

SILVA ECOSYSTEM CONSULTANTS

Box 9, Slocan Park, B.C. Canada V0G 2E0

Phone: 250-226-7222 Fax: 250-226-7446

Initial Review of Forest Development Plan for Chilko River Watershed

(FDP-June, 2001)

by Herb Hammond

Section 1: Introduction

This initial review of the current forest development plan (FDP) for the Chilko River watershed has been prepared as part of a report for the Chilko Resorts and Community Association. The main report is being developed by Cariboo Envirotech Ltd., Likely, British Columbia.

One of the key assumptions for this review is that timber extraction, as currently practiced in the Chilko River watershed, is not compatible with protection of ecosystem functioning at multiple spatial scales, and, therefore, not ecologically sustainable, particularly in the long term. In conjunction with this assertion, local communities and tourism operators find that current timber extraction plans and operations are also incompatible with their needs for a high quality environment to maintain their lifestyles and businesses. This initial review will address these issues in a general way, and recommend an approach to develop compatibility between timber management; and the protection of ecosystem functioning, the needs of local communities, and the needs of tourism operations in the Chilko River watershed.

This report is *initial*, because its findings are based upon review of the current FDP maps (Ministry of Forests Consolidated Development Plan, June, 2001), and relevant higher level plan documents that direct land use in the Chilko River watershed. In order to develop a complete analysis of forest development plans and the impacts of timber management in the Chilko River watershed, a number of additional tasks are necessary:

- conduct a field assessment of planned logging and past logging in the Chilko River watershed;
- review any written rationales and supporting documents accompanying timber company development plans for the Chilko River watershed;
- interview First Nations, rural community members, tourism operators, and other people dependent upon the resources of the Chilko River watershed to better understand past, ongoing, and future impacts of industrial timber management in the Chilko River watershed, and

- conduct an ecological economic analysis using the *competing demands model* to understand the relationship between the timber and non-timber components of the economy in the Chilko River watershed; and to define a diverse, ecologically sustainable economy for the area.

The Ministry of Forests' Five-Year Consolidated Development Plan maps reviewed for this report were 1:50,000 forest cover maps for the following map sheets: 920 116, 92N 115, 92N 120, 92N 125, 93B 101, and 93B 102. These FDP maps cover a significant portion of the Chilko River watershed, with the notable exception of the southern portion of the Taseko River watershed.

While there is significant further work necessary to refine this initial review, the findings described below identify key issues, and provide an important framework for improving timber management planning and balancing land use within the Chilko River watershed.

This report consists of the following sections, of which this introduction is the first:

Section 2: Planning context

Section 3: Forest development planning limitations

Section 4: Specific timber management issues

Section 5: Conclusions and overall recommendations

Section 2: Planning context

The Chilko River watershed is part of the Cariboo-Chilcotin Land Use Plan, October, 1994. In addition, the area was studied carefully as part of the Consensus Report of the Chilko Lake Study Team, September, 1993.

The work of the Chilko Lake Study Team was instrumental in the Cariboo-Chilcotin Land Use Plan establishing Ts'yl-os Provincial Park, and in designating the Taseko Management Zone. Chilko Lake, contained within Ts'yl-os Provincial Park, is effectively the headwaters of the Chilko River. Nutzi Provincial Park, in the southeastern portion of the Brittany Triangle, is also included within the Chilko River watershed. The Taseko Lakes and the Taseko River are the largest tributary to the Chilko River, and the watershed of the Taseko River comprises a large portion of the overall Chilko River watershed.

The Ts'yl-os Provincial Park is managed under a Parks Management Plan that conserves ecosystem functioning in this important part of the Chilko River watershed.

The Taseko Management Zone, encompassing a significant portion of the upper Taseko River watershed, is to be managed jointly by a variety of government agencies, and this management is to be "outside of the provincial forest." This joint management also includes the development and implementation of a Local Advisory Group.

