

B. C. TAP WATER ALLIANCE

**Caring for, Monitoring, and Protecting
British Columbia's Community Water
Supply Sources**

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RESULTS-BASED MANAGEMENT OF BRITISH COLUMBIA'S DRINKING WATER SOURCE WATERSHEDS

A SUBMISSION TO THE PUBLIC PANEL
AND REVIEW PROCESS
FOR A RESULTS-BASED FOREST AND RANGE
PRACTICES REGIME FOR BRITISH COLUMBIA

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Chapman Creek, Sunshine Coast Regional District, Category 2 Watershed Reserve, May 1996. Forest previously liquidated from top to bottom. Note severe road, cutslope, upper-slope, and lower-slope erosion, landslides in distance.

1. Concerns related to the Results Based Code public review process

The following submission was done “in a hurry” due to time constraints imposed for the present review process. It is unfortunate that the present review panel was unable to respond to our June 7th request to appear before the panel on June 27th in Vancouver, where we anticipated having a constructive and meaningful dialogue on very critical issues related to historic forest policy and management of drinking water sources in British Columbia.

2. The B.C. Tap Water Alliance

As a result of ongoing public concern about impacts from logging in community watersheds, the B.C. Tap Water Alliance was formed in February, 1997, initially by members from Greater Vancouver, Greater Victoria, the Sunshine Coast Regional Districts, and the Slocan Valley area, where issues related to logging in domestic/community watersheds were prominent. Based on our ongoing research into roadbuilding, mining, logging, and cattle grazing in community watersheds, we advocate the policy of “single use”, the natural production and protection of drinking water. This is the simplest and most effective management approach for the production of high quality drinking water. It is also the cheapest.

Due to the involvement of our members, the watersheds for Greater Victoria and Greater Vancouver, which provide water to 60% of British Columbia’s population, are now protected from forest resource management activities - as they previously had been protected. The residents of the Sunshine Coast Regional District have also requested protection for their two highly impacted community watersheds, Gray and Chapman Creeks, through a 1998 regional government referendum and a petition recently tabled in the Legislature.

The essence of our concern, as it relates to the proposed changes to the Forest Act and the Forest Practices Code Act for a Results-Based Code, is that community watersheds should not be subject to the said Acts. Rather, they should be, as they once were, excluded from the timber harvesting land base, and from other resource management activities, during the first phase of timber supply review. The community watersheds should not be contained within the boundaries of any Resource Development Permit and their boundaries should be clearly shown on all government maps. They should be reserved in a separate provincial category and should be managed for the purpose of long term, high quality water provision.

3. The highly questionable politics of logging in domestic/community watersheds

As elaborated in previous submissions to government (www.alternatives.com/bctwa), the provincial government’s policy, enabled through *Land Act* and *Forest Act* legislation, was to protect drinking water sources, a policy that began to change in the 1960s:

The Lieutenant Governor in Council may grant to any incorporated city, owning and operating its own system of water works, a lease of the vacant Crown lands which form the whole or any portion of the natural watershed from which such city derives its water supply, for such term, not exceeding nine hundred and ninety nine years, and upon such conditions as may be deemed advisable, and may in such lease define the limits of such natural watershed. (Provincial

Statutes, 1908, *Land Act*, Chapter 30, section 47, Leases, subsection 8. Note: the exact wording of this *Act* remained in effect until 1970.)

(1.) The Minister [of Lands] shall cause an examination of Crown lands to be made by the Department for the purpose of delimitating areas of such lands that it is desirable to reserve for the perpetual growing of timber, and as a result of such examination the Lieutenant Governor in Council may, by Proclamation, constitute any such area a permanent forest reserve; and upon such proclamation all land included within the boundaries of any such area shall be withdrawn from sale, settlement, and occupancy under the provisions of the “Land Act”, and in respect of the “Mineral Act” and “Placer Mining Act” and “Coal Mines Act” shall be subject to such conditions as the Lieutenant Governor in Council may impose. After such proclamation no Crown land within the boundaries of such forest reserve so constituted shall be sold, leased, or otherwise disposed of or be located or settled upon, and no person shall use or occupy any part of the land included in said reserve except under provisions of this Act or of regulations made thereunder.

(2.) Forest reserves constituted in the manner provided in this section shall be under the control and management of the Minister for the maintenance of the timber growing or which may hereafter grow thereon, for the protection of the water supply, and for the prevention of trespass thereon. (Provincial Statutes, 1912, *Forest Act*, Chapter 17, Section 12.)

