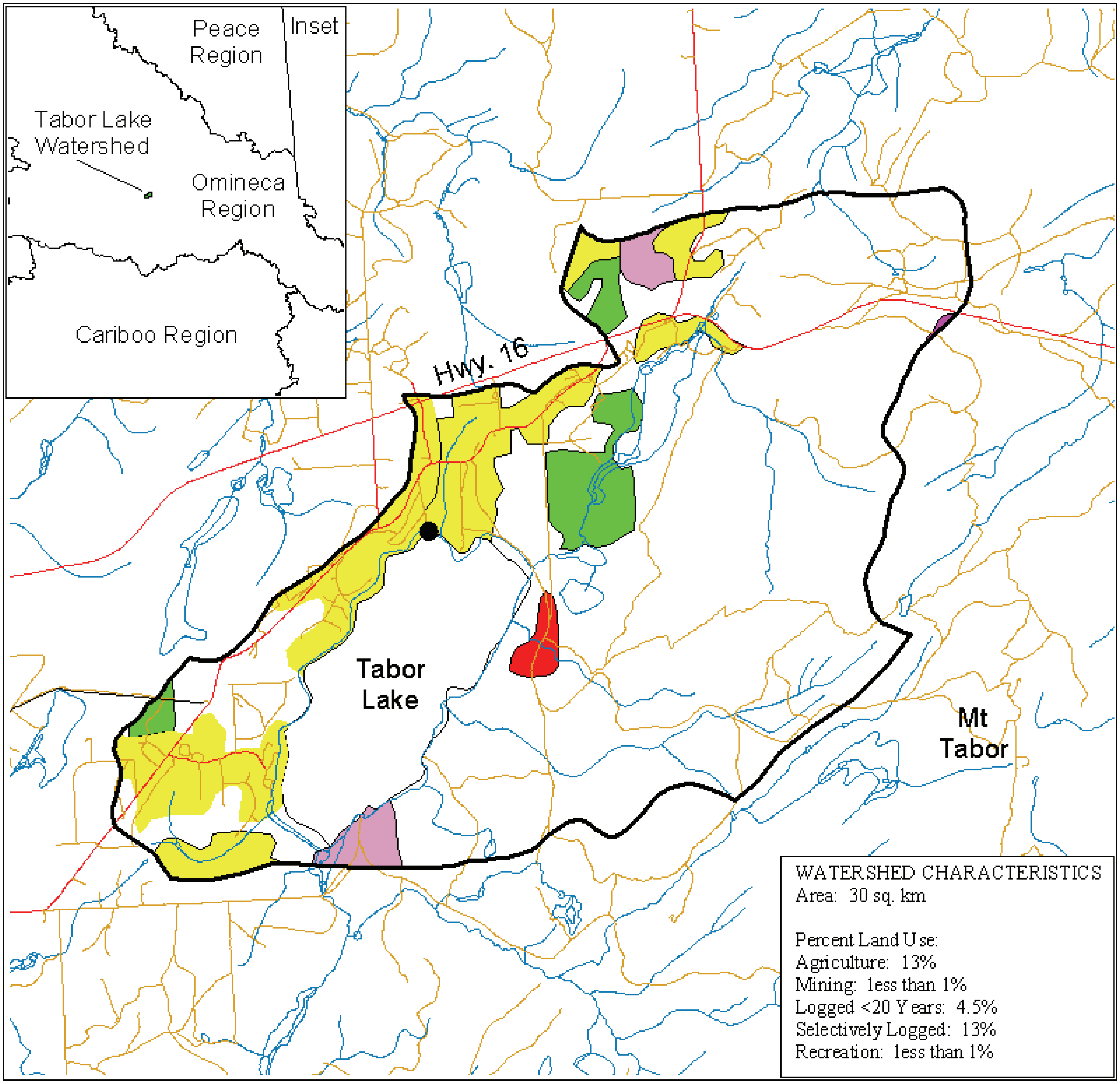
- whether the source supply was surface water or ground water,
- the level of water treatment,
- the population size served,
- the potential for upstream diffuse and point-source pollution,
- the availability of current, high-quality and representative data on each raw water source,
- whether past outbreaks of waterborne illness had been reported,
- the ability/willingness of local purveyors to assist with sampling.

Through this process and with available funding, a total of 18 community water supplies in the Omineca-Peace region were selected for monitoring during 2002/03.

This brief report will summarise water quality data collected from the Tabor Lake Estates raw potable water source, Tabor Lake (Plate 1). The data are compared to current provincial drinking water quality guidelines meant to protect finished water if no treatment other than disinfection is present. This comparison should identify parameters with concentrations that represent a risk to human health. It is intended that this program will lead to the identification of human activities responsible for unacceptable source water quality, and that it will assist water managers to develop measures to improve raw water quality where needed.

[1] A template report was prepared for the author by Todd D. French of TDF Watershed Solutions, Research & Management and Bruce Carmichael, Ministry of Environment.

Tabor Lake Watershed



Data Source:
Land Use - Geographic Data BC, 1995
Trim2

Ministry of Sustainable Resource Management
Omineca-Peace Region (Prince George)

Project Date: Jan. 6, 2004
Projection: BC Albers Nad 83
Project I.D.: OP-101

This map is a visual representation and not to be used for legal purposes.

LEGEND

Tabor Lake Watershed

Transportation
- Road (Loose)
- Road (Paved)
- Rail Line
- Transmission Line
- Pipe Line

Land Use
- Agriculture
- Mining
- Logged <20 Years
- Selectively Logged
- Recreation
- WLAP 2002/2003 Watershed Sample Site

Scale: 1:50 000

Figure 1. Tabor Lake watershed and associated land-use practices.

Site Description

Watershed Overview

The Tabor Lake watershed (Figure 1) lies within the Sub-Boreal Spruce biogeoclimatic zone, which is characterized by gently rolling terrain, dense coniferous forests, and extremes in the annual temperature range of $^-40$°C to 30°C (B.C. Ministry of Forests, 1998).

The lake is located 15 km east of Prince George off Highway 16. The lake is a popular recreational site and has a good rainbow trout fishery. The lake is considered eutrophic and has a surface area of 4.08 km^2, a volume of 2.20 x 10^7 m^3 and a mean depth of 5.4 m. A bathymetric map of Tabor lake, which defines the depth contours, is shown in Figure 2. The flushing rate, as calculated by Lyle Larson (MOE), is 0.24 times/yr. Skaret Creek is the only named tributary that has sufficient flow to adequately feed the lake throughout the entire year (Ableson, 1980). Tabor Mountain Creek is the other named tributary, with Tabor Creek being the outflow which subsequently drains into the Fraser River.

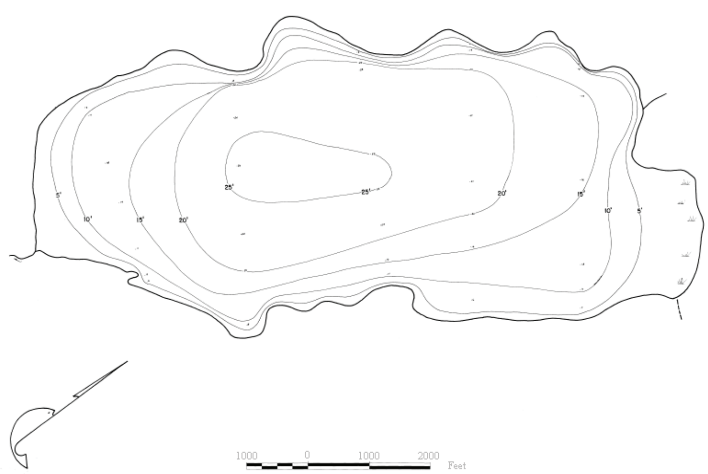


Figure 2. A bathymetric map of Tabor Lake showing depth contours (fishwizard.com).

