

Mill Creek Sensitive Area Plan

**Kispiox Forest District
December 1998**

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Order to Establish a Sensitive Area and Objectives

Pursuant to section 5 of the *Forest Practices Code of British Columbia Act*, 117 hectares of Crown land in the Mill Creek watershed are established as a sensitive area effective June 15, 1999.

The following objectives for this area are established as sensitive area objectives effective June 15, 1999:

Cedar stand zone (as shown on Map 2):

1. Maintain old growth forest attributes in the cedar stand zone by precluding commercial timber harvesting and road construction, except where required to maintain forest health and control fires.
2. Retain a representative example of a rare ecosystem in old growth condition.

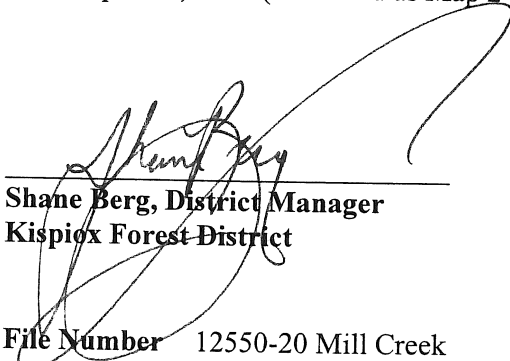
Reserve zone (as shown on Map 2):

3. Retain the interior forest condition of the cedar stand zone by providing a reserve of at least 70 metres where the cedar stand zone is not buffered by an adjacent ecosystem as shown in Figure 1.
4. Protect the cedar stand zone from windthrow.
5. Maintain the hydrologic stability of the alluvial fan.

Management zone (as shown on Map 2):

6. Maintain the hydrologic stability of the alluvial fan in the cedar stand and reserve zones by limiting timber harvesting in the management zone to non-clearcut systems.
7. Protect the cedar stand and reserve zones from windthrow.

The boundaries of the Mill Creek sensitive area are shown on the attached 1:20,000 scale map dated April 24, 1998 (described as Map 2 in the Mill Creek Sensitive Area Plan).


Shane Berg, District Manager
Kispiox Forest District

98-12-15
Date

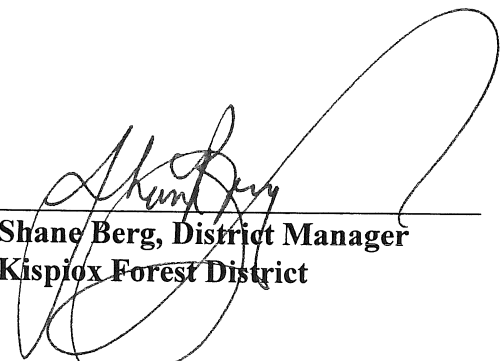
File Number 12550-20 Mill Creek

District Manager's Policy

Under section 41(1) of the *Forest Practices Code of British Columbia Act* (the Act), I am required to approve an operational plan or amendment that has been prepared and submitted in accordance with the Act, the regulations and the standards, and that I am satisfied will adequately manage and conserve the forest resources of the area to which it applies.

I have reviewed the strategies in section 4.0 of the Mill Creek Sensitive Area Plan and believe they are relevant to, and will provide appropriate guidance in, the development of operational plans and amendments which pertain to the area covered by the Mill Creek Sensitive Area Plan. I therefore recommend that these strategies be considered and incorporated into operational plans and amendments where possible.

I will continue to evaluate each operational plan or amendment on its own merits prior to making a decision on whether or not it should be approved. To assist me in this process, where an operational plan or amendment does not incorporate the strategies, I will expect an adequate explanation of the circumstances which justify their omission.



Shane Berg, District Manager
Kispiox Forest District

98-12-15
Date

File Number 12550-20 Mill Creek

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Mill Creek Sensitive Area Plan

1.0 Introduction

During the land and resource management planning process for the Kispiox Timber Supply Area, participants identified rare or threatened plant communities as a priority for conservation. The Kispiox Land and Resource Management Plan (LRMP) reflects this priority through the following resource management zone objectives for biodiversity:

- maintain rare or threatened plant and animal species and communities; and
- maintain rare ecosystems and environmentally sensitive areas such as wetlands, floodplains and riparian areas.