Our research findings indicate that a number of forest industry and government foresters in the northwestern United States were responsible for widespread counter-initiatives against the protection of forested drinking water sources in the United States. These initiatives were then promoted through related forestry associations in British Columbia beginning in the 1950s. This occurred during the era of the granting of forest management licences (later called Tree Farm Licences) in British Columbia in which large tracts of Crown lands were handed out to forest companies, to be administered under the concept of “sustained yield logging”. In 1960 government resource administrators and politicians quietly amended a critical section of the Forest Act that had protected forested drinking water sources located in the new tree farm licenses, and the areas were included in timber supply:

33. (4.) Forest reserves except lands included in a tree farm licence (emphasis) shall be under the control and management of the Minister [of Lands and Forests] for the maintenance of the timber growing thereon, for the protection of the water supply, and for the prevention of trespass thereon. (Provincial Statutes, 1960, *Forest Act*, Chapter 153, Section 33.)

Our research has revealed that the initiation of logging in the Greater Vancouver and Victoria drinking watersheds resulted from a behind-closed-doors realignment of public policies to conform with a movement by US foresters to implement “scientific” logging of the formerly out of bounds watershed reserves. Our findings also show that logging in these watersheds was then used as a rationale by the provincial government and industry foresters to begin logging in community watersheds throughout the province, not just in tree farm license areas, in order to alleviate short term timber supply shortages starting to be felt in many communities. Our findings also show that objections to the new policy to log in drinking watersheds by some government agencies and administrators, and water users and community organizations, were continually stifled by government politicians, senior government administrators, and administrators with the Ministry of Forests. As a result, public participation and community involvement in planning processes related to forest management were either avoided all together or the results simply shelved. We draw your attention to a recent case history of the Category 2 Arrow Creek Watershed Reserve (available on our website). These concerns are also summarized in an article, “Foresters Should be Leading the Way”, published in the Association of B.C. Professional Foresters’ Forum magazine (March/April 2002).

Recently, the administration of domestic/community watersheds has gone through significant changes, moving from the administration of the former Ministry of Environment, Lands and Parks, to the Ministry of Sustainable Resource Management. The MSRM advocates what Premier Campbell has summarized as “economic development” in the opening quotation of the May 2002 Results-Based Forest and Range Practices Regime for British Columbia document. We are opposed to the assignment of administration to the MSRM. Domestic/community watersheds should be under the administration of the Ministry of Water, Land, and Air Protection, with the proviso that these watersheds be protected for community water supply.

We are concerned about recent initiatives under *Bill 35* to dismantle the “designated environment officials” roles in forest management planning for domestic/community watersheds under the guise of cutting “unnecessary red tape” (refer to press release, Appendix A). This does not mean that we agree with the figurehead rubber-stamping role the designated environment official has played, but we interpret this as a further erosion of the legislated protection of drinking water sources. This significant change to an already weak *Forest Practices Code Act* also makes us suspicious of this current review process, particularly because this was not acknowledged in your May 2002 policy and discussion document.



Jump Creek and Jump Creek reservoir, February 26, 2002, Nanaimo’s water supply. Private land owned by Weyerhaeuser, successor to MacMillan Bloedel Ltd. Weyerhaeuser recently proposed a forest hydrology experiment in Jump Creek, and has conducted a separate experiment with the Ministry of Forests in Penticton’s community Watershed Reserve. Note the extensive clearcut logging and roadbuilding.

4. Forest Hydrology research and applications for government policies

Much of the present policy framework for the manner and extent of logging and roadbuilding in domestic/community watersheds has been influenced, to some extent, by the findings, methodologies, and modeling associated with the science of forest hydrology. Science, as everyone knows, can be well or poorly conducted, frequently based on the various limiting constraints imposed by the funder. One of the concerns we have about this is that B.C. forest hydrology reports, with their terms of references, are almost all predicated upon forest management outcomes. Determining the best use for the area or whether certain uses are contraindicated in the watershed is never part of the terms of reference. A forest hydrologist is very rarely allowed to make recommendations against a particular management activity, but is instead expected to seek ways to bring about certain forms of resource management in a given drainage. In other words, conclusions in some forest hydrology reports may sometimes be quite “political” in nature, depending on the author and the sponsor of the report.

It is our position, that forest hydrology experiments advocating logging in domestic/community watersheds, should be rejected. Rather, forest hydrology experiments and monitoring processes in drinking watersheds should simply study the complex conditions and interactions present, in order for all to benefit from neutrally-based findings that promote their integrity and protection. However, this has not been the case, historically. The science of forest hydrology has not often been used as a tool for protection. It has been relegated to a political tool for the promotion of various forms of logging.