The predominant land-use in the watershed is forestry, with agriculture, urban development, mining, and recreation also having potential impacts on regional water quality. There is abundant development on the shores of Tabor Lake; however, results from Carmichael's 1994 report suggest the water quality is still favourable for water contact and domestic use (with treatment). A major white fish kill did occur in the summer of 1993, likely resulting from a lack of oxygen in shallow waters.

There are currently seven water withdrawal licenses on Tabor Lake including both domestic and municipal users. As indicated in the Tabor Lake report by the Water Management division of Lands and Water B.C. (February 14, 2002), the total withdrawl volume is 380.6 m^3/day. Water levels within the lake are controlled by a weir located on the eastern outlet (Robin Fairservice, personal communication). This weir is managed by the Regional District of Fraser-Fort George.

Drinking Water Supply & Treatment

Tabor Lake Estates draws its domestic water supply from a pump house located in the northwest corner of Tabor Lake. As measured with a GPS, the geographic co-ordinates of the pump house are 53°55.718'N/122°32.191'W. At the pump house, the water is treated by pressure, multi-media filters and chlorination. Treated water is then transported to a 40 lot subdivision (Fairservice, p.c.).

Tabor Lake Estates has no current concerns with the existing water system, regarding both source and treatment (Fairservice, p.c.). Historical issues regarding the drinking water included colour and odour problems, however, no significant problems have occurred in recent years. One minor concern is iron and manganese levels, which have been noted to stain residents cookware, however, these are not major concerns with respect to health.

Materials & Methods

Review of Previous Data

Historical data relevant to the Tabor Lake Estates source water assessment have been included in this report. The following data were copied from MOE computer files: E227184 (Tabor Lake Littoral Site), E208768 (Tabor Lake North Station) and NHA treated water trihalomethane data. No relevant bacterial data were found during the data search.

Sample Collection & Analyses for the 2002/03 Water Monitoring Program

An experienced consultant and/or MOE staff member collected water samples in laboratory certified polyethylene bottles for a variety of chemical and bacterial analyses. Representative grab samples were collected from the raw water tap inside the Tabor Lake Estates pump house (site E249355 - Water Source ID Tag 1320). The chemical results, analytical detection levels and drinking water quality guidelines are provided in Table 1, Appendix A.

Bottles used for general ion analyses were rinsed three times with source water prior to sample collection. Metal and bacterial bottles were not rinsed and metal samples were lab preserved. Prior to sampling the raw water tap, the source was flushed for 5 minutes in order to minimize contamination by system piping. Water samples were shipped by overnight courier in coolers with ice packs to

CanTest Ltd. (from September 2002-March 2003) and JR Laboratories Inc. (April 2003 to September 2003) for bacteria and PSC Environmental Services Ltd. for chemistry. Bacterial samples were analysed using membrane filtration. Metals analysis made use of ICPMS technology. Dissolved metal samples were lab filtered within 24 hours after collection through a 0.45 µm membrane filter. Samples for the analysis of cysts and oocysts of the *Giardia* and *Cryptosporidium* parasites were collected using the high volume filtering method described in EPA (1995) (Plate 2 and Figure 3). Filters were shipped by overnight courier in a cooler with ice packs to the B.C. Centre for Disease Control's Enhanced Water Laboratory for analysis.

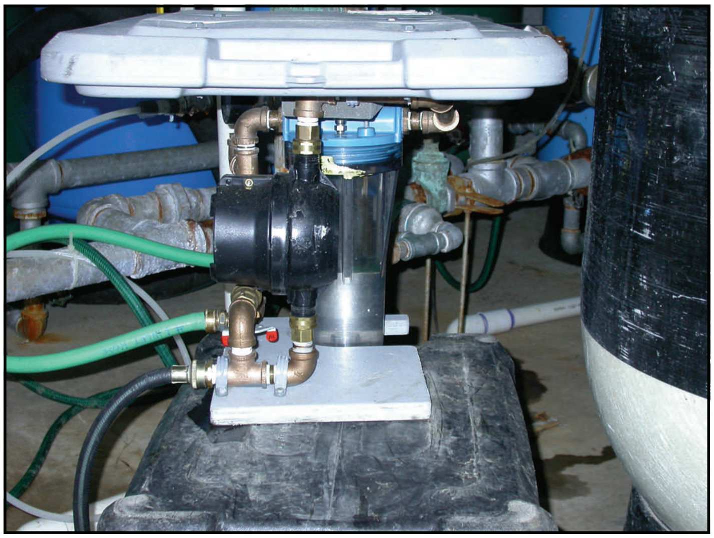


Plate 2. The parasite filtration kit set up inside the Tabor Lake Estates pump house.

Bottom Sediment Quality

Bottom sediments were collected from Tabor Lake on September 15th, 2003. Lake sediment was analyzed to determine the possible presence of contaminants that were not detected in the water samples. Where follow up is deemed to be necessary, additional monitoring will depend on the type and level of contamination. The sample was collected using an Ekman dredge that was lowered from a boat into the bottom sediments near the drinking water intake. Sediment samples were then collected using two acetone washed stainless steel spoons for organic analysis, and plastic spoons for metal/grain size analysis. A 3-5 cm deep sediment sample was gently scooped from a number of areas in the Ekman sample with the large spoon. Each of these scoops was sub-divided from the larger spoon into jars for grain size, total organic carbon, hydrocarbons and pesticides, using a second, smaller spoon. Sediment samples were kept cool and shipped to PSC Environmental Laboratories Ltd. for analysis within three days of collection. Samples for metals analysis were dried with heat, disaggregated, sieved at 2 mm and leached with a strong acid. Samples for organic analysis were processed wet and without screening. Results are expressed in dry weight. The sample date and sample parameter concentrations are provided in Table 2, Appendix A.

For further details on the analytical methods abbreviated above, refer to Greenberg *et al.* (1992), EPA (1995), PSC (2002) and British Columbia Field Sampling Manual (2003).

Quality Assessment (QA)

To ensure accuracy and precision of data, quality assurance and control (QA/QC) procedures were incorporated into the monitoring program. This included use of rigorous sampling protocols, proper training of field staff, setting of data quality objectives and the submission of QA samples to the lab. Field QA included duplicate and blind blank samples. Blank samples detect contamination introduced in the field and/or in the lab. A comparison of duplicate results measures the effect of combined field error, laboratory error and real between-sample variability. The blind blank and duplicate program accounted for roughly 20% of the overall chemistry and bacterial sample numbers.

Duplicate sediment samples (which were collected from one stream in the drinking water program) were collected by distributing sediment from each scoop into both sample jars. Differences between duplicate results indicate collection and/or analytical inconsistency and/or natural variability in physical and chemical properties.