These objectives have been established as a higher level plan and are legally mandated under the Forest Practices Code. The Kispiox LRMP lists the identification of rare ecosystems and environmentally sensitive areas as a management strategy to achieve these objectives.

The western redcedar stand at Mill Creek (see Map 1) has been identified as a rare ecosystem and will be maintained through the establishment of a sensitive area. The purpose of the sensitive area is to conserve the rare qualities of the cedar stand in accordance with the resource management zone objectives for the Kispiox LRMP. Appendix 1 contains additional background information to support the establishment of a sensitive area.

2.0 Site Description

2.1 Ecological Characteristics

The cedar stand is located on the west side of Mill Creek, a tributary of the Skeena River. It has been classified as interior cedar - hemlock forest with a moist cold subzone - hazelton variant (ICHmc2) and occurs primarily on two site series - 04 and 05 (refer to Appendix 2 for a site series description). This biogeoclimatic ecosystem classification (BEC) variant is typically found in valley bottoms in the southern and western portions of the district.

The stand has developed on an alluvial fan at the base of a stream that flows from Kitwanga Mountain. The soil profile of the fan is characterized by layered deposits of sand, gravel and silty clay loam resulting from periodic floods and debris slides. Generally, fans are underlain by coarse materials that permit the lateral movement of water. This seepage water is rich in nutrients and acts as a hydroponic fertilizer for vegetation on the fan. As a result, fan ecosystems are often rich sites characterized by impressive tree growth (McLennan 1997). Characteristically, the cedar stand is moist but well drained, and supports rich site indicators such as devil's club (*Oplopanax horridus*), lady fern (*Athyrium filix-femina*) and stream violet (*Viola glabella*).

The diversity of species and age classes surrounding the stand indicate that the area has had a complicated fire history. Although adjacent areas have burned in a series of fires, the cedar stand has escaped stand-replacing fire for several centuries and is estimated to be at least 300 years old. The rich, moist growing conditions associated with the alluvial fan have given rise to a productive old growth stand dominated by western redcedar (*Thuja plicata*) (60%) and black cottonwood (*Populus balsamifera trichocarpa*) (30%). Western hemlock (*Tsuga heterophylla*) and white spruce (*Picea glauca x engelmannii*) comprise the remaining 10% of the stand. The trees in the surrounding stands are estimated to range in age from 61 to 140 years (age classes 4 to 6).

2.2 Other Identified Values and Uses

The area has been assessed as having high value for wildlife based on evidence of bear, moose and woodpecker activity and the presence of songbirds and barred owls.

Two culturally modified cedar trees were identified during a field review of the stand and there is evidence of limited cedar poling dating from the 1940s and 1950s.

The stand is part of the chart area for Kitwanga Lumber Company Ltd. and was partially included in Cutting Permit 30 - Block 4 (CP 30 - Blk 4) before being proposed as a sensitive area.

The Ministry of Energy and Mines has assessed the area as having low mineral potential and no mineral claims or survey lines exist on the site.

Chief Yeah Yeah, a Gitxsan Chief of Gitwangak, has identified the cedar stand as part of his traditional use and trapline area. Chief Yeah Yeah holds a registered trapline that encompasses the cedar stand. The stand is also located within a licenced guiding territory. Trapping, guiding and hunting are all viewed as compatible with conserving the cedar stand.

3.0 Zoning Within the Sensitive Area

The sensitive area is 117 hectares in size and encompasses three zones: a cedar stand zone; a reserve zone; and a management zone. These zones are illustrated on Map 2.

Cedar Stand Zone

The cedar stand zone is represented by Polygons 1 and 2 on Figure 1. This zone also encompasses the portion of Polygon 3 that includes old cedar trees.