As defined in "Draft Management Recommendations, Taseko Management Zone, September 21, 2001", future planning and development of the Taseko Management Zone is to be guided by seven management principles that were originally developed by the Chilko Lake Study Team:

- *To ensure the integrity and perpetuation of the ecological systems, recreational attributes and cultural features within the area.*
- *To develop and implement resource plans, including any access development, in a manner than enhances other values and their use wherever possible. Key values to be considered include Aboriginal cultural sites and activities, biodiversity, fish, wildlife, wilderness recreation, commercial tourism, minerals and timber.*
- *To inventory and evaluate the significant values within the zone before, or in concert with, the planning of resource use and development.*
- *To implement a consensus-based, joint planning framework in which relevant government agencies and public and private interests plan, monitor and assess the implementation of activities.*
- *To involve affected interests directly in the development and implementation of management plans for the TMZ through the creation of a Local Advisory Group.*
- *To establish a formal framework for the joint administration of the TMZ, outside of the provincial forest, by the B.C. Ministries of Environment, Lands and Parks (MELP, now MSRM and MWLAP); Energy, Mines and Petroleum Resources (MEMPR, now Energy and Mines (MEM)); and Forests (MOF). Within this framework, agencies remain accountable for managing their respective responsibilities. Such a framework might best be initiated by a protocol agreement among agencies. **Joint management is a key component of this package.** (emphasis added)*
- *To manage resource use activities within the zone in a manner consistent with the prescribed activity matrix.*

Clearly, the Taseko Management Zone is to be managed in a diverse, ecologically friendly way so that the full spectrum of human uses is accommodated in ways that one use does not prejudice or preclude other uses, particularly those uses dependent upon maintaining “ecological systems, recreational attributes, and cultural features within the area.” This goal would suggest a significantly different approach to timber management planning than that employed in standard forest development plans like those currently being prepared for the Chilko River watershed.

Another aspect of the Cariboo-Chilcotin Land Use Plan is the designation of Special Resource Development Zones (SRDZs). Special Resource Development Zones are “low intensity areas” that “recognize the sensitive nature of certain lands outside protected areas that contribute to a range of values, including: natural resource conservation and maintenance; resource development and extractions; commercial and non-commercial recreation and tourism; and fishing, trapping and hunting.” According to the Cariboo-Chilcotin Land Use Plan, all activities, including timber management, “will be carried out in a manner which respects sensitive natural values.” As a part of respecting natural values, SRDZs provide access to only 70% of the productive forest landbase to timber companies within SRDZs. While access to 70% of the productive forest land indicates a significant timber aspect in SRDZs, this specification also indicates that 30% of the productive forest land will be excluded from timber management, and the overall requirements for SRDZs imply that, where timber management occurs, it will occur in “low intensity” ways that “respect sensitive natural values.”

Within the Chilko River watershed, there are three SRDZs designated by the Cariboo-Chilcotin Land Use Plan:

- Potato Range SRDZ;
- Brittany Triangle SRDZ; and
- Taseko River SRDZ (overlaps with Taseko Management Zone)

Hence, as well as the headwaters of the Chilko River being contained within Ts'yl-os Provincial Park, and another portion of the Chilko River watershed being contained within Nutzi Provincial Park, significant portions of the Chilcotin River watershed are recognized as having special natural values. Land use plan zonation for these SRDZs requires that the diverse natural values be maintained through careful planning that fully includes all land users, and through application of low intensity forms of resource use.

Respect for higher level plans in Chilko River FDP

The following observations have been made by reviewing the Ministry of Forests Consolidated Forest Development Plan Maps, effective June, 2001:

1. Development plan text to accompany the Consolidated Forest Development Plan maps was requested. However, the Ministry of Forests advised that there was no written text that accompanied the Forest Development Plan maps. Based on this information, I assume that there is neither an ecological rationale, nor a cultural/social rationale for the FDP in the Chilko River watershed. This appears to contradict both the requirements for the Taseko Management Zone and the Special Resource Development zones (SRDZs) found within the Chilko River watershed. Both the Taseko Management Zone and the SRDZs require local planning processes to ensure effective protection of a diverse range of forest values. Without results from local planning processes, and explanation of methods employed to provide for the protection for diverse local values (e.g., Aboriginal culture, recreation, tourism, and harvesting of non-timber forest products), there is no indication that the current forest development plan for the Chilko River watershed meets the requirements of the Taseko Management Zone and the SRDZs within the Chilko River watershed.
2. Both the Taseko Management Zone and the SRDZs anticipate a "low intensity" of timber management. However, the style and intensity of timber management as depicted on the Consolidated Forest Development Plan Maps could hardly be referred to as "low intensity." The dominant logging system employed in the past and proposed for the future in the FDP is clearcutting. In addition, a significant number of the clearcuts that have occurred in the past, and that are proposed in the FDP exceed the maximum clearcut size of 60 hectares designated for the interior portions of British Columbia by the Forest Practices Code Act.
3. Based upon the description of the need for conservation in the Taseko Management Zone and in the SRDZs, one would expect that unique habitat types within the Chilko River watershed would be protected. SRDZs, which actually include the Taseko Management Zone, specify that 30% of the productive forest landbase will be excluded from timber management. In order to protect special values, one would

assume that this 30% would be allocated to unique, or naturally rare ecosystem types.