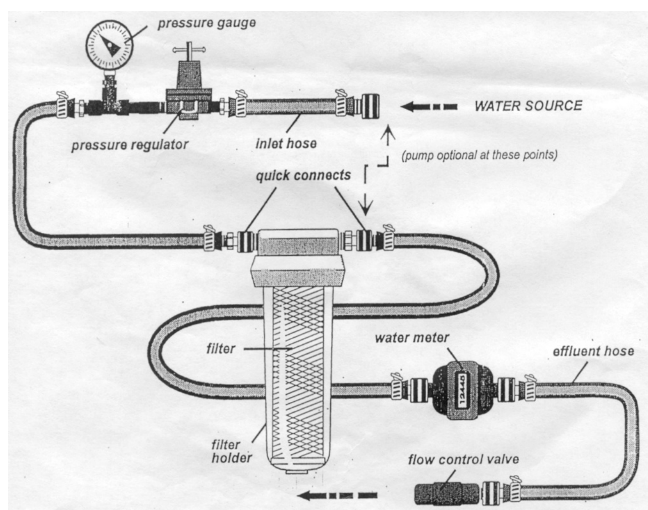


Figure 3. Schematic of the high-volume filtration unit used to sample raw water for Cryptosporidium oocysts and Giardia cysts (from EPA 1995)

Results

Review of Previous Data

Water Chemistry

The historical chemistry data collected by the Ministry at the sites E227184 and E208768 are presented in Tables 3 and 4, Appendix A. Most parameters tested were below recommended drinking water guidelines. Most data was collected for the purpose of determining changing nutrient conditions rather than for drinking water purposes. Therefore, the historical data does not encompass a wide range of parameters. The historical total phosphorus data that was examined was from 1990-95. Most total phosphorus samples were detected at concentrations greater than 0.01 mg/L, the recommended drinking water quality guideline for lakes.

The trihalomethane data collected by the NHA is presented in Table 5, Appendix A. Chloroform was detected above the MDL, however the value of 13 µg/L is well below the drinking water guideline of 100 µg/L.

Water Monitoring Program (2002/03)

Quality Assessment (QA)

The field blank and duplicate results indicate that no field or lab contamination of samples with bacteria occurred and that acceptable precision in bacterial sampling and analysis was observed. The parasite analysis provided duplicate precision results for *Giardia* of between 7 and 26%. No duplicate *Cryptosporidium* oocyst analysis produced detectable results.

The five water chemistry field blank samples that were prepared either the same day or within one day of the Tabor Lake collections tested positive for some parameters. The concentration of most of these parameters was either very close to or less than 5-fold the minimum detectable concentration, an acceptable threshold as per the lab acceptance criteria. Three parameters exceeded these acceptance criteria significantly and are listed below in Table 6.

Table 6. Blind blank samples that tested strongly positive (≥ 5-fold MDL) for chemical contamination.

Date	Parameter	Measured Concentration	MDL
Jan. 20/03	Sulfate	14.6 mg/L	0.5 mg/L
Mar. 17/03	Copper-Total	0.33 µg/L	0.05µg/L
Mar. 17/03	Zinc-Total	0.7 µg/L	0.1 µg/L

Although the levels of some of these blank results are equal to or greater than the actual concentrations observed in Tabor Lake on some dates, the values are usually well below provincial raw drinking water guidelines by greater than two orders of magnitude. The contamination that did occur may have resulted during the deionization process in the lab or during the transfer of the deionized water between bottles in the field. Regardless, these levels of blank contamination should not limit the comparison of data to water quality guidelines.

The five water chemistry duplicate samples that were prepared either the same day or within one day of the Tabor Lake collections did have some values outside the lab acceptance criteria of 25% relative percent difference (Table 7, Appendix A). The differences that are present may be due to problems with collection and/or analytical precision. Of particular concern are the imprecision's of copper and lithium, which occurred well above their respective detection level. All of the parameters that did have differences greater than 25% between the duplicates were nonetheless well below recommended drinking water guidelines.

The duplicate sediment samples indicated that the variations between duplicates were most likely the result of natural in-stream variations rather than collection and/or analytical inconsistencies (Table 8, Appendix A). The lab acceptance criteria for duplicate variation is 35% for metals and other inorganics. All duplicate values, as indicated in Table 7, are within this range.

Bacteriology

The 2002/03 bacterial data are summarised in Table 9. Drinking water quality guidelines are ≤100CFU/100 mL (90th perc.) for *E. coli* and fecal coliforms and ≤25CFU/100 mL (90th perc.) for *Enterococci* in systems that receive partial treatment.

Table 9. Results of bacterial analyses for Tabor Lake Estates source water supply. Units are CFU/100mL.

Date	Total Coliform	*E. coli*	*Enterococci*	Fecal Coliform
Provincial Guideline	No Provincial Guideline	≤100CFU/100 mL (90th perc.)	≤25CFU/100 mL (90th perc.)	≤100CFU/100 mL (90th perc.)
Oct. 10/02	3	<1	<1	<1
Jan. 21/03	<1	<1	<1	<1
Mar. 18/03	3	<1	**15**	<1
Apr. 24/03	100	<2	**12**	<2
May 21/03	2	<2	<2	<2
Aug. 11/03	<1	<1	<1	<1

The analysis of the March 18th, 2003 and the April 24th, 2003 samples produced hits for *Enterococci.* Although the *Enterococci* concentrations are lower than their recommended guideline for partial treatment, these concentrations could induce human illness should treatment become ineffective.

Although total coliforms were detected above the detection level on numerous dates, there is currently no recommended guideline for these bacteria. Furthermore, total coliforms are found naturally in many water bodies and do not necessarily indicate harmful land use activities. They do suggest that more harmful bacteria may be present in the system and that further sampling should occur.

Care must be taken when interpreting these data, as recommended guidelines for raw water using partial treatment require five samples to be collected in a 30 day period. The

90th percentile of these samples would then need to be over the stated guideline for that guideline to be exceeded. This study did not sample five times in a 30 day period, but rather six times throughout the entire year. While these data do not technically exceed the B.C. water quality guidelines, the two very significant *Enterococci* values suggest that further monitoring should be considered.

Parasitology

The 2002/03 parasite data are summarised in Table 10. No *Cryptosporidium* oocysts or *Giardia* cysts were detected in any of the samples throughout the duration of this study. From this dataset, it is apparent that protozoa densities are generally low at the northwest corner of Tabor Lake throughout the year.

Table 10. Parasite densities observed in Tabor Lake over the period October 15th, 2002 to August 11th, 2003 (samples collected from the raw water tap in the Tabor Lake Estates pump house).

Date	*Cryptosporidium* (oocysts/100L)	*Giardia* (cysts/100L)
*Oct. 15/02	<24.7	<24.7
Jan. 21/03	<4.3	<4.3
Mar. 18/03	<3.4	<3.4
Apr. 24/03	<3.9	<3.9
May 21/03	<3.7	<3.7
Aug. 11/03	<8.6	<8.6

*Sample collected directly from Tabor Lake

Water Chemistry

In 2002/03, the Tabor Lake Estates raw water supply was sampled on six different dates. The water samples were analysed for 15 general parameters as well as the ICPMS low level metals package that includes 27 metals in both the total and dissolved form. Of the chemical parameters tested through the duration of this study, three exceeded water quality guidelines. A description of these parameters, their concentrations during this study and possible anthropogenic sources are listed below (RIC, 1998).

Colour (TCU) - The mean colour concentration for the year was 15.8 TCU with a maximum of 20 TCU (the recommended water quality guideline is 15 TCU). The colour of water is a measure of the dissolved compounds (attributed to the presence of organic and inorganic materials). High colour levels are regarded as a pollution problem in terms of aesthetics, and can be produced by agricultural and industrial effluents. Colour can also originate naturally from organic soils and wetlands.