Reserve Zone

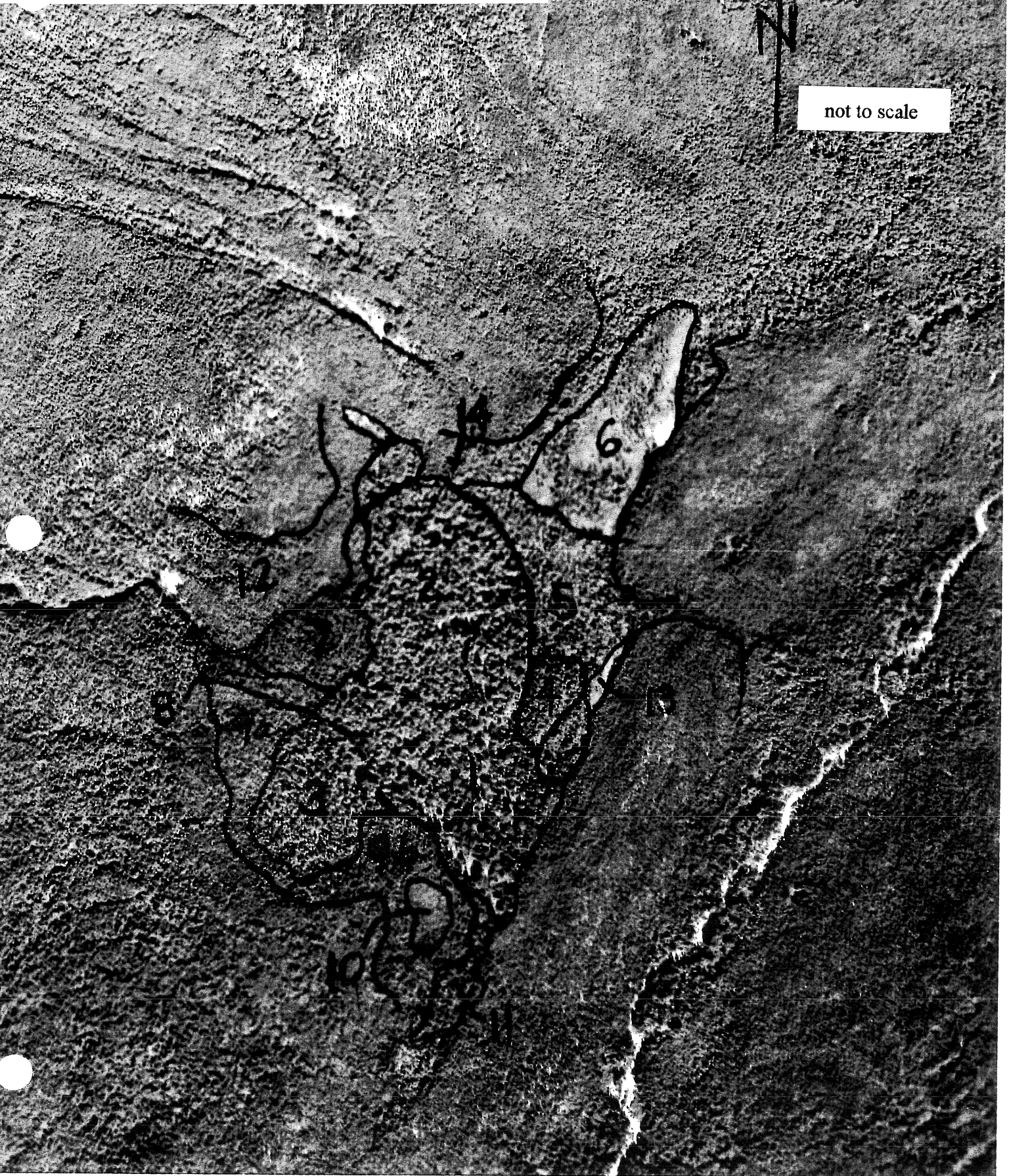
The adjacent reserve zone encompasses:

- i) the remaining ecosystems on the alluvial fan (Polygons 3, 7, 8, 9 and part of 12);
- ii) the outflow stream for the fan system (Polygon 11);
- iii) patches of wetland forest at the foot of the fan (Polygons 4, 5 and 14);
- iv) adjacent non-forested wetland ecosystems (Polygons 6 and 13); and

Figure 1: Ecological delineation of polygons in sensitive area.



not to scale



- v) a plant community identified as blue-listed ("vulnerable") by the Conservation Data Centre of British Columbia (Polygon 10). Blue-listed plant communities are also found in Polygons 3, 4 and 5.

Protection of the alluvial fan is viewed as integral to maintaining the hydrologic condition of the stand. Consequently, all ecosystems on the fan have been included in the reserve zone.

Most of the remaining ecosystems in the reserve zone are forested and non-forested wetland ecosystems. They are not considered to be productive from a timber harvesting perspective because of low site productivity and the likelihood of regeneration problems if harvested (McLennan 1997).