A naturally rare ecosystem type in the Chilko River watershed are valley bottom forest ecosystems. These forest ecosystem types are often located adjacent to riparian ecosystems and at the toe of steep slopes. These ecosystem types commonly contain small amounts of species, like Engelmann spruce and Douglas-fir, that are infrequent within the Chilko River watershed, particularly in the middle and lower portions of the watershed. However, the Forest Development Plan Maps show numerous large clearcuts located in the valley bottoms along the main stem of the Chilko River. This type of timber management planning is inconsistent with protection of natural values, because it is not only prejudicial to the maintenance of infrequent or naturally rare ecosystem types, but also results in significant fragmentation and habitat loss along one of the major connectivity routes, the Chilko River corridor, within the Chilko River watershed.

Apparently, there is a significant disconnect between the formulation of forest development plans for the Chilko River watershed and the requirements established in the Cariboo-Chilcotin Land Use Plan, specifically specifications for the Taseko Management Zone and SRDZs. In order to correct this “disconnect”, the local planning processes envisioned by the Cariboo-Chilcotin Land Use Plan for the Taseko Management Zone and the SRMDZs need to be implemented and followed in the formulation of forest development plans. In other words, the FDP for the Chilko River watershed does not ensure the integrity and perpetuation of the ecological systems, recreational attributes, and cultural features within the area, as envisioned by specifications for the Taseko Management Zone and SRMDZs.

Section 3: Forest development planning limitations

Before discussing some specific timber management issues associated with the Chilko River FDP, I would like to discuss some overall limitations of the forest development planning process that are relevant to the conservation and diverse use of the Chilko River watershed.

Timber extraction plans

Forest development plans are established by the Forest Practices Code Act to serve as five-year forecasts for logging activities within a particular timber tenure (i.e. forest licence or tree farm licence). These plans do not address the issue of “whether to log,” but instead simply specify how and where to log in a particular area. With the exception of the Small Business Forest Enterprise Program in the Ministry of Forests, these plans are prepared solely by timber companies, and interpretations of any potential constraints to timber management planning are made by the timber company preparing the plan.

A fair characterization of forest development plans is that they are timber-biased. Therefore, these plans offer a poor to non-existent framework for protection of ecological integrity, and accommodation of a diversity of non-timber forest uses and values. Local resource use plans (LRUPs) are the Ministry of Forests’ planning process that offers the

opportunity for more inclusive consideration and accommodation of ecological considerations, and non-timber forest values and uses.

Administrative units versus watershed units

Forest development plans are prepared for timber tenures, which seldom have logical ecological boundaries like drainage basins or watersheds. Hence, the FDP for the Chilko River watershed is actually an amalgamation of FDPs prepared by several companies which include portions of the Chilko River watershed. Under this FDP approach, overall impacts of timber management to watershed functioning and landscape ecology within the watershed are not considered. From an ecological perspective, FDPs represent short-term, “patchwork” timber management planning, as opposed to long-term ecosystem-based planning that protects ecosystem functioning at multiple spatial scales, while providing for diverse, balanced human activities in the landscape.

RECOMMENDATION: If the Chilko River FDP is to be effective in meeting the requirements of higher level plans, and the expectations of local communities, a unified ecosystem-based plan needs to be prepared for the entire Chilko River watershed.

Non-timber forest values

With the exception of adherence to higher level plans, and the directive to “consider” public input, the Forest Development Planning Process does not directly collect information about, and incorporate non-timber forest values and uses. In other words, the timber company preparing the FDP is under little or no obligation to collect and analyze information in enough detail to effectively protect ecosystem functioning and non-timber forest uses.

The emphasis is on locating the most desirable timber stands, and including them in proposed cut blocks, subject to the requirements of the Forest Practices Code Act. Public comments are sought on proposed cut blocks in an FDP, but there is no requirement in the Forest Practices Code Act to accommodate requests made by First Nations and rural communities. From their perspective, timber companies may believe that small changes to road locations and cut block boundaries are adequate to incorporate the results of public consultation, but most people living within the landscape covered by an FDP are unlikely to believe that FDPs incorporate their needs.