Total Organic Carbon (mg/L) - The mean TOC concentration was 8.2 mg/L, over the recommended guideline of 4 mg/L. This is a measure of the dissolved and particulate organic carbon. TOC can be important in drinking water systems that use chlorination, as high levels can promote the formation of trihalomethanes which are considered carcinogens. Sources of TOC include agricultural, municipal and industrial waste discharges. Natural sources are similar to those for colour.

Manganese, Total (µg/L) - The mean manganese concentration was 56 µg/L with a maximum of 84 µg/L, both exceeding the aesthetic objective of 50 µg/L. Manganese can colour water and form colloidal material that can be difficult to remove.

A complete list of the results as well as their corresponding guideline is attached in Table 1, Appendix A. A list of the raw data is available in Table 11, Appendix A.

Bottom Sediment Chemistry

Of the 29 sediment metals analyzed, 28 were detected (Table 2, Appendix A). However, water samples collected through the duration of this project showed low concentrations relative to existing drinking water guidelines for most parameters.

Total oil & grease was also detected in the sediment sample at a concentration of 1600µg/g.

No compounds in the following classes were detected in Tabor Lake sediments:

- Chlorinated phenols
- Phenoxy acid herbicides
- Organochlorine pesticides
- Polychlorinated biphenyls
- Organophosphorus pesticides
- Polycyclic aromatic hydrocarbons

Conclusions & Recommendations

Review of the Tabor Lake data indicates a good overall raw drinking water quality. Most water soluble contaminants were present at concentrations below drinking water guidelines. Parasite densities were below the detection level on all dates throughout the year. *Enterococci* were detected above the detection level on two dates. Although the concentrations were below recommended drinking water guidelines for systems that undergo partial water treatment, the concentrations could induce human illness should treatment become ineffective.

Monitoring of Tabor Lake Estates treated water for bacteria and trihalomethanes is recommended. Because the raw water did have high TOC concentrations, and chlorination is used during the disinfection process, trihalomethanes may result as a potential bi-product. Also, the monitoring of bacteria, especially *Enterococci*, may be beneficial to ensure that water treatment is fully effective.

Bottom sediments located near the water intake should be further examined. Another sample needs to be taken to help identify whether the previous oil and grease detection was a result of anthropogenic sources (mainly petroleum hydrocarbons), or from the natural breakdown of organic material. Furthermore, if the results do indicate that the total oil and grease are the result of human activities, recreational and urban activities in the area need to be examined.

Acknowledgements

We thank Mr. Robin Fairservice, P.Eng. (Tabor Lake Estates) for his useful insight and his direction around the water supply. Mr. Todd French is recognized for his help in designing and implementing the project (TDF Watershed Solutions, Research & Management). Mr. Mohamad Khan (Enhanced Water Laboratory, B.C. Centre for Disease Control, Vancouver) provided us with the *Cryptosporidium* and *Giardia* sampling equipment, documentation on parasite collection methodologies and information critical to data interpretation. The NHA is thanked for giving us access to historical water quality data.

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Contact Information

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Appendix A

Table 1. 2002/03 sample parameters, summaries of current results and associated B.C. drinking water guidelines.

Parameter	# of Values	Min.	Max.	Mean	Std. Dev.	MDL	D.W. Guideline	Guideline Type
General								
pH	6	7.6	8.2	7.9	0.19	0.1	6.5-8.5	aesthetic objective
Colour (TCU)	6	10	20	15.8	4.92	5	≤ 15	aesthetic objective
Specific Conductance (µS/cm)	6	136	166	147	12.1	1	≤ 700	maximum acceptable concentration
Turbidity (NTU)	4	0.77	1.44	1.00	0.298	0.1	≤ 5	maximum acceptable concentration
Hardness Total (mg/L)	6	61	74.4	67.6	5.38			
Hardness Total -Diss. (mg/L)	6	63	76.1	67.2	5.20		≤ 500 $CaCO_3$	aesthetic objective
Alkalinity (mg/L)	6	55.6	67	60.7	4.67	0.5		
Residue Non-Filterable (mg/L)	6	4	4	4	0.0	4		
Total Organic Carbon (mg/L)								
TOC	6	7.5	9.1	8.22	0.574	0.5	≤ 4	maximum, to control THM production
Anions (mg/L)								
Chloride Dissolved	6	4.3	8.8	5.62	1.618	0.5	≤ 250	aesthetic objective
Fluoride Dissolved	6	0.02	0.04	0.03	0.008	0.01	≤ 1.5	maximum acceptable concentration
Bromide Dissolved	6	0.1	0.1	0.1	0.00	0.1		
Nutrients (mg/L)								
Nitrate+Nitrite	6	0.002	2.53	0.478	1.007	0.002	≤ 45 (Nitrate)	maximum acceptable concentration
Phosphorus Total	6	0.012	0.047	0.027	0.016	0.002	≤ 0.01	Maximum (lakes only)
Phosphorus Total-Diss.	6	0.007	0.038	0.016	0.011	0.002		
Sulphate (mg/L)								
Sulphate	6	3.7	5.8	4.5	0.71	0.5	≤ 500	aesthetic objective
Metals Total (ug/L)								
Aluminum-T	6	2.7	25.2	10.3	8.42	0.3		
Aluminum-D	6	1.6	3.8	2.7	0.97	0.3	≤ 200	maximum acceptable concentration
Antimony-T	6	0.07	0.106	0.084	0.014	0.005	≤ 6	interim maximum acceptable concentration
Antimony-D	6	0.039	0.079	0.067	0.014	0.005		
Arsenic-T	6	0.4	1.2	0.6	0.32	0.1	≤ 25	interim maximum acceptable concentration
Arsenic-D	6	0.4	1.2	0.6	0.32	0.1		
Barium-T	6	8.7	17.2	14.4	3.12	0.02	≤ 1000	maximum acceptable concentration
Barium-D	6	7.18	17.5	13.63	3.523	0.02		
Beryllium-T	6	0.02	0.02	0.02	0.000	0.02		
Beryllium-D	6	0.02	0.02	0.02	0.000	0.02		
Bismuth-T	6	0.02	0.3	0.08	0.111	0.02		
Bismuth-D	6	0.02	0.09	0.03	0.029	0.02		
Cadmium-T	6	0.01	0.37	0.07	0.147	0.01	≤ 5	maximum acceptable concentration
Cadmium-D	6	0.01	0.04	0.02	0.012	0.01		
Calcium-T (mg/L)	6	18.2	22	20.1	1.54	0.05		
Calcium-D (mg/L)	6	18.7	22.7	19.9	1.56	0.05		
Chromium-T	6	0.2	0.2	0.2	0.00	0.2	≤ 50	maximum acceptable concentration
Chromium-D	6	0.2	0.2	0.2	0.00	0.2		
Cobalt-T	6	0.005	0.056	0.026	0.019	0.005		
Cobalt-D	6	0.005	0.034	0.011	0.012	0.005		
Copper-T	6	0.86	2.06	1.28	0.486	0.05	≤ 1000	aesthetic objective
Copper-D	6	0.7	1.82	1.13	0.486	0.05		
Iron-T (mg/L)	5	0.043	0.123	0.077	0.033	0.005	≤ 0.3	aesthetic objective
Iron-D (mg/L)	5	0.005	0.03	0.020	0.009	0.005		
Lead-T	6	0.12	0.53	0.28	0.142	0.01	≤ 10	maximum acceptable concentration
Lead-D	6	0.01	0.24	0.08	0.089	0.01		
Lithium-T	6	0.05	0.71	0.38	0.209	0.05		
Lithium-D	6	0.05	0.45	0.31	0.136	0.05		
Magnesium-T (mg/L)	6	3.77	4.72	4.22	0.372	0.05		
Magnesium-D (mg/L)	6	3.91	4.72	4.22	0.337	0.05	≤ 100	aesthetic objective

Table 1 Continued.