The polygons in the reserve zone are illustrated in Figure 1. Appendix 3 describes the attributes of each polygon and provides additional information on the blue-listed plant communities found in the sensitive area.

In addition to the ecosystems described above, the reserve zone includes a 70 metre wide buffer where required to ensure a contiguous reserve around the cedar stand zone. The 70 metre buffer represents two tree heights which is a common measure used to promote windfirmness (McLennan, personal communication) and to reduce edge effects (*Biodiversity Guidebook*, p. 79).

Management Zone

With the exception of the upslope portion of the fan, which is included in the reserve zone, and the area due north of the stand, which is subject to an approved cutting permit, the reserve zone is surrounded by a 100 metre wide management zone where limited activities are permitted (see Section 4.0).

4.0 Objectives and Strategies

Sensitive area objectives are statements of desired future condition for forest resources. As a higher level plan, they provide legally-binding direction for forest management and must be reflected in operational plans. The associated strategies describe recommended approaches to achieving the objectives. They represent the District Manager's policy and will be considered in the approval of operational plans.

The objectives and strategies for the Mill Creek sensitive area are intended to address the following key features of biodiversity:

- the retention of old growth;
- the representation of rare ecosystems; and
- the maintenance of old growth stands large enough to provide interior forest condition.

Objectives	Strategies
<p><i>Cedar stand zone</i> (as shown on Map 2):</p> <ol style="list-style-type: none"> 1. Maintain old growth forest attributes in the cedar stand zone by precluding commercial timber harvesting and road construction, except where required to maintain forest health and control fires. 2. Retain a representative example of a rare ecosystem in old growth condition. 	<ul style="list-style-type: none"> • Prioritize response to fires to ensure maximum possible protection of the cedar stand. • Allow natural processes of insect feeding and disease to occur unless infestations or infections threaten to spread into areas outside the cedar stand zone. If intervention is required, select treatments that allow for the retention of structural diversity in the form of coarse woody debris, snags and standing live trees.
<p><i>Reserve zone</i> (as shown on Map 2):</p> <ol style="list-style-type: none"> 3. Retain the interior forest condition of the cedar stand zone by providing a reserve of at least 70 metres where the cedar stand zone is not buffered by an adjacent ecosystem as shown in Figure 1. 4. Protect the cedar stand zone from windthrow. 5. Maintain the hydrologic stability of the alluvial fan. 	<ul style="list-style-type: none"> • Commercial timber harvesting and road building are not permitted in the reserve zone. • Prioritize response to fires to ensure maximum possible protection of the reserve zone. • Allow natural processes of insect feeding and disease to occur unless infestations or infections threaten to spread into areas outside the reserve zone. If intervention is required, select treatments that allow for the retention of structural diversity in the form of coarse woody debris, snags and standing live trees.

Objectives	Strategies
<p>Management zone (as shown on Map 2):</p> <p>6. Maintain the hydrologic stability of the alluvial fan in the cedar stand and reserve zones by limiting timber harvesting in the management zone to non-clearcut systems.</p> <p>7. Protect the cedar stand and reserve zones from windthrow.</p>	<ul style="list-style-type: none"> • A maximum of 50% of the basal area may be removed within the management zone with the exception of harvesting for road construction. • If a road is constructed through the management zone, minimize the width of the right of way and deactivate the road after use. • Obtain the written support of a qualified hydrologist before submitting a road permit or cutting permit for an area on, or directly adjacent to, the alluvial fan.

5.0 Implementation Strategy

All provisions of the higher level plan take effect as of the date specified in the attached order. A statement of higher level plan transition is therefore not required.

The sensitive area and objectives will be reviewed during the planning process for the Kitwanga Landscape Unit. If, at that time, the sensitive area meets the criteria for an old growth management area, it may be cancelled and re-established under the new designation. Otherwise the sensitive area and its objectives will be reviewed in 10 years, as outlined in the *Higher Level Plans: Policy and Procedures*.

If changes are made to the resource management zone objectives for the Kispiox LRMP while the sensitive area is still in effect, the objectives for the sensitive area will be reviewed to ensure they remain consistent with the revised resource management zone objectives.