Limited public review

Forest development plans are the only location in a sequence of operational timber management planning in British Columbia where the public can review plans. Formerly, the public was not only able to review FDPs, but also to review management plans that preceded FDPs, and review silviculture prescriptions that followed FDPs. However, when the Forest Practices Code Act was streamlined, circa June 1999, the requirement for public consultation was reduced to only forest development plans.

Not only is public consultation now significantly constrained in the overall process of forest planning, but also forest development plans furnish little or no information on which the public can determine the extent of potential impacts from forest development plans.

All forest development plans are required to show is a general location for a proposed cut block and the general logging and silvicultural systems to be employed in a particular cut block. FDPs no longer provide a projected schedule for when various areas will be logged. In addition, FDPs do not provide ecological inventories and economic data, including impacts to non-timber forest businesses like tourism. Even terrain stability studies and fish habitat assessments, which may be required by the District Manager prior to approving a cutting permit for a particular area, are not required to be included with the forest development plan.

Therefore, forest development plans contain very limited information on which First Nations and the general public may evaluate the potential impacts of the plan. However, once an FDP is approved, the category A (i.e. "approved") cut blocks are all but assured of receiving a cutting permit and being logged, irrespective of any further studies that may be required by the District Manager. In most cases, further studies are simply regulatory hoops that a timber company goes through in order to receive a cutting permit for an area. These further studies may slightly modify cut block boundaries and/or road locations, but they seldom, if ever, prohibit logging.

FDPs may be a location for public input. However, due to the limited information contained in FDPs, and the lack of requirement for accommodation of the needs of forest ecosystems and local residents, FDPs constitute a less than adequate means of sustaining forest ecosystems and providing for balanced, diverse use of forest landscapes.

The limitations of the forest development planning process exposes the need for plans that can provide for protection of the integrity of forest ecosystems, protection of First Nations' culture and needs, and protection and accommodation of non-timber forest values and uses. Theoretically, these important aspects of forest planning are contained within the Taseko Management Zone and SRDZs planning requirements for the Chilko River watershed. However, these local planning processes do not seem to have occurred, or at least, to not have occurred in ways that have affected the characteristics of the FDP for the Chilko River watershed.

RECOMMENDATION: I would suggest that approval of the current FDP be held in abeyance pending satisfactory completion and implementation of local planning processes for the Taseko Management Zone and the SRDZs within the Chilko River watershed.

Section 4: Specific timber management issues

As explained in Sections 2 and 3 above, the forest development plan for the Chilko River watershed does not appear to meet the needs of the higher level plan specifications in the Cariboo-Chilcotin Land Use Plan, nor does it adequately represent an approach to forestry that protects ecosystem integrity and non-timber forest values and uses. While the FDP does not take into account critical higher level plan decisions and is virtually exclusively about short-term timber extraction needs of timber companies, the FDP also appears to be based upon some poor understanding of ecological and forestry issues. Problems associated with these issues not only threaten the maintenance of non-timber forest uses,

like First Nations' cultural activities and tourism, but also threaten the long-term sustainability of timber resources in the Chilko River watershed.

This section provides a brief explanation of some important specific timber management issues in the Chilko River watershed. These issues are not only derived from review of the FDP maps, but also from my field and planning experience in portions of the Chilko River watershed and surrounding Cariboo-Chilcotin landscapes.

Fragmentation

Past and planned logging throughout the Chilko River watershed has resulted in, and will continue to increase, fragmentation in this landscape. While the Chilko River watershed contains two significant provincial parks—Ts'yil-os and Nutzi—these protected areas, or core reserves, are insufficient to maintain overall landscape level ecosystem functioning in the Chilko River watershed and surrounding landscapes. These protected areas need to be linked by healthy, fully functioning forest landscapes. The large clearcuts which have occurred and are planned for significant portions of the Chilko River watershed will block or interrupt connectivity, not only between these two parks, but also within the remaining portions of the Chilko River watershed.

Fragmentation blocks the movement of animals from one required habitat type to another required habitat type. The negative impacts of fragmentation occur at multiple spatial scales—from habitat loss for large mammals at the landscape level, to habitat loss for invertebrates at the patch or stand level. As well, the roads associated with fragmentation serve as vectors for the spread of disease and insects throughout the landscape, and result in higher levels of hunting pressure in formally unroaded, difficult to access areas.