5. Downloading Liability - Post Cranbrook: Range permits for cattle grazing in domestic/community watersheds

5(a) June 25, 2002 – Forest Practices Board’ Investigative Report on Cattle Grazing

The Range Practices Regulation prohibits certain impacts in riparian areas, but only within community watersheds. Livestock use of riparian areas in community watersheds must not result in faecal deposits, trampling of vegetation, deposit of sediments or exposure of mineral soil to the extent that the district manager considers detrimental. There are no standards, however, for the district managers to use in their determination. Some guidance as to what constitutes detrimental levels is provided in the Community Watershed Guidebook, however the focus of this guidebook is on maintenance of water quality rather than riparian condition. (Page 2)

Community watershed streams averaged 1 cattle faeces per 100 metres of stream bank, while non-community watershed streams averaged 4.5 cattle faeces per 100 metres of stream bank. Lakes and wetlands averaged 2.5 cattle faeces per 100-metre transect in community watershed sites and 9 in non-community watershed sites. Combining lake and stream sites, the cattle faeces count was 1.4 in community watersheds and 8 in non-community watersheds. The maximum cattle faeces counted in any community watershed site was 15 and in non-community watershed sites was 120.” “The percentage of sites that were not at proper functioning condition was 7.5 percent in community watersheds and 26 percent in non-community watersheds. Only one community watershed site was found to be NF. (Page 18)

Without a clear and measurable standard for faecal deposits and soil exposure, enforcement of the regulation is difficult and highly subjective. It is not appropriate to leave the criteria for these impacts to the discretion of district managers. (Page 24)

This project has shown that there currently are significant problems in meeting proper functioning condition in riparian areas in a percentage of the pastures. (Page 27)

The reader is again cautioned that these results are based on a sample, not a complete inventory of all riparian areas, and is a one-time assessment. Therefore, it does not look at the trend of the site. Some sites may be improving, or others deteriorating, from their present condition. (Page 22) (Effect of Cattle Grazing near Streams, Lakes and Wetlands, Special Report, Forest Practices Board, June 2002.)

It is our position that range use permits and activities for cattle grazing in domestic and community watersheds are highly inappropriate and must discontinue, and that all considerations and references for forest range management prescriptions should be removed from the legislation.

We note in a submission to the Results-Based Code Panel from a registered professional forester, comments about the inappropriateness of cattle in community watersheds:

Cattle must be excluded from community watersheds. #7 states that livestock use should not result in fecal deposits, vegetation trampling, deposition of sediments, or exposure of mineral soil in riparian areas. My experience is that that is exactly what is happening in these areas. Cattle tend to congregate in riparian areas due to the availability of water, lush grasses and palatable shrubs. Cattle do this naturally and unless you exclude cattle from riparian areas through expensive fencing, the only other option is to exclude cattle from community watersheds. (Lyle C. LeClair, Pope & Talbot, Submission to the Results-Based Code Panel, June 28, 2002.)

The obvious question that must be answered is why domestic livestock grazing is permitted within community watersheds on Crown lands in British Columbia. The fact that such incompatible uses continue to be endorsed by the provincial government is perplexing, particularly following decades of complaints from water users and in light of the July 1996 Cranbrook and the May 2000 Walkerton incidents. Ministry of Forests management of both forest and range resources has resulted in the degradation of water quality and supply from road building, logging, mining and cattle grazing.

Contaminated cattle faeces in community watersheds exemplifies the complete bankruptcy of provincial government resource management policies regarding drinking water sources. However, due to the accrued range licenses permitted on Crown lands in drinking water sources over the last 25 or so years, there is little political will to end such practices, as shown in the economic argument currently put forth by some politicians as a rationale for its continuance:

There is a need to balance the interests of British Columbia's \$700 million per year beef industry with drinking-water quality protection interests. (Page 38, *Protecting Drinking-Water Sources*, Select Standing Committee on Public Accounts Report, April 2000).

Recently, in response to a number of public complaints, the Forest Practices Board completed a limited investigation of the impacts of cattle grazing in many watershed riparian zones, which included 41 community watershed sites in the Kamloops and Penticton Forest Districts. The report, *Effect of Cattle Grazing near Streams, Lakes and Wetlands*, June 2002 (see above quotations), provided recommendations to the draft discussion paper for the Results Based Code.

However, rather than proposing appropriate measures to exclude cattle from the hydrographic boundaries of domestic/community watersheds, the Forest Practices Board has recommended "a higher

standard of grazing management” (page 17), based on current provincial resource management policies. The report states, “a higher level of water quality and riparian management is expected in community watersheds” (page 26). On the other hand, water drinkers demand the “highest” level of water quality and riparian management. This would exclude the multiple use management philosophy that advocates cattle grazing, logging, and mining in community watersheds. Multiple-use should be replaced with the previous provincial policy of “single use”, for the sole protection and production of water. Nevertheless, the Forest Practices Board report on cattle grazing has arrived at a very important time. Despite its limitations and the fact that it was released near the end of the public review process, it indisputably exposes the serious limitations of both the Forest Practices Code Act and the proposed Results-Based Forest and Range Practices Regime document with regard to drinking water.