6.0 References

- Banner, A., W. MacKenzie, S. Haeussler, S. Thomson, J. Pojar and R. Trowbridge. 1993. A Field Guide to Site Identification and Interpretation for the Prince Rupert Forest Region. Land Management Handbook No. 26. B.C. Ministry of Forests, Victoria, B.C.
- McLennan, D. 1997. Location, Description and Conservation Recommendations for a Rare Ecosystem, Mill Creek Area - Kispiox Forest District. OIKOS Ecological Services Ltd., Smithers, B.C.
- Ministry of Forests and BC Environment. 1995. *Biodiversity Guidebook*, Forest Practices Code of British Columbia.

Appendix 1

Mill Creek Sensitive Area: Background Information

1.0 Rationale for Establishing the Sensitive Area

The western redcedar stand at Mill Creek was first brought to the attention of the District Manager by the District Check Cruiser after a routine inspection of CP 30 - Block 4, which included a portion of the stand. The Check Cruiser described the stand as unique based on its size and high concentration of old cedar and recommended that it be retained as an old growth reserve.

During a subsequent field review, the Silviculture Practices Forester suggested that the size and complexity of the stand made it extremely rare and also recommended that it be protected. After participating in the same review, the Regional Forest Ecologist confirmed that the stand is rare in the Kispiox District because of its size, age and species composition.

The *Biodiversity Guidebook* defines a rare ecosystem as “an ecosystem (site series or surrogate) that makes up less than 2% of a landscape unit and is not common in adjacent landscape units”. Based on the existing forest cover inventory, cedar-leading stands with cottonwood as a secondary species make up only 323 hectares of the forested land in the Kispiox District. One hundred and forty-three hectares of this species mix is classified as old growth (250+ years).

The cedar stand at Mill Creek is 26.5 hectares in size and is the only forest stand of this type known to exist within the proposed Kitwanga Landscape Unit. It comprises .09% of the landscape unit, which has a total forested land base of 31,125 hectares, and is not found in adjacent landscape units. The cedar stand is therefore considered to be a rare ecosystem.

Under section 5 of the *Forest Practices Code of British Columbia Act*, a district manager is authorized to establish a sensitive area and objectives if he or she believes that the area should be treated differently from adjacent areas in order to manage or conserve the forest resources.

According to the Chief Forester's policy, a proposed sensitive area must also meet the following criteria in order to be established:

1. the area must be less than 1000 hectares in size;
2. the circumstances associated with the management or conservation of the area must be special and not broadly present in the district; and
3. the resource must be unique or locally significant.

The District Manager has determined that the cedar stand at Mill Creek meets these criteria and has chosen to conserve the stand by establishing a sensitive area and objectives.

2.0 The Planning Process

2.1 Information Assembly

After the stand was first brought to the attention of the District Manager as a possible rare ecosystem in December 1996, it underwent a series of field reviews by planning and silviculture staff, the Forest Ecosystem Specialist and the Regional Forest Ecologist. Based on the observations and recommendations resulting from these reviews, the cedar stand was proposed as a pilot sensitive area in July 1997 with the support of the District Manager.

To assist with determining the boundary of the sensitive area, a contract was issued to OIKOS Ecological Services Ltd. in September 1997 to identify and mark the boundary of the cedar stand in the field. Based on the earlier field reviews, the objective was to contain the area that included the target site series (ICHmc2/04 and 05) and structural stage (Old Forest) (McLennan 1997).

In addition to identifying the boundary of the cedar stand, OIKOS provided several recommendations for maintaining the structural integrity of the stand and the ecological processes that support the ecosystem. These recommendations are reflected in the objectives and strategies for the sensitive area, and in the zoning depicted on Map 2.

In November 1997, an additional field reconnaissance was completed by the Regional Hydrologist and Philpot Forestry Services (1977) Ltd. The purpose of this review was to examine the hydrological characteristics of the fan and to assess options for road location. The recommendations arising from this review have also been considered in the zones and objectives for the sensitive area.

2.2 Consultation and Referrals

As the cedar stand was included in Kitwanga Lumber Company Ltd.'s harvesting proposal for the area, a series of meetings were held with the company through the summer and fall of 1997. Recognizing the rarity of the stand, the company agreed to cease planning in the proposed sensitive area and to reroute the road so the stand could be conserved.