Parameter	# of Values	Min.	Max.	Mean	Std. Dev.	MDL	D.W. Guideline	Guideline Type
Manganese-T	6	28.1	84	56.4	24.05	0.008	≤ 50	aesthetic objective
Manganese-D	6	0.935	38.3	11.554	14.308	0.008		
Molybdenum-T	6	0.041	0.55	0.360	0.175	0.05	≤ 250	maximum acceptable concentration
Molybdenum-D	6	0.33	0.52	0.40	0.064	0.05		
Nickel-T	6	0.08	0.37	0.19	0.100	0.05		
Nickel-D	6	0.11	0.2	0.15	0.033	0.05		
Selenium-T	6	0.2	0.2	0.2	0.00	0.2	≤ 10	maximum acceptable concentration
Selenium-D	6	0.2	0.2	0.2	0.00	0.2		
Silver-T	6	0.02	0.02	0.02	0.000	0.02		
Silver-D	6	0.02	0.02	0.02	0.000	0.02		
Sodium-T (mg/L)	5	4.21	5.97	4.72	0.719	0.05	≤ 200	aesthetic objective
Strontium-T	6	87.6	104	95.4	5.59	0.005		
Strontium-D	6	83.2	103	94.6	7.16	0.005		
Thallium-T	6	0.002	0.026	0.006	0.010	0.002	≤ 2	maximum acceptable concentration
Thallium-D	6	0.002	0.009	0.004	0.003	0.002		
Tin-T	6	0.01	0.02	0.01	0.004	0.01		
Tin-D	6	0.01	0.01	0.01	0.000	0.01		
Uranium-T	6	0.015	0.046	0.031	0.011	0.002	≤ 100	maximum acceptable concentration
Uranium-D	6	0.02	0.037	0.029	0.006	0.002		
Vanadium-T	6	0.34	1.28	0.622	0.345	0.06	≤ 100	maximum acceptable concentration
Vanadium-D	6	0.19	0.71	0.43	0.196	0.06		
Zinc-T	6	1.3	13	7.6	4.62	0.1	≤ 5000	aesthetic objective
Zinc-D	6	2.3	11.2	5.6	3.36	0.1		

Table 3. Historical chemical data (site E227184) collected from Tabor Lake in July, 1997 by the B.C. Ministry of Water, Land and Air Protection. All values in mg/L.

Parameter	Value	Parameter	Value	Parameter	Value
Antimony-Dissolved	<0.05	Cobalt-Dissolved	0.012	Phosphorus Tot. Dissolved	<0.1
Aluminum-Dissolved	<0.05	Copper-Dissolved	<0.005	Phosphorus-Total	0.048
Alkalinity pH 4.5/4.2	74.7	Iron-Dissolved	0.011	Potassium-Dissolved	1.1
Arsenic-Dissolved	<0.05	Flouride-Total	0.04	Selinium-Dissolved	<0.05
Boron-Dissolved	<0.01	Hardness Total-Dissolved	84	Silicon-Dissolved	4.62
Barium-Dissolved	0.015	Lead-Dissolved	<0.05	Silica-Dissolved	9.7
Beryllium-Dissolved	<0.001	Magnesium-Dissolved	5.7	Silver-Dissolved	<0.01
Bromide-Dissolved	<0.05	Manganese-Dissolved	0.011	Sodium-Dissolved	5.9
Cadmium-Dissolved	<0.005	Molybdenum-Dissolved	<0.01	Strontium-Dissolved	0.127
Calcium-Dissolved	24.3	Nickel-Dissolved	<0.02	Sulfur-Dissolved	2.25
Carbon Diss. Inorganic	16.6	Nitrate Dissolved	<0.002	Sulfate-Total	5.8
Carbon Dissolved Organic	10.7	Nitrite-Total	<0.005	Tin-Dissolved	<0.05
Carbon Total Dissolved	27.3	Nitrogen-Total	0.74	Titanium-Dissolved	<0.002
Chloride-Disolved	8.5	Ortho-Phosphate-Dissolved	<0.05	Vanadium-Dissolved	<0.01
Chromium-Dissolved	<0.005	pH	8.13	Zinc-Dissolved	<0.002

Table 2. Sediment sampling results from September 15th, 2003.