As fragmentation increases, unlogged areas in the landscape become more and more “islands” in a sea of clearcuts and homogeneous young tree farms. The resultant loss of connectivity and habitat diversity will result in the decline of a wide range of plant and animal species, and in the loss of overall health and integrity of the forest ecosystems in the Chilko River watershed.

RECOMMENDATION: *Develop a protected landscape network for the Chilko River watershed to protect riparian ecosystems, unique ecosystem/habitat types, old growth forests, and representative ecosystems; and to ensure that protected corridors and linkages are designated throughout the Chilko River watershed. This protected landscape network will likely include some previously logged areas in strategic locations within the Chilko River watershed. Portions of the protected landscape network within logged areas will be designated as restoration zones. The protected landscape network for the Chilko River watershed will form the framework to accommodate the Taseko Management Zone and the SRDZs; and around which future cut blocks will be planned.*

Clearcutting

The dominant system used in both past and planned logging in the Chilko River watershed is clearcutting. Clearcutting has occurred in large cut blocks, often exceeding 100 hectares in size. These large cut blocks exceed the limit of 60 hectares imposed by the Forest Practices Code Act. However, this limit may be exceeded at the discretion of the District

Manager, which apparently is the normal procedure for an FDP approval in the Chilko River watershed.

Clearcuts are the most degrading, aggressive silviculture system that is applied in forest ecosystems. Clearcuts result in the most severe fragmentation; alter microclimates, resulting in negative impacts to soil and hydrological processes; and convert formerly diverse small forest landscapes into homogeneous young tree farms. Large clearcuts are likely justified on the pretext that they “mimic fire.” However, there are few similarities, and many differences between clearcutting and natural fire:

- Fires leave behind live trees and dead trees to maintain critical forest processes, like climate modification, diverse habitat niches, soil fertility, water storage and filtration, and overall landscape diversity. In contrast, clearcuts remove all merchantable trees in the form of logs from the site.
- Fire diversifies and enriches the landscape, while clearcutting homogenizes and fragments the landscape.
- There are no access roads associated with natural fire events, while access roads are a main feature in clearcutting. As explained earlier, these access roads result in fragmentation, habitat loss, and hunting pressure, to name a few impacts of roads.
- Fires occur on unpredictable cycles that range in the Chilcotin-Cariboo from 50 years to 300+ years. Clearcuts are planned to occur in regular predictable cycles of approximately 80 years. The unpredictability of fire is a major factor in its contribution to landscape diversity, while the predictability of clearcutting is a major factor in the homogenizing, fragmenting effects of clearcutting on the landscape.
- Fires are messy, leaving behind a variety of structures, habitat niches, and landscape patterns. In contrast, clearcuts are uniform prescriptions that reduce diversity from the landscape scale to the patch or stand, where the clearcut occurs.

Fire is a natural part of the functioning of the forest ecosystems in the Chilko River watershed, while clearcutting is not a part of the natural functioning of this landscape. \

RECOMMENDATION: *After a protected landscape network has been developed for the Chilko River watershed, and timber zones identified through a cooperative, participatory process with First Nations and non-timber forest users, a diversity of silvicultural prescriptions need to be planned and applied in timber zones. Key features of these silvicultural systems are:*

- *Develop stand level protected ecosystem networks to maintain water, soil, and biodiversity within cut blocks;*
- *Designate well-distributed, full cycle trees (i.e. trees that will be left to live out their natural life cycles, become snags, and eventually fallen trees) across each logging block. The minimum standard for full cycle trees should be 10% of the dominant and co-dominant trees, with a target level of 25% of the dominant and co-dominant trees. Note: maintaining full cycle trees on logged areas will*

not hinder the regeneration of tree species, including lodgepole pine, in the Chilko River watershed.

- ***Minimize the density and width of haul roads and skid roads within cut blocks.***
- ***Provide adequate riparian reserves for all riparian features, including ephemeral streams, small wetlands, and ephemeral ponds.***

Naturally rare or unique forest ecosystems

My review of Category A “approved” cut blocks and Category PA “proposed approved” cut blocks in the Chilko River watershed shows numerous large blocks located along the main stem of the Chilko River in valley bottom positions. The forest cover labels for many of these blocks indicate that they are lodgepole pine forests that have been disturbed by insects (i.e. the mountain pine beetle) in the neighbourhood of 15 years ago. In my experience, these stands are frequently not pure lodgepole pine stands. These areas are often rich sites by comparison to upland forests in the Chilko River watershed and frequently contain varying components of Engelmann spruce and Douglas-fir. These tree species are often not indicated on forest cover maps in the west Chilcotin region, due to the old, generally poor nature of the forest inventory in this area.