In October 1997, the Liaison Officer Aboriginal Affairs met with the Chief of the Gitksan House territory where the cedar stand is located to discuss the sensitive area proposal. The Chief was sent a draft of the plan in February 1998, and a second meeting was held with the Liaison Officer Aboriginal Affairs in March 1998 to review the draft plan. The Chief, who also holds a registered trapline in the area, supports the protection of the cedar stand in principle.

A copy of the draft plan was also sent to the licenced guide in the area and was referred to the Ministry of Environment, Lands and Parks and the Ministry of Energy and Mines for comment.

3.0 Relationship to Other Higher Level Plans

3.1 Landscape Units and Objectives

The Kispiox LRMP specifies that 12% of the forested land in each medium-sized watershed, or landscape unit, will be managed for old growth values through a combination of preservation and conservation. In an effort to co-ordinate planning requirements under the Forest Practices Code, conservation provisions outlined in the resource management zone objectives for the Kispiox LRMP will be integrated with landscape-level biodiversity strategies wherever possible. Landscape unit objectives will generally be developed for old growth retention and stand structure.

Representative examples of ecosystems in old growth condition will be retained through the delineation of old growth management areas. Old growth management areas are established under a higher level plan and contain, or are managed to replace, structural old growth attributes (s. 1(1) *Operational Planning Regulation*). The following elements of biodiversity will generally be considered when locating old growth management areas:

- ◆ rare ecosystems in old growth condition;
- ◆ patches of old growth large enough to provide interior forest condition (>36 ha); and
- ◆ connectivity between key habitat elements.

The cedar stand at Mill Creek is an example of a rare ecosystem in old growth condition and will be considered for possible establishment as a future old growth management area in the Kitwanga Landscape Unit.

3.2 Resource Management Zones and Objectives

The cedar stand is found within the general resource development zone in the Kispiox LRMP. The management objective for that zone is “to maintain a wide range of resources uses, including forestry, agriculture and mineral exploration and development”. Although resource activities are limited within the sensitive area, opportunities for resource development exist throughout the broader zone. The sensitive area is therefore consistent with the overall intent of the resource management zone.

Appendix 2

Description of Site Series

According to McLennan (1997), the primary site series in the cedar stand are ICHmc2/05 and ICHmc2/04. The site series descriptions are as follows:

Plot 1 was located in Polygon 1 (see Figure 1) in a stand of western redcedar and black cottonwood with a minor amount of western hemlock. The diameter at breast height of the two western redcedars was 94 and 97 centimetres and for the black cottonwood 157 centimetres. Estimated total heights were 36, 34 and 37 metres respectively. Based on the 400 square metre plot for the ecosystem description there were 150 stems/hectare in the area represented by the plot. The shrub layer is dominated by devil's club, red elderberry, red raspberry and thimbleberry, with lady fern, spiny wood fern, oak fern, enchanter's nightshade, and three-leaved foamflower the most important herbs. Mosses were scattered due to heavy litterfall and leafy mosses were the most common. The humus form on the site was Leptomoder and overlaid a stratified soil with gravely silt texture, and was classified as a Gleyed Dystric Brunisol. No seepage was found in the soil pit to a depth of 1 metre. These site, soil and vegetation attributes were consistent with an ICHmc2/05 classification (Banner *et al.* 1993).

Plot 2 was located in Polygon 2 (see Figure 1) in a stand of western redcedar and western hemlock. The diameter at breast height of three western hemlocks was 110, 95, and 110 centimetres and for the western redcedar, 91 centimetres. Estimated total heights were 38, 37, 34 and 30 metres respectively. Based on the 400 square metre plot for the ecosystem description there were 175 stems/hectare in the area represented by the plot. The shrub layer was dominated by devil's club, red currant and thimbleberry, with oak fern and spiny wood fern dominating the herb layer. As in Plot 1, mosses were scattered due to heavy litterfall, and leafy mosses were the most common. The humus form on the site was Leptomoder. The soil was stratified with silty texture to about 60 cm, below which a gravely sand occurred. This soil was classified as an Orthic Dystric Brunisol. No seepage was found in the soil pit to a depth of 1 metre. These site, soil and vegetation attributes were consistent with an ICHmc2/04 classification (Banner *et al.* 1993).