Parameter	Unit	Value	Parameter	Unit	Value	Parameter	Unit	Value
% Moisture	(% W/W)		Diazinon	(µg/g)	<0.05	Propazine	(µg/g)	<0.05
0.063-2.00 mm	(% W/W)	1.22	Dichlorvos	(µg/g)	<0.05	Simazine	(µg/g)	<0.05
0.053-0.063 mm	(% W/W)	0.53	Ethion	(µg/g)	<0.05	Terbuthylazine	(µg/g)	<0.05
0.002-0.053 mm	(% W/W)	43.42	Fenitrothion	(µg/g)	<0.05	Terbutryn	(µg/g)	<0.05
<0.002 mm	(% W/W)	54.84	Fensulfothion	(µg/g)	<0.05	Triallate	(µg/g)	<0.05
Carbon - Tot. Inorg.	(µg/L)	<500	Fenthion	(µg/g)	<0.05	Triadimefon	(µg/g)	<0.05
Carbon - Tot. Org.	(µg/L)	140000	Fonofos	(µg/g)	<0.05	Trifluralin	(µg/g)	<0.05
Carbon - Tot.	(µg/g)	140000	Iodofenphos	(µg/g)	<0.05	Chlorpropham	(µg/g)	<0.05
Phosphorus - Tot.	(µg/g)	1690	Malathion	(µg/g)	<0.05	Dacthal (DCPA)	(µg/g)	<0.05
Aluminum - Tot.	(µg/g)	18800	Mevinphos-cis	(µg/g)	<0.05	Diallate (e)	(µg/g)	<0.05
Antimony - Tot.	(µg/g)	0.8	Methamidophos	(µg/g)	<0.05	Diallate (z)	(µg/g)	<0.05
Arsenic - Tot.	(µg/g)	4.9	Naled	(µg/g)	<0.05	Dichlobenil	(µg/g)	<0.05
Barium - Tot.	(µg/g)	177	Parathion	(µg/g)	<0.05	Dichloran	(µg/g)	<0.05
Beryllium - Tot.	(µg/g)	0.5	Parathion Methyl	(µg/g)	<0.05	Dichlofluanid	(µg/g)	<0.05
Bismuth - Tot.	(µg/g)	0.4	Phorate	(µg/g)	<0.05	Dicofol	(µg/g)	<0.1
Cadmium - Tot.	(µg/g)	0.69	Phosalone	(µg/g)	<0.1	Folpet	(µg/g)	<0.1
Calcium - Tot.	(µg/g)	12300	Phosmet	(µg/g)	<0.05	Nitrofen	(µg/g)	<0.05
Chromium - Tot.	(µg/g)	40	Phosphamidon	(µg/g)	<0.05	Permethrin, cis	(µg/g)	<0.05
Cobalt - Tot.	(µg/g)	12.4	Oil & Grease - Tot.	(µg/g)	**1600**	Permethrin, trans	(µg/g)	<0.1
Copper - Tot.	(µg/g)	53.2	Acenaphthene	(µg/g)	<0.01	Procymidone	(µg/g)	<0.05
Iron - Tot.	(µg/g)	28000	Acenaphthylene	(µg/g)	<0.01	Pronamide	(µg/g)	<0.05
Lead - Tot.	(µg/g)	19.2	Anthracene	(µg/g)	<0.01	Quintozene	(µg/g)	<0.05
Magnesium - Tot.	(µg/g)	7720	Benzo(a)anthracene	(µg/g)	<0.01	Tecnazene	(µg/g)	<0.05
Manganese - Tot.	(µg/g)	808	Benzo(b)fluoranthene	(µg/g)	<0.01	Tetradifon	(µg/g)	<0.05
Molybdenum - Tot.	(µg/g)	1.3	Benzo(k)fluoranthene	(µg/g)	<0.01	Tolylfluanid	(µg/g)	<0.05
Nickel - Tot.	(µg/g)	43.1	Benzo(g,hi)perylene	(µg/g)	<0.02	Vinclozolin	(µg/g)	<0.05
Potassium - Tot.	(µg/g)	1510	Benzo(a)pyrene	(µg/g)	<0.01	Azinphos Ethyl	(µg/g)	<0.05
Selenium - Tot.	(µg/g)	2.8	Chrysene	(µg/g)	<0.01	Azinphos Methyl	(µg/g)	<0.1
Silver - Tot.	(µg/g)	0.31	Dibenz(a,h)anthracene	(µg/g)	<0.02	Bromacil	(µg/g)	<0.05
Sodium - Tot.	(µg/g)	299	Fluoranthene	(µg/g)	<0.01	Benfluralin	(µg/g)	<0.05
Strontium - Tot.	(µg/g)	74.9	Fluorene	(µg/g)	<0.01	Bromophos	(µg/g)	<0.05
Tellurium - Tot.	(µg/g)	<0.1	Indeno(1,2,3-c,d)pyrene	(µg/g)	<0.02	Bromophos, Ethyl	(µg/g)	<0.05
Thallium - Tot.	(µg/g)	0.11	Naphthalene	(µg/g)	<0.01	Chlorfenvinphos (z)	(µg/g)	<0.05
Tin - Tot.	(µg/g)	0.8	C2-Naphthalenes	(µg/g)	<0.02	Chlormephos	(µg/g)	<0.05
Titanium - Tot.	(µg/g)	491	Phenanthrene	(µg/g)	<0.01	Chlorpyrifos, Methyl	(µg/g)	<0.05
Vanadium - Tot.	(µg/g)	53	C1-Phen/Anthracene	(µg/g)	<0.02	Chlorthiphos	(µg/g)	<0.05
Zinc - Tot.	(µg/g)	127	C2-Phen/Anthracene	(µg/g)	<0.02	Cyanophos	(µg/g)	<0.05
Zirconium - Tot.	(µg/g)	5.9	Pyrene	(µg/g)	<0.01	Demeton	(µg/g)	<0.05
Aldrin	(µg/g)	<0.05	Total PAHs	(µg/g)	<0.01	Dichlofenthion	(µg/g)	<0.05
BHC, Alpha-	(µg/g)	<0.05	Total Low MW PAHs	(µg/g)	<0.01	Dicrotophos	(µg/g)	<0.05
BHC, Beta-	(µg/g)	<0.05	Total High MW PAHs	(µg/g)	<0.01	Dimethoate	(µg/g)	<0.05
Chlordane, Alpha-	(µg/g)	<0.05	1-methylnaphthalene	(µg/g)	<0.01	Dioxathion	(µg/g)	<0.05
Chlordane, Gamma-	(µg/g)	<0.05	Captan	(µg/g)	<0.1	Disulfoton	(µg/g)	<0.05
DDE-p,p'	(µg/g)	<0.05	Chlorbenside	(µg/g)	<0.05	EPN	(µg/g)	<0.05
DDT-o,p'-	(µg/g)	<0.1	Chlorfenson	(µg/g)	<0.05	Fenchlorophos (Ronnel)	(µg/g)	<0.05
DDT-p,p'-	(µg/g)	<0.1	Chlorohalonil	(µg/g)	<0.1	Isofenphos	(µg/g)	<0.05
Dieldrin	(µg/g)	<0.05	De-ethyl Atrazine	(µg/g)	<0.05	Malaoxon	(µg/g)	<0.1
Endosulfan I	(µg/g)	<0.1	Butylate	(µg/g)	<0.05	Methinphos, trans	(µg/g)	<0.05
Endosulfan II	(µg/g)	<0.1	Cyanazine	(µg/g)	<0.05	Meviniphos, trans	(µg/g)	<0.05
Endosulfan Sulphate	(µg/g)	<0.05	Desmetryn	(µg/g)	<0.05	Omethoate	(µg/g)	<0.1
Endrin	(µg/g)	<0.1	Diphenylamine	(µg/g)	<0.05	Pirimiphos, Ethyl	(µg/g)	<0.05
Hepatachlor	(µg/g)	<0.05	Eptam	(µg/g)	<0.05	Pirimiphos, Methyl	(µg/g)	<0.05
Lindane, BHC, Gamma-	(µg/g)	<0.05	Ethalfluralin	(µg/g)	<0.05	Profenophos	(µg/g)	<0.05
Methidathion	(µg/g)	<0.05	Hexazinone	(µg/g)	<0.05	Pyrazophos	(µg/g)	<0.05
Methoxychlor	(µg/g)	<0.1	Metalaxyl	(µg/g)	<0.05	Quinalphos	(µg/g)	<0.05
Mirex	(µg/g)	<0.05	Metribuzin	(µg/g)	<0.01	Sulfotep	(µg/g)	<0.05
Acephate	(µg/g)	<0.1	Metolachlor	(µg/g)	<0.05	Terbufos	(µg/g)	<0.05
Carbophenothion	(µg/g)	<0.05	Pirimicarb	(µg/g)	<0.05			
Chlorfenvinphos(e)	(µg/g)	<0.05	Profluralin	(µg/g)	<0.05			
Chlorpyrifos	(µg/g)	<0.05	Prometryn	(µg/g)	<0.05			

Table 4. Historic chemical data (site E208768) collected from Tabor Lake over the period June 1990 to May 1995. Multiple values for one date indicates samples taken at different depths (shallow, mid-depth and deep). Values in mg/L.