Forest Practices Board investigators observed and catalogued only some of the layered impacts from cattle loitering in, trudging through, and defecating on selected sites along one side of riparian zones within designated community watersheds. They did not collect water quality data from streams impacted by cattle manure. Based only on their limited sampling, the impacts were so apparent that their report noted in some surprise that “in spite of the level of impact found in this assessment of range practices, to our knowledge, there has been no enforcement action taken under section 45 of the Act” (page 23). Section 45(1) of the *Forest Practices Code Act*, under “Protection of the Environment”, states “a person must not carry out a forest practice that results in damage to the environment”. The Code stipulates that only through the discretionary powers of the Ministry of Forests District Manager can there be a determination whether the presence of cattle faeces near streams merit penalties under the *FPC Act*, or the removal of cattle from the watershed. The Auditor General’s March 1999 report on Drinking Water also identified weaknesses in the administration of range land management: that Range use plans do not require professional sign-off, as is the case for forest management plans, and; that the same staff who prepare the Range use plans are also those responsible for monitoring and enforcement compliance.

Despite the fact that both the government and licensees knew of the negative outcomes of cattle grazing to soils, sensitive vegetation, stream banks, and drinking water quality, the discretionary powers given to Ministry of Forests district managers under the *Forest Practices Code* did not result in rigorous enforcement or effective deterrent penalties for encouraging compliance from range users.

To us, it is apparent that to even consider cattle grazing in domestic/community watersheds is a recipe for disaster. Forest Practices Board investigators found that the Code standard against the deposition of faecal matter has probably been consistently transgressed since the Code was adopted. They also indicated that directives to prohibit and prevent cattle manure in riparian zones with proposed “regulatory amendments” made by the Select Standing Committee on Public Account’s report, *Protecting Drinking-Water Sources*, in April 2000 (page 39), have gone unheeded.

The Forest Practices Board’s report led us to consider how many provincial domestic/community watersheds have range use permits for cattle grazing. Consequently, we learned from Ministry of Forests’ Range administrators that there are no easily accessible, collated data available that identify the number and range permits and cattle numbers in domestic/community watersheds, either by provincial regions or by districts. Such information is critical in determining how widespread the problem actually is, and would obviously be critical information for the proposed Water Protection Officers recommended under the *Drinking Water Protection Act*. According to a recent estimate (June 27th) by one of the Forest Practices Board investigators, there may be at least 250 community watersheds that have Forest Range Permits for cattle grazing, which represents just over half of the total designated “community” watersheds in the province (grazing permits in “domestic” watersheds were not included in this estimate). If accurate, this is an alarming statistic, and may explain why the

Ministry of Health has issued so many boil-water advisories over the last ten years, and why government is asking taxpayers for enormous expenditures on water treatment facilities.

Unfortunately, these statistics for the number of domestic/community watersheds impacted by cattle grazing were not available for recent public reviews, such as the March 1999 Auditor General's report on *Protecting Drinking Water Sources*, the public submission process for the *Drinking Water Protection Act* in the Spring of 2001, nor for the Drinking Water Review Panel and their final report in February 2002. This lack of information is further evidenced by the comment that "there are no established criteria or baseline information against which to assess riparian health or established measures to indicate whether or not the condition of riparian areas found in this assessment is acceptable" (page 18). Nor were questions raised to promote the gathering of evidence on the extent of these problems in B.C. However, the Auditor General did provide some important information on cattle faecal deposition and the impacts to water quality in his analysis of the July 1996 cryptosporidium outbreak from Cranbrook's community watershed, and the attending comments in section 3.2 of the report, "management of cattle grazing does not fully address threats from parasites" (which is attached as Appendix B to our report).

Some of the important findings in section 3.2 of the Auditor General's report concern the distance between the deposition of cattle faecal matter and a stream source that carries faecal bacteria to the water intake, and criticism of how forest range managers may be ineffectual in evaluating safe management of cattle grazing in domestic/community watersheds:

As long as high levels of overland flow do not occur, manure would have to be deposited in water - or within a metre or two of it - to significantly raise the water's bacteria or parasite levels. However, once in a stream, it appears that bacteria and parasites have a reasonable chance of remaining viable until they reach a water intake. Although the Community Watershed Guidebook suggests 1 km as a minimum distance between grazing areas and water intakes, there is evidence that *Cryptosporidium* can remain alive after traveling this distance and more.

Our examination of the research literature showed that when range and riparian areas are managed so as to be in proper functioning condition for grazing, they are unlikely to contribute problem levels of sediment and turbidity to local water supplies under normal flows. However, we also found that proper functioning condition alone may not keep harmful bacteria and parasites from entering a water supply.

The Forest Practices Board investigators, however, confined their inventory analysis of cattle faecal deposits within a three-meter zone from stream banks, limiting consideration of the concerns that the Auditor General's report raises about the comprehensive distribution and attendant dangers from cattle manure outside of that zone.

