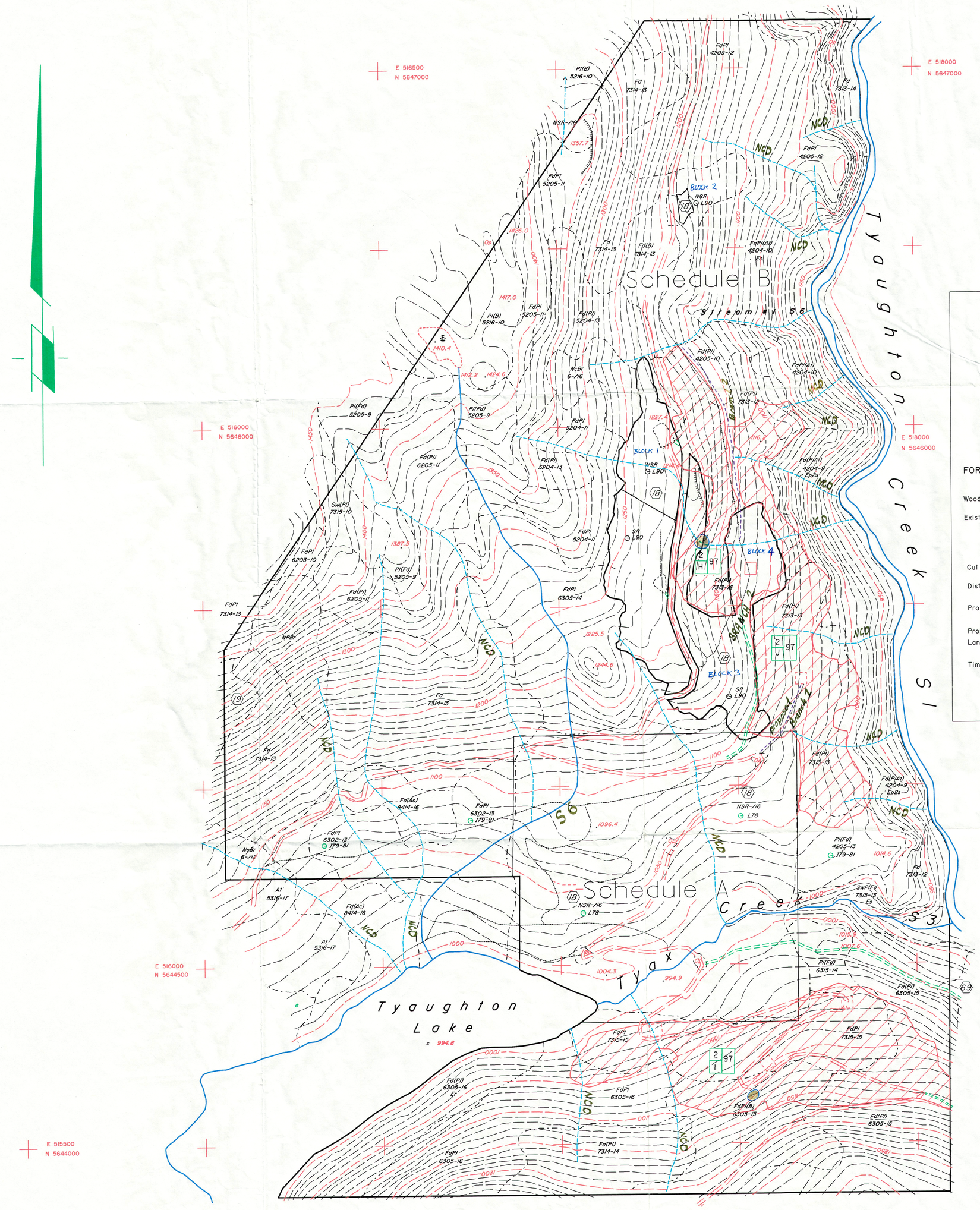


FOREST COVER / BLOCK BOUNDARIES

BLOCK ID	Gross Ha	Net Ha
H	8.56	8.56
I	20.29	19.55
J	18.22	17.65

Woodlot Licence 361 Boundary .....

Existing Block Boundary .....

SELECTION

Cut Block Boundary (proposed) .....

District Lot Line .....

Proposed Cut Block ..... CP YR Blk

Proposed Road .....

Landing - Proposed / Located .....

Timber Type Line .....

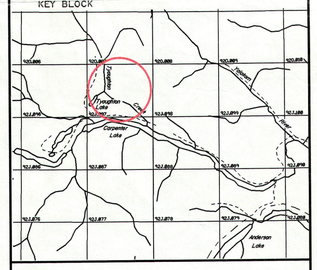
FOREST LICENCE CP # 2

WOOD LOT 361 BLK. H,I,J

ABEL

BCGS 92 J.097

KEY BLOCK



SCALE 1 : 5 000
(1 Centimetre = 50 Metres)

50 0 100 200 300
contour interval at 10 m intervals

BASE MAP INFORMATION

Photo Centre .....
Shoreline / Lake .....
River / Stream .....
Marsh .....
Swamp .....
Sand Bar .....
Beaver Dam .....
Road (Paved) .....
Road (Main Gravel) .....
Road (Secondary Gravel) .....
Road (Minor Gravel) .....
Trail .....
Landing .....
Railroad .....
Cut Line .....
Gravel Pit .....
Tower .....
Pole .....
Building (Symbolized) .....
Building (To Scale) .....
Index Contour (Def. Indef. Dep.) .....
Intermediate Contour .....
Drop Off .....
Ridge .....
Rock .....
Brush .....
Open .....
Windfall .....
Immature .....
Logged .....
Alpine .....
Slide .....
Ditch .....

Notes:
Datum based on reconnaissance type control with uncertain absolute referencing.

NCD NON CLASSIFIED DRAINAGE

ROOT ROT. DRA