Date	Alkalinity (4.5)	Ammonia-D	Chloride-D	Color True (NTU)	N.Kjel:T	pH	Sp. Cond. (µS/cm)	NO_3 + NO_2-D	Phos-Total	Phos-Tot-D	Ortho-Phos-D
Jun. 20/90						7.9;7.9;7.9	186;186;187		0.024;0.016;0.015	0.02;0.02;0.02	<0.003;<0.003;<0.003
Jul. 10/90									0.019;0.018;0.019	0.009;0.008;0.009	<0.003;<0.003;0.004
Jul. 20/90									0.021;0.022;0.054	0.012;0.012;0.032	0.007;0.009;0.027
Jul. 30/90									0.026;0.019;0.025	0.008;0.009;0.01	<0.003;<0.003;<0.003
Aug. 29/90									0.109;0.063	0.027;0.032	0.014;0.019
Sep. 18/90									0.05;0.043;0.042	0.01;0.011;0.012	<0.003;<0.003;<0.003
Oct. 11/90									0.019;0.02	0.007;0.007	<0.003;<0.003
Nov. 5/90									0.013;0.013;0.012	0.007;0.007;0.007	<0.003;<0.003;<0.003
Apr. 10/91		<0.005;<0.005;<0.005			0.57;0.54;0.56	7.7;7.8;7.7		0.07;0.08;0.14	0.022;0.019;0.015	0.007;0.007;0.006	<0.003;<0.003;<0.003
Apr. 10/91											<0.003;<0.003;<0.003
May 14/91					0.43;0.51;0.47	7.9;7.9;7.9		<0.02;<0.02;<0.02	0.019;0.021;0.017	0.007;0.007;0.007	
Jun. 4/91	74.4;74.5;74.5	0.009;0.009;0.009			0.33;0.33;0.37	7.8;8.0;7.9		0.02;0.02;0.02	0.015;0.012;0.012	0.005;0.005;0.005	
Jul. 10/91									0.01;0.01;0.046	0.005;0.006;0.005	<0.003;<0.003;<0.003
Aug. 7/91	75.3;75.2;75.2	0.014;0.011;0.009			0.5;0.37;0.39	7.9;7.9;7.9	188;188;193	<0.02;<0.02;<0.02	0.018;0.021;0.02	0.007;0.006;0.006	<0.003;<0.003;<0.003
Sep. 5/91									0.017;0.021;0.015	0.006;0.005;0.005	<0.003;<0.003;<0.003
Sep. 25/91									0.013;0.01;0.018	0.005;0.006;0.005	<0.003;<0.003;<0.003
Oct. 23/91									0.016;0.013;0.012	0.006;0.008;0.006	<0.003;0.003;<0.003
Apr. 8/92									0.02;0.022;0.018	0.008;0.009;0.008	<0.003;<0.003;<0.003
May 27/92									0.015;0.016;0.019	0.004;0.006;0.005	<0.003;<0.003;<0.003
Jun. 15/02									0.007;0.006;0.006	0.006;0.005;0.005	<0.003;<0.003;<0.003
Jul. 7/92									0.01;0.007;0.008	0.004;0.005;0.005	<0.003;<0.003;<0.003
Jul. 27/92									0.01;0.016	0.005;0.007	<0.003;0.004
Aug. 17/92									0.018;0.016;0.023	0.01;0.009;0.022	0.003;0.003;0.014
Sep. 8/92									0.03;0.025;0.045	0.006;0.007;0.008	<0.003;<0.003;<0.003
Sep. 30/92									0.022;0.018;0.018	0.005;0.006;0.006	<0.003;<0.003;<0.003
Oct. 28/92									0.008;0.008;0.008	<0.003;0.003;<0.003	<0.003;<0.003;<0.003
May 3/94				10;10;10	0.49;0.5;0.46	7.9;8.0;8.0	189;196;186	<0.02;<0.02;<0.02	0.048;0.023;0.031	0.03;0.017;0.026	0.004;<0.003;0.003
May 9/95		0.011;0.018;<0.005	8.7;8.5;8.7	5;5;5	0.46;0.52;0.49	8.0;8.0;7.7	193;192;193	<0.02;<0.02;<0.02	0.022;0.021;0.027	0.007;0.008;0.009	<0.003;0.006;<0.003

Table 5. Historical trihalomethane and haloacetic acid data collected by the NHA. The sample was taken on November 24, 2003 from a treated water source.

TRIHALOMETHANES	Concentration (*µg/L)*
Bromodichloromethane	< 0.4
Bromoform	< 0.3
Chloroform	**13**
Dibromochloromethane	< 0.4
HALOACETIC ACIDS	Concentration (*µg/L)*
Monochloroacetic Acid	<1
Monobromoacetic Acid	<0.8
Dichloroacetic Acid	<0.4
Trichloroacetic Acid	<0.4
Dibromoacetic Acid	<0.4

Table 7. Duplicate samples that exceeded precision acceptability criteria (≤25% difference when >5-fold MDL). All concentrations in µg/L.

Parameter	MDL (µg/L)	January/03			March /03			April/03			May/03			August/03		
		Conc. 1	Conc. 2	RPD %	Conc. 1	Conc. 2	RPD %	Conc. 1	Conc. 2	RPD %	Conc. 1	Conc. 2	RPD %	Conc. 1	Conc. 2	RPD %
Copper-T	0.05							0.36	0.78	**74**				15	6.7	**76**
Copper-D	0.05													8.53	2.75	**102**
Lithium-T	0.05										0.22	0.29	**27**			
Lithium-D	0.05	0.69	2.15	**103**												
Lead-T	0.01							<0.01	0.09	**160**						
Lead-D	0.01													0.52	0.32	**29**
Manganese-T	0.008													1.86	1.42	**27**
Tin-T	0.01	0.01	0.1	**164**										0.1	0.06	**50**
Zinc-T	0.1	<0.1	1.7	**178**	0.7	0.1	**150**	0.9	1.4	**43**						
Zinc-D	0.1	<0.1	0.8	**156**												

RPD %=Relative Percent Difference
**Data are presented for the purpose of batch specific QA assessment. Most QA samples were not collected at Tabor Lake.*

Table 8. Percent difference in measures taken from duplicate sediment samples.

Parameter	Unit of Measure	% Difference	Parameter	Unit of Measure	% Difference
PART I: PHYSICAL PROPERTIES			PART III. TOTAL METALS		
Moisture	% (W/W)	15%	Aluminum - Total	µg/g	21%
Percent Gravel	% (W/W)	68%	Arsenic - Total	µg/g	11%
Solid Content	%	7%	Barium - Total	µg/g	25%
Percent Coarse Sand	% (W/W)	41%	Calcium - Total	µg/g	2%
Percent Medium Sand	% (W/W)	8%	Chromium - Total	µg/g	34%
Percent Fine Sand	% (W/W)	15%	Cobalt - Total	µg/g	20%
Percent Very Fine Sand	% (W/W)	10%	Copper - Total	µg/g	29%
Percent Silt	% (W/W)	8%	Iron - Total	µg/g	20%
Percent Clay	% (W/W)	8%	Lead - Total	µg/g	20%
PART II. CARBON AND PHOSPHORUS			Magnesium - Total	µg/g	18%
Organic Carbon - Total	µg/g	20%	Manganese - Total	µg/g	20%
Carbon - Total	µg/g	20%	Molybdenum - Total	µg/g	0%
Phosphorus - Total	µg/g	12%	Nickel - Total	µg/g	23%
			Potassium - Total	µg/g	21%
			Strontium - Total	µg/g	1%
			Tin - Total	µg/g	25%
			Titanium - Total	µg/g	20%
			Vanadium - Total	µg/g	0%
			Zinc - Total	µg/g	17%

Table 11. 2002/03 raw water quality data collected from the Tabor Lake Estates pump house.