5(b) The rationale for "minimal" pollution and damage – the June 2002 Forest Practices Board Investigation of cattle grazing in two drainages above the intake of the Freeman Brook Community Waterworks Association

The Forest Practices Board concluded its investigation on the effects of cattle fecal deposits to the drinking water sources of the Freeman Brook Community Waterworks Association in June 2002, Cattle Grazing in a Community Watershed near Salmon Arm, following a November 15, 2001 complaint by the Association. Over a one and a half year period prior to complaining to the Forest practices Board, the Association had registered a series of complaints with the Ministry of Forests

District Manager regarding cattle defecating near and into two water sources, Freeman Brook and Sweetwater Creek:

The complainant raised concerns with MOF that cattle would contaminate the domestic water supply and asked that cattle be excluded from the right-of-way west of Freeman Brook. MOF refused, but offered to test the water during the grazing season. If the cattle impacted water quality, MOF would manage the range to minimize those impacts. (Page 1)

Water samples taken beside the pasture range at Freeman Brook between May and July 2000 revealed “very high fecal coliform counts measured immediately below the right-of-way during livestock use and during heavy rainfalls (page 3).” These findings were considered inconsequential by the District Manager because “there were no corresponding high fecal coliform counts at the downstream water intake” (ibid.), and because the fecal deposits were beyond one kilometre from the intake, conforming to the guidelines in the Forest Practices Code document. An environmental health officer with the Thompson Health Region concluded that “the presence of cattle could have an impact to surface water (streams), but it would be minimal” (page 4). This conclusion would not put many water purveyors at ease and the Forest Practices Board itself noted that although no similar fecal coliforms counts were registered at the intake, “daily water sampling would be needed to definitively determine the presence of coliforms” (ibid.).

Following persistent concerns by the water users and after multiple field visits by various ministries, the District Manager finally ordered fencing around both channels of Freeman Brook, although the water users still felt these additional measures “were inadequate to prevent contamination of the domestic water supply” (page 2).

The water users registered more complaints in 2001 for the Sweetwater Creek tributary, which enters Freeman Brook just above the water intake. The range pasture is located less than one kilometre from the intake, thereby falling under the conditions for concern in the Forest Practices Code guidelines document. Here, cattle were provided free access to a wetland (“swamp”) fed by springs from forested uplands. A MOF hydrologist “observed high concentration of cattle feces both adjacent to the area of open water in the swamp and at the forest-right-of-way edge”, and noted that “where cattle have access to the surface water, the level of contamination can be high” (page 5). The hydrologist discovered that the polluted wetland waters travel underground for a short distance before Sweetwater Creek begins on the surface, further noting that the wetland waters most likely travel above ground directly into Sweetwater Creek during high-run off periods from storm events and snowmelt. The hydrologist concluded that the “likelihood of water contamination was low if the forested slopes above the water intake were not harvested” (ibid.), meaning that logging would contribute to sudden increases in water flow to the wetlands, thereby contributing to overland flows directly into Sweetwater Creek. In response, the MOF District Manager determined that cattle could continue to roam through the wetlands. The Forest Practices Board’s report concluded that there were “low” risks to water quality from the polluted wetlands, based on the findings of “various specialists” who “confirm that the risk of contamination is minimal” (page 6).

Overall:

The Board concludes that management of the range has minimized the risk of water contamination from cattle, consistent with the range use plan... The district manager’s conclusion that the cattle did not cause detrimental impacts to Freeman Brook was reasonable. There was no basis for, or need to, prohibit the licensee from allowing cattle to use riparian areas in this area of the community watershed. (page 6)

However, the report noted that risks to water quality of the two intake sources: "... may exist in years when excessive snow pack melts rapidly or when there are prolonged rains with saturated slopes. Management of the range must be cognizant of these risks" (ibid.).

Representatives with the Ministry of Agriculture and the Ministry of Health recommended that the water users invest in water treatment technology to remove the risks associated with cattle grazing. It is the provincial government's position that, despite the fact that the government or private landowners may be responsible or liable for polluting or degrading water quality through land resource activities, downstream water users are responsible for treating drinking water:

The chief environmental health officer for the Thompson Health Region similarly concluded that risks caused by cattle grazing were inconsequential when compared to the inherent risk the complainant already accepted given the state of the domestic waterworks; specifically, that the use of surface water without filtration and disinfection means accepting the risk posed by bacterial, protozoal and chemical components in the watershed regardless of land uses or agricultural practices. (Page 5)

5(c) Implications of the Forest Practices Board's findings for a Results-Based Code on range land practices

Along with the Forest Practices Board's general findings and conclusions about cattle grazing around streams and riparian areas outlined in section 5(a), the Freeman Brook report summarized in section 5(b) highlights the inadequacies and weaknesses of the Forest Practices Code for proper monitoring and enforcement of range practices on Crown lands, particularly for domestic/community watersheds. This finding is critical to the present Results-Based Code review because the Forest Practices Code, upon which considerations for results-based management are dependent, fails to "protect" water quality from cattle manure. This is well demonstrated in the findings of the Freeman Brook report where, although water quality was impacted by cattle feces, the District Manager was able to sidestep the fact, based on limited testing near the water users' intake and the insufficient regulatory standard currently in place. In other words, the proposed Results-Based Code provisions for water quality are being based upon a demonstrably ineffective regulatory standard of care. This basic flaw necessitates a comprehensive public review, supported by a thorough provincial investigation of the issue.