If these valley bottom stands contain significant components of Engelmann spruce and/or Douglas-fir, they need to be either reserved from cutting, or only a portion of the lodgepole pine component of these forests removed. In order to protect biological diversity, and in recognition of the unique nature of these ecosystem types along the Chilko River, my general preference would be to exclude most of these areas from timber management zones. In any event, the main point is that forest development plans need to reserve from cutting naturally rare, infrequent ecosystem types within the Chilko River watershed. This will include mixed stands of lodgepole pine, Engelmann spruce, and/or Douglas-fir; and the extremely uncommon small stands of pure Douglas-fir and/or Engelmann spruce.

RECOMMENDATION: Perform a geographic information system (GIS) analysis of the Chilko River watershed using forest cover data and air photo interpretation to identify the location of naturally rare ecosystem types. Naturally rare ecosystem types will be described by tree species and other vegetation composition, by landform and soil types, by geographic position within the watershed, and by topographic position (i.e., plateau, slope, valley bottom). The results of this GIS analysis will be used to reserve naturally rare, infrequent forest ecosystem types in the Chilko River watershed from logging and other timber management activities. In the SRMDZs, these naturally rare forest ecosystem types can be reserved under the specification that 30% of the productive forest landbase will not be used for timber extraction. Protection of these naturally rare, infrequent forest ecosystem types is not only important for the protection and maintenance of biological diversity, but also many of these sites will be important for various forms of tourism, including adventure tourism and ecosystem interpretation.

Small aquatic and terrestrial ecosystems

Water is a scarce resource throughout the Chilko River watershed and the broader Cariboo-Chilcotin plateau. However, small ephemeral streams, small wetlands, small hay meadows, and ephemeral ponds are relatively frequent in many portions of the Chilko

River watershed. These important ecosystem types—combinations of aquatic and terrestrial ecosystems—do not show up in forest development plans, nor in most silvicultural prescriptions that direct how logging is to occur in cut blocks designated in the FDP. Furthermore, these small land/water features are not protected under the Forest Practices Code Act.

Hence, clearcutting, as prescribed in the FDP for the Chilko River watershed, systematically degrades these small water features found in and adjacent to cut blocks. Without realizing it, timber companies and the Ministry of Forests are sanctioning the complete logging of “micro-watersheds” that are responsible for much fine-grain, patch level diversity in the Chilko River watershed. This diversity contributes to healthy bird and mammal populations, furnishes pure water for fish habitat in larger streams and lakes, and provides important linkages or connectivity within the larger landscape ecology of the Chilko River watershed.

RECOMMENDATION: *Adequate riparian reserves need to be designated on all water features. In particular, riparian reserves are needed on all small and ephemeral water features, including ephemeral streams, small wetlands, small hay meadows, and ephemeral ponds, as part of forest development planning. At the FDP level, riparian reserves will serve as a netdown to overall area and volume expectations from a particular cut block. At the silvicultural prescription and cut block level, riparian reserves will be field-located around all water features, both year-round and ephemeral.*

Low timber potential—high non-timber values

Overall, the forest ecosystems that comprise the Chilko River watershed may be described as high elevation, dry, cold forests. This results in cold, nutrient-poor soils and short growing seasons. From the standpoint of timber productivity, these areas are some of the lowest timber producing sites found within the productive timber landbase in British Columbia. It is not only questionable whether or not these areas are ecologically viable for long-term sustainable timber production, but also whether or not current timber extraction is economically viable, without significant subsidies.

In contrast, the rich assemblage of mountains, forested plateaus, lakes, rivers, wetlands, and small streams results in a highly attractive landscape for a variety of recreational pursuits, tourism, and harvest of non-timber forest products. However, many of these activities and values are incompatible with conventional timber extraction. Despite the significant economic contribution provided by recreation, tourism, and non-timber forest products; timber extraction on marginal sites continues to degrade and reduce options for non-timber forest activities and businesses.