Appendix 3

Attributes for Polygons in Figure 1

Polygon	SS1	SER 1	DEC 1	SS2	SER 2	DEC 2
1	05	Old Forest	80	04	Old Forest	20
2	04	Old Forest	80	05	Old Forest	20
3	03	Old Forest	70	07 ¹	Old Forest	30
4	05	Old Forest	60	07 ¹	Old Forest	40
5	07 ¹	Old Forest	100			
6	32	Tall Shrub/Herb	60	03	Old Forest	40
7	03	Young Forest	100			
8	05	Old Forest	100			
9	03	Young Forest	100			
10	02 ²	Young Forest	100			
11	06	Old Forest	100			
12	01	Young Forest	100			
13	32	Tall Shrub/Herb	60	32	Herb	40
14	03	Young Forest	100			

SS1 = predominant site series

SER 1 = structural stage of site series 1

DEC 1 = % of polygon occupied by site series 1

SS2 = secondary site series

SER 2 = structural stage of site series 2

DEC 2 = % of the polygon occupied by site series 2

¹ ICHmc2/07 is a Western Redcedar/Hybrid White Spruce - Devil's Club - Horsetail community listed as blue with the BC Conservation Data Centre (*Thuja plicata* - *Oplopanax horridus* - *Equisetum arvense*)

² ICHmc2/02 is a Western Hemlock - Kinnikinnick - Cladonia community listed as blue with the BC Conservation Data Centre (*Tsuga heterophylla* - *Arctostaphylos* - *Cladonia*)

Appendix 4

Glossary of Terms

Alluvial fan: A sloping, fan-shaped mass of sediment deposited by a stream where it emerges from upland onto a plain.

Basal area: The area of the cross-section at breast height (measured inside or outside the bark, usually the latter) of a single tree or of all trees in a stand.

Biogeoclimatic ecosystem classification (BEC) system: A hierarchical classification system of ecosystems that integrates regional, local and chronological factors and combines climatic, vegetation and site factors. A biogeoclimatic zone is a geographical area having similar patterns of energy flow, vegetation, and soils as a result of a broadly homogeneous macro-climate. Biogeoclimatic zones are typically subdivided into biogeoclimatic subzones by characteristic plant communities, the most commonly used BEC category. Subzones may be further subdivided into variants, usually based upon climatic variation.

Blue-listed species: Any indigenous species or subspecies (taxa) considered to be vulnerable in British Columbia. Vulnerable taxa are of special concern because of characteristics that make them particularly sensitive to human activities or natural events. Blue-listed taxa are at risk, but are not extirpated, endangered or threatened.

Botanical forest product: A prescribed plant or fungus that occurs naturally on Crown forest land. There are seven recognised categories of botanical forest products: wild edible mushrooms, floral greenery, medicinal products, fruits and berries, herbs and vegetables, landscaping products and craft products.

Coarse woody debris: Sound and rotting logs and stumps that provide habitat for plants, animals, and insects and are a source of nutrients for soil development. Coarse woody debris is generally greater than 8-10 cm in diameter.

Connectivity: A qualitative term describing the degree to which late successional ecosystems are linked to one another to form an interconnected network.

Edge effect: Habitat conditions (such as degree of humidity and exposure to light or wind) created at or near the boundary between ecosystems (e.g. between open areas and adjacent forest).

Environmentally sensitive area: An area identified during a forest inventory that is sensitive to disturbance and/or is significantly valuable for fisheries, wildlife, water and recreation resources.

Floodplain: A level, low-lying area adjacent to streams that is periodically flooded by stream water. It includes lands at the same elevation as areas with evidence of moving water, such as active or inactive flood channels, recent fluvial soils, sediment on the ground surface or in tree bark, rafted debris, and tree scarring.

Higher level plan: Defined in the *Forest Practices Code of British Columbia Act* as an objective for a:

- (a) resource management zone,
- (b) landscape unit or sensitive area
- (c) recreation site, recreation trail or interpretative forest site.

Hydroponics: The science of growing plants without soil. Hydroponics provides a more direct and efficient way to feed plants. The plant roots can grow in moist or humid air, in well aerated water, or in a solid moist non-soil medium.

Interior forest condition: A condition achieved when edge effects no longer influence environmental conditions within a forest patch. For coastal British Columbia forests, the edge effect is generally felt for a distance equivalent to 2 to 4 times the average tree height into the stand. The effects usually involve light intensity, temperature, wind, relative humidity and snow accumulation and melt. See edge effect.