6. Conclusion

The provincial government has incorrectly placed the financial burden, or onus, on the water purveyor to provide potable water from a community water source over which they have no authority or control. For decades, this concern has been repeatedly raised by water purveyors and community organizations, the UBCM (Union of B.C. Municipalities) and like organizations. The unjustness of this policy is further compounded by the fact that government administrators and politicians have routinely denied water users legislated protection of their drinking water sources, although such provisions were available under the Land Act. For instance, the Greater Vancouver Water District's three watersheds are protected from land resource uses under a *Land Act* lease agreement.

Since the provincial government began to change its policies and to permit land use activities that alter and negatively impact water quality in domestic/community watersheds, no provisions were enabled to provide legal autonomy or liability protection for water users. When the liability issue became the focus of public attention in the early 1980s, it was internally reviewed by administrators, particularly in the Ministry of Forests. Draft legislation was tabled to provide liability clauses in Crown land use

permits to protect public water supplies. This was done to remedy public concerns about land resource activities in their community watersheds. However, this initiative was quickly and quietly abandoned, leaving provincial water purveyors at a distinct disadvantage. Government's baffling denial of liability has been responsible for the continued public acrimony over the treatment of drinking watersheds and the unjust and expensive downloading of liability to water consumers. The March 1999 Auditor General's report on drinking-water sources refers to a conservatively-estimated cost of \$700 million for water treatment for just 100 communities to treat their water which has been degraded by multiple-resource use.

The present "public" review process for a performance-based or results-based *Forest Practices Code* should **EXCLUDE** drinking water source watersheds from consideration for forest and range uses. The necessary measures can be simply and inexpensively accomplished by reinstating the watershed reserve program and through implementing the February 2002 Drinking Water Review Panel's recommendations for a lead "water" agency with legislated authority over other ministries currently advocating resource management activities in Provincial forests.

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APPENDIX A: PRESS RELEASE

B. C. TAP WATER ALLIANCE

**Caring for, Monitoring, and Protecting
British Columbia's Community Water
Supply Sources**

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CAMPBELL GOVERNMENT CUTS DRINKING WATER “WATCHDOG” WITH BILL 35 - CALLING IT “RED TAPE”

Vancouver – With the final reading of Bill 35 on May 8, 2002, the provincial government provided exclusive powers to the Ministry of Forests (MoF) by revoking the 17 year-old protocol agreement between it and the Ministry of Land, Water and Air Protection on management of drinking water sources. Government files document how the protocol, approved by the Social Credit government in 1985, resulted from years of internal resistance by senior government officials who advised against the MoF as lead agency for drinking water sources, because it lacked “sufficient public credibility” (February 1982). When the MoF became a separate agency in 1976, it had quickly gained notoriety by ignoring public processes and overriding the “Lands”, “Environment” and “Health” ministries’ protective policies concerning drinking water sources. Furthermore, a subsequent protocol agreement signed in 1994, prior to the enabling of the Forest Practices Code Act, clearly assigned administrative authority of Section 12 Reserves under the Land Act to the Ministry of Environment, which included the almost 300 Community Watershed Reserves throughout British Columbia.

“Not only is government discarding what little public accountability remains since these community water sources were invaded in the 1960s, but it is also short circuiting public processes and ignoring its own Drinking Water Review Panel’s recommendations about future drinking water protection,” observed Will Koop, Coordinator of the B.C. Tap Water Alliance. “We are completely opposed to any

measures that provide Ministry of Forest managers with exclusive discretionary powers. The government is abusing its powers by removing watchdog agencies and systematically removing environmental legislation and policy. On a sensitive issue that warrants extreme caution and meaningful public consultation, these changes are completely irresponsible.”