RECOMMENDATION: *Conduct a competing demands economic analysis to compare timber extraction with non-timber forest activities and businesses, including recreation, various forms of tourism, harvesting and processing of non-timber forest products, and subsistence lifestyles. The results of this competing demands economic analysis will be used to determine the compatibility of timber and non-timber forest activities, to identify activities with the highest short- and long-term social, cultural, and economic values, and to designate forest use zones for ecologically, socially, and economically appropriate uses.*

Section 5: Conclusions and overall recommendations

This initial review of the forest development plan for the Chilko River watershed indicates that higher level plans, specifically the designation of the Taseko Management Zone and special resource development zones within the Chilko River watershed are not being adhered to in forest development plans for the area. This is potentially a violation of the Forest Practices Code Act; and should be more carefully examined through discussions with the Ministry of Forests and timber companies, through thorough review of all forest development plan materials, and through review of policies and planning materials for the Taseko Management Zone and SRDZs.

Forest development plans for the Chilko River watershed are dominated by large clearcuts. This type of silvicultural system has the most detrimental impact to forest ecology, both at the landscape and stand levels. As well, this approach forecloses upon most non-timber forest values and uses. Specifically, the clearcut approach to timber management negatively impacts the growing, readily sustainable tourism sector in the Chilko River watershed and surrounding Cariboo-Chilcotin landscape.

The economic viability of both current and long-term large-scale industrial timber management in the Chilko River watershed is questionable. The major constraints to economic viability are low productivity timber growing sites and long distances to manufacturing facilities. These inherent limits to the economic viability of large-scale industrial timber management indicate that forest planning needs to provide better protection for ecosystem functioning, and needs to provide for a wider diversity of non-timber forest activities and businesses. Important non-timber forest activities and businesses include First Nations' cultural needs, adventure tourism, fishing lodges, harvest of non-timber forest products, and eco-tourism, featuring ecosystem interpretation.

Overall recommendations

1. Bring forest development plans for the Chilko River watershed into compliance with higher level plans, specifically the Taseko Management Zone and special resource development zones in the Chilko River watershed.
2. Conduct a complete analysis of the *character* (i.e. how the forest ecosystems function) and the *condition* (i.e. impacts to ecosystems from human activities, particularly logging and mining) of the Chilko River watershed. This analysis will include an assessment of the impacts of planned logging on the landscape ecology of the area. This analysis will also assess whether or not naturally rare, infrequent ecosystems are included in proposed logging, and whether or not the area of old growth forests is within the historic range of variation for the Chilko River watershed. The analysis of character and condition will provide the basis to assess the rate of cut and distribution of cut in the watershed, and to determine necessary changes to maintain and/or restore the ecological integrity of the watershed.
3. Develop an ecosystem-based watershed plan for the Chilko River watershed. This ecosystem-based plan will not only provide a protected landscape network to maintain and/or restore ecosystem functioning, but also will provide a clear way of developing compatibility between timber and non-timber forest values and uses.

The analysis of character and condition referred to in Recommendation 2 above is an integral part of the development of the ecosystem-based plan.

4. As a part of the ecosystem-based plan for the Chilko River watershed, conduct a competing demands economic analysis to compare the economic, social, and cultural viability of both timber and non-timber forest uses.
5. Designate forest use zones within the Chilko River watershed to provide for balanced timber and non-timber forest uses, based upon maintenance and restoration of ecological integrity in the watershed. Forest use zones are designated as a part of the ecosystem-based plan, and follow from the competing demands economic analysis.
6. Follow the recommendations identified in Section 3: *Forest development planning limitations*, and Section 4: *Specific timber management issues*.

I am hopeful that this initial review of Forest Development Plans for the Chilko River watershed will serve as a starting point to improve forest planning in the area. Specifically, there is a need for timber management activities to better protect the landscape ecology and site level ecology, and to achieve a better balance between timber management and non-timber forest values and uses. I would be happy to answer any questions regarding the contents of this report, and to participate in a process to improve overall forest planning in the Chilko River watershed.

To assist the reader in better understanding the concept of ecosystem-based planning, I have attached two documents to this review:

- *An Ecosystem-based Approach to Forest Use: Definition and Scientific Rationale*, September 1997, Silva Forest Foundation; and
- A flow chart describing Ecosystem-based Planning at Multiple Spatial Scales, September 2000, Silva Ecosystem Consultants.

Herb Hammond
December 20, 2001