Land and resource management planning (LRMP): An integrated sub-regional consensus-based process requiring public participation that produces a land and resource management plan for review and approval by government. The plan establishes direction for land use and specifies broad resource management objectives and strategies.

Landscape unit: A planning area established under the *Forest Practices Code of British Columbia Act* by the district manager. A landscape unit is typically up to 100,000 hectares in size, and is based on topographic or geographic features such as a watershed or series of watersheds.

Old growth: Forest that contains live and dead trees of various sizes, species, composition and age classes. Old growth forests, as part of a slowly changing but dynamic ecosystem, include climax forests but not sub-climax or mid-seral forests. The age and structure of old growth varies significantly by forest type and from one biogeoclimatic zone to another.

Old growth management area: An area established under a higher level plan which contains, or is managed to replace, structural old-growth attributes.

Rare ecosystem: An ecosystem (site series or surrogate) that makes up less than 2% of a landscape unit and is not common in adjacent landscape units.

Reserve: An area of forest land that, by law or policy, is not available for timber harvesting or production.

Sensitive area: A small area of land or water established under the *Forest Practices Code of British Columbia Act* by the district manager to manage or conserve unique or locally significant forest resources.

Site series: Sites capable of producing the same late seral or climax plant communities within a biogeoclimatic subzone or variant.

Snag: A standing dead tree or part of a dead tree from which at least the smaller branches have fallen.

Threatened or endangered species: Threatened or endangered species as identified by the Ministry of Environment, Lands and Parks. Threatened, endangered or extirpated taxa, or taxa being considered for such status, are "red-listed" species with the Conservation Data Center. Any indigenous taxon (species or sub-species) threatened with imminent extinction or extirpation throughout all or a significant portion of its range in British Columbia is endangered. Threatened taxa are those indigenous species or sub-species that are likely to become endangered in British Columbia if the limiting factors are not reversed.

Wetland: A swamp, marsh or other similar area that supports natural vegetation that is distinct from adjacent upland areas.

Windfirmness: The ability to resist windthrow.

Windthrow: Uprooting by the wind. Also refers to a tree or trees so uprooted.

Map of the Mill Creek Watershed

Legend:

- SENSITIVE AREA BOUNDARY (Thick solid line)
- MANAGEMENT ZONE (Thin solid line)
- RESERVE ZONE (Dashed line)
- CEDAR STAND ZONE (Stippled area)
- TIMBER TYPE LINE (Dotted line)
- CREEKS (Long dashed line)

Map Labels:

9317-10 BH 7416-17 601 HC(B) 9417-12 604Es PI(SA) 6214-14 596 HPI(B) 5208-9 606 PIH(B) 5217-12 603 H 5308-15 599 H(B) 8417-14 595 HCB 8414-13 447 H 8417-15 441 HB(C) 5407-22 452 HC(B) 8415-13 449 HPI 444 HPI 4208-12 453 HC(S) 7316-15 445 PIH(AIS) 4205-15 459 ACS(CB) 8513-25 4207-15 455 HEPIAT 4207-15 458 PIH 4306-19 451 HS(BE) 4207-16 456 PI(H) 7316-17 460 HSPI(E) 457 PIH(SE) 7316-14 446 450 PI(H) 447 316-17 442 CSAC 439 HPIE 4207-12 435 PIH(S) 6315-14 432 HC(SPI) 5306-19 434 HS(B) 5408-21 426 H 5307-16 423 HBC(S) 5306-17 422 NPB 135 BH(S) 6306-13 424Es AICS(BH) 5225-13 417Es HS(B) 8417-18 3658 H(B) 7317-12 362 H 7318-12 357 HS(B) 8417-18 363 HSB(C) 7417-16 355Es HS(B) 8414-16 352 HPI(SB) 6305-12 349 PIH(AI) 5214-15 345 AIE 5216-14 344 NPB 342 358 PIAIB 5245-13 431 NP-EH(PIB) 5223 428 HBS(PI) 6306-12 413 NPB 414Es HB(SPI) 8315-13 427Es HBPI 5205-12 418 NP-B(AIH) 5103 433 PIH(B) 5214-13 436Es HB(PI) 5305-15 429Es H(B) 5207-13 609Es PIHS 6214-13 612 NPB 619 NPB

Scale 1:20,000
Date: April 24, 1998