Bill 35, repeals Sections 13, 24, 28(2), 32, 40(2), 41(6, 6.1, 7), 42(3), 43(2), 72, and amends parts of Sections 22 (7-c), 96(1), and 143(3) of the Forest Practices Code Act, removing all references to, and intercessory powers of, the designated “environment official”. These changes were executed through the new Ministry of Deregulation. The April 16th legislative transcripts state that Deregulation Minister Kevin Falcon concluded that the Environment Ministry’s role in community watersheds was “nonessential”, “red tape”, and an “unnecessary requirement”. He argued that an environment agency “diminishes the province's economic competitiveness and stands in the way of job creation or wastes taxpayers’ time and money” and blamed the 1985 Social Credit protocol agreement on “NDP Socialism”. By removing the ministry accountable for environmental protection, Falcon felt the changes would “protect the important values of public health, safety and the environment.” Falcon also promised government would be “consulting with interested stakeholders”.

When the Campbell government took office in May 2001, it immediately severed the functions of the former Ministry of Environment, Lands and Parks into two ministries. Instead of sanctioning community watersheds under Joyce Murray’s new Ministry of Water, Land and Air Protection, the management of drinking watersheds was quietly transferred to Stan Hagen’s new Ministry of Sustainable Resource Management, whose mandate is exploitation of Crown land resources. This manoeuvre, which occurred months before the second public review of the Drinking Water Protection Act in September 2001, circumvented the Drinking Water Review Panel’s recommendations for the protection of drinking water sources, and led to the final cuts in Bill 35. In fact, when the B.C. Tap Water Alliance sought clarification from senior administrators in the late summer of 2001, they were “unable” to tell us which Ministry the authority for drinking watersheds had been transferred to. By axing the protocol agreements on joint sign-off and authority over public planning processes, the government is evidently censoring internal debate and ministerial dissent about future logging developments and cattle farming in drinking water sources.

“The actions of this government on the issue of drinking water source protection are utterly disgraceful. We now have a clear picture of why the government stalled legislating the Drinking Water Protection Act. Forestry activity in drinking watersheds, and who knows what else, can now proceed without interference. With the removal of former legislative provisions by Bill 35, this government has made it clear they are not interested in protecting drinking watersheds, and are catering to the special interest lobby associated with the forest industry”, says Koop. “Premier Campbell and 16 of his 27 Cabinet ministers represent Greater Vancouver and Victoria residents whose drinking watersheds are now protected. They do not have a mandate in their own ridings to degrade drinking watersheds. So why are they discriminating against the remainder of B.C.’s residents?”

APPENDIX B: EXCERPT FROM THE MARCH 1999 AUDITOR GENERAL'S REPORT ON PROTECTING DRINKING-WATER SOURCES

3.2: Management of cattle grazing does not fully address threats from parasites

If not properly managed, cattle grazing can add sediment, harmful bacteria and parasites to drinking-water sources. Responsibility for managing these risks on public lands lies with the Ministry of Forests, which regulates grazing in the Crown forest, including community watersheds.

As with logging, the Ministry of Forests uses rule- and site-based controls to manage grazing. Because enforceable rules for grazing are, in our view, insufficient by themselves to give appropriate protection to drinking-water sources, we only discuss site-based controls here.

Site-based controls to manage grazing are designed to maintain rangeland in proper functioning condition

Ranchers using Crown range must abide by range use plans. Through these plans, the ministry aims to achieve, among other goals, proper functioning condition—a state in which plants and streams on the range can sustain themselves and have the resiliency to stay in condition despite outside disturbances. Rangeland that is in proper functioning condition can support an appropriate level of grazing without incurring damage to natural values or to future grazing potential.

Proper functioning condition helps to minimize sediment and turbidity by:

- * maintaining stable stream banks and stream beds, which reduces sediment released as a result of bank damage or scouring of the stream bed;
 - * minimizing soil disturbance, which reduces the sediment available to be washed into streams;
 - * minimizing overland flows, which keeps sediment on surrounding rangeland from entering a stream;
- and
- * keeping stream flows stable, which reduces the chance that sediments already on the stream bottom will be re-suspended during peak flows.

Dry uplands, not riparian (stream-influenced) areas, make up most of the area of grazed watersheds (Exhibit 17). Cattle kept in uplands have little effect on water quality, as long as the range is in good condition. Unfortunately, cattle prefer riparian areas, where their presence is more threatening to water quality. The crux of managing cattle in watersheds supplying drinking water is managing how they use the riparian area.

Our examination of the research literature showed that when range and riparian areas are managed so as to be in proper functioning condition for grazing, they are unlikely to contribute problem levels of sediment and turbidity to local water supplies under normal flows. However, we also found that proper functioning condition alone may not keep harmful bacteria and parasites from entering a water supply.

Four variables affect whether cattle grazing will harm drinking-water sources

Four variables play a part in determining whether harmful levels of bacteria and parasites will reach a drinking-water supply as a result of cattle grazing:

* Volume of manure: The volume of manure in or near streams depends on the number of cattle present and the length of time they graze in these locations. The higher the volume, the greater the risk that harmful bacteria and parasites will get into the water supply. Both grazing numbers and duration are key controls for managers in maintaining proper functioning condition.