Date	Cryptosporidium (oocysts/100L)	Giardia (cysts/100L)	Total Coliform (CFU/100mL)	Fecal Coliform (CFU/100mL)
10-Oct-02			3	<1
15-Oct-02	<24.7	<24.7		
21-Jan-03	<4.3	<4.3	<1	<1
18-Mar-03	<3.4	<3.4	3	<1
24-Apr-03	<3.9	<3.9	100	<2
21-May-03	<3.7	<3.7	2	<2
11-Aug-03	<8.6	<8.6	<1	<1

Enterococci (CFU/100mL)	E. Coli (CFU/100mL)	pH (pH Units)	True Colour (Col. Unit)	Specific Conductance (µS/cm)
<1	<1	7.8	20	141
<1	<1	7.8	20	159
15	<1	7.6	10	166
12	<2	7.8	20	142
<2	<2	7.9	10	136
<1	<1	8.2	15	140

Residues - NonFilt. (mg/L)	Turbidity (NTU)	Hardness - Total (mg/L)	Hardness - Dissolved (mg/L)	Alkalinity - T as $CaCO_3$ (mg/L)
<4		61	63.8	59
<4		73.4	70.4	67
<4	1.44	74.4	76.1	66
<4	0.77	66.7	66.4	58
<4	0.92	63.1	63.2	55.6
<4	0.88	67.2	63	58.5

Bromide - Diss. (mg/L)	Chloride - Diss. (mg/L)	Fluoride - Diss. (mg/L)	Carbon - Tot. Org. (mg/L)	$NO_2 + NO_3$ (mg/L)
<0.1	4.8	0.04	8.3	<0.002
<0.1	5.2	0.03	9.1	0.086
<0.1	8.8	0.03	7.9	0.151
<0.1	5.6	0.02	7.5	0.05
<0.1	5	0.02	8.6	0.046
<0.1	4.3	0.03	7.9	2.53

Phosphorus - Tot. Diss. (mg/L)	Phosphorus - Tot. (mg/L)	Sulfate (mg/L)	Aluminum - Tot. (µg/L)	Aluminum - Diss. (µg/L)
0.015	0.047	4.1	5.6	1.6
0.013	0.015	4.6	2.7	2.4
0.014	0.021	5.8	25.2	1.6
0.008	0.012	4.4	13.1	3.8
0.007	0.021	4.4	11.4	3.5
0.038	0.047	3.7	3.7	3.3

Antimony - Tot. (µg/L)	Antimony - Diss. (µg/L)	Arsenic - Tot. (µg/L)	Arsenic - Diss. (µg/L)	Barium - Tot. (µg/L)
0.076	0.039	0.7	0.7	13.6
0.106	0.079	0.4	0.4	17.2
0.074	0.072	0.5	0.4	17
0.097	0.069	0.4	0.4	14.9
0.079	0.073	0.4	0.4	15.2
0.07	0.07	1.2	1.2	8.7

Barium - Diss. (µg/L)	Beryllium - Tot. (µg/L)	Beryllium - Diss. (µg/L)	Bismuth - Tot. (µg/L)	Bismuth - Diss. (µg/L)
13.2	<0.02	<0.02	0.06	<0.02
17.5	<0.02	<0.02	0.02	<0.02
15.8	<0.02	<0.02	<0.02	0.02
14.4	<0.02	<0.02	0.3	0.09
13.7	<0.02	<0.02	0.03	<0.02
7.18	<0.02	<0.02	<0.02	<0.02

Cadmium - Tot. (µg/L)	Cadmium - Diss. (µg/L)	Calcium - Tot. (mg/L)	Calcium - Diss. (mg/L)	Chromium - Tot. (µg/L)
<0.01	<0.01	18.2	19.1	<0.2
0.37	0.04	21.8	20.8	<0.2
<0.01	<0.01	22	22.7	<0.2
<0.01	<0.01	19.9	19.5	<0.2
<0.01	<0.01	18.8	18.8	<0.2
<0.01	<0.01	20	18.7	<0.2

Chromium - Diss. (µg/L)	Cobalt - Tot. (µg/L)	Cobalt - Diss. (µg/L)	Copper - Tot. (µg/L)	Copper - Diss. (µg/L)
<0.2	<0.005	<0.005	0.86	1.02
<0.2	0.029	<0.005	1.2	0.7
<0.2	0.029	<0.005	0.87	0.84
<0.2	<0.005	<0.005	2.06	1.82
<0.2	0.033	0.012	1.66	1.65
<0.2	0.056	0.034	1	0.74

Iron - Tot. (mg/L)	Iron - Diss. (mg/L)	Lead - Tot. (µg/L)	Lead - Diss. (µg/L)	Lithium - Tot. (µg/L)	Selenium - Diss. (µg/L)
		0.19	0.24	<0.05	<0.2
0.043	0.03	0.12	0.12	0.71	<0.2
0.123	0.024	0.22	0.01	0.37	<0.2
0.077	0.023	0.31	0.03	0.37	<0.2
0.093	0.018	0.3	0.03	0.41	<0.2
0.05	0.005	0.53	0.03	0.38	<0.2

Lithium - Diss. (µg/L)	Magnesium - Tot. (mg/L)	Magnesium - Diss. (mg/L)	Manganese - Tot. (µg/L)	Manganese - Diss. (µg/L)	Strontium - Diss. (µg/L)
<0.05	3.77	3.91	28.1	10.2	94.8
0.45	4.6	4.48	33.6	38.3	100
0.33	4.72	4.72	44.4	2.5	103
0.37	4.12	4.31	70.5	15.6	96.8
0.32	3.93	3.94	78	1.79	83.2
0.34	4.19	3.96	84	0.935	89.9

Molybdenum - Tot. (µg/L)	Molybdenum - Diss. (µg/L)	Nickel - Tot. (µg/L)	Nickel - Diss. (µg/L)	Selenium - Tot. (µg/L)	Uranium - Tot. (µg/L)
0.32	0.33	0.08	0.11	<0.2	0.015
0.46	0.4	0.37	0.12	0.2	0.024
0.041	0.37	0.2	0.2	0.2	0.037
0.41	0.4	0.22	0.15	<0.2	0.035
0.38	0.38	0.13	0.15	<0.2	0.03
0.55	0.52	0.16	0.17	<0.2	0.046

Silver - Tot. (µg/L)	Silver - Diss. (µg/L)	Sodium - Tot. (mg/L)	Strontium - Tot. (µg/L)
<0.02	<0.02		94.3
<0.02	<0.02	4.66	98.9
<0.02	<0.02	5.97	104
<0.02	<0.02	4.32	95.2
<0.02	<0.02	4.21	87.6
<0.02	<0.02	4.43	92.6

Thallium - Tot. (µg/L)	Thallium - Diss. (µg/L)	Tin - Tot. (µg/L)	Tin - Diss. (µg/L)
<0.002	<0.002	<0.01	<0.01
0.026	0.009	<0.01	<0.01
0.002	<0.002	0.01	0.01
0.002	<0.002	<0.01	<0.01
<0.002	<0.002	0.02	<0.01
0.004	0.004	0.01	<0.01

Uranium - Diss. (µg/L)	Vanadium - Tot. (µg/L)	Vanadium - Diss. (µg/L)	Zinc - Tot. (µg/L)	Zinc - Diss. (µg/L)
0.02	0.59	0.61	1.3	4
0.026	1.28	0.19	4.1	3.4
0.033	0.67	0.71	6	4.9
0.032	0.34	0.32	13	11.2
0.025	0.42	0.32	12.3	8.1
0.037	0.43	0.43	8.7	2.3