* Concentration of bacteria and parasites in the manure: Cattle health is the key factor affecting how many bacteria or parasites are in manure. Cattle age can be particularly significant. For example, young calves are more likely to spread *Cryptosporidium* cysts than are older animals.

* Barriers to bacteria and parasite movement, on land and in water: Whether bacteria and parasites can move into nearby streams depends mainly on whether cattle are allowed in, or close to, a stream, and on whether there is overland waterflow. The ground cover provided by vegetation on land in proper functioning condition is an important barrier to overland flow. As long as high levels of overland flow do not occur, manure would have to be deposited in water—or within a metre or two of it—to significantly raise the water’s bacteria or parasite levels. However, once in a stream, it appears that bacteria and parasites have a reasonable chance of remaining viable until they reach a water intake. Although the Community Watershed Guidebook suggests 1 km as a minimum distance between grazing areas and water intakes, there is evidence that *Cryptosporidium* can remain alive after traveling this distance and more.

* Extent to which previous deposits of bacteria and parasites are re-suspended: Bacteria and parasites can remain alive for extended periods in sediments on a stream bottom. If these sediments are re-suspended by high stream flows or by cattle wading in the stream, large quantities of bacteria and parasites can be quickly released into the water. Such sudden pulses can result in bacteria or parasites entering a drinking-water system. Water treatment works by reducing the percentage of bacteria or parasites in water, but no treatment achieves 100% success. A high enough concentration of bacteria or parasites entering a water treatment system can result in enough of them remaining alive after treatment to infect drinkers of the water.

In short, we found that the proper functioning condition requirements of the Code, even if fully enforced, are not sufficient by themselves to control the risk of bacteria and parasites reaching a drinking-water supply. The main concern here is parasites, as water disinfection is usually able to deal with the risk from bacteria. Exhibit 18 summarizes these findings.

We note that in response to the outbreak of *Cryptosporidium* infection in Cranbrook in 1996, the Ministry of Forests went beyond requiring proper functioning condition, and made two changes that may help address the concerns highlighted in Exhibit 18. The range use plan for Cranbrook’s community watershed, developed by the Ministry of Forests with help from the Ministry of Agriculture and Food, now excludes calves from the watershed until they are old enough to be unlikely to carry high levels of *Cryptosporidium*. As well, the Ministry of Forests and the City of Cranbrook cooperated to build a fence that generally keeps cattle away from the stream for about 2 km above the city’s water intake.

We recommend that the Province expand the range provisions of the Forest Practices Code to more effectively address risks from parasites.

Doing so would, we believe, help in obtaining value for money from public range resources by cost-effectively minimizing the risk of bacteria and parasites reaching drinking-water supplies as a result of cattle grazing. We suggest that the Ministry of Forests (responsible for grazing) and the Ministry of

Health (responsible for drinking-water safety) take the lead in developing the range controls needed, using technical advice from other ministries.

It is worth noting that the Code includes special rules for using livestock in silviculture work such as site clearance and weeding. In this type of work, animals (usually sheep) are concentrated, but under close supervision. These rules require all livestock to be "inspected and certified by the Minister of Agriculture and Food," and forbid the use of livestock within the riparian management area of community watersheds.

The effectiveness of range use plans is weakened by unclear responsibility for their preparation and enforcement

Clear assignment of responsibilities is a keystone of the Forest Practices Code. Logging companies, for example, have been given clear responsibility for developing operational plans and ensuring that the goals of such plans are achieved. Responsibility for adhering to range use plans, however, is less clear.

Range use plans are often prepared by Ministry of Forests' staff, sometimes the same staff responsible for monitoring the plan, and are only later signed off by the rancher. Those range use plans prepared by ranchers themselves do not need professional sign-off, as do those required for logging plans. We heard two reasons why range users are not required to take full responsibility for plan preparation: specialists able to prepare these plans are rare outside the ministry, and small ranch operations cannot afford to hire professionals to help them prepare plans.

We believe it is undesirable for the same ministry staff members to have responsibility for both developing plans and enforcing them. The strict division of responsibility seen elsewhere in the Code is sound, and should be applied equally to all commercial users of forest resources. Some Ministry of Forests districts maintain this division, using separate staff for range planning and range monitoring.

If this is not feasible, there should be a compensating control, such as regular oversight inspections by, for example, regional or headquarters specialists, to ensure that grazing plans are leading to the results envisioned in the Forest Practices Code.

We recommend that the Province consistently separate the responsibilities for developing range use plans and for enforcing them, or introduce compensating controls.

As with logging, responsibility lies with the Ministry of Forests to make sure, through monitoring and field inspections, that range users are abiding by their approved plans. Our concerns about this monitoring and field inspection are similar to those we raised in section 3.1: the extent of field checks is unclear, responsibility for monitoring is unclear, and water quality objectives are not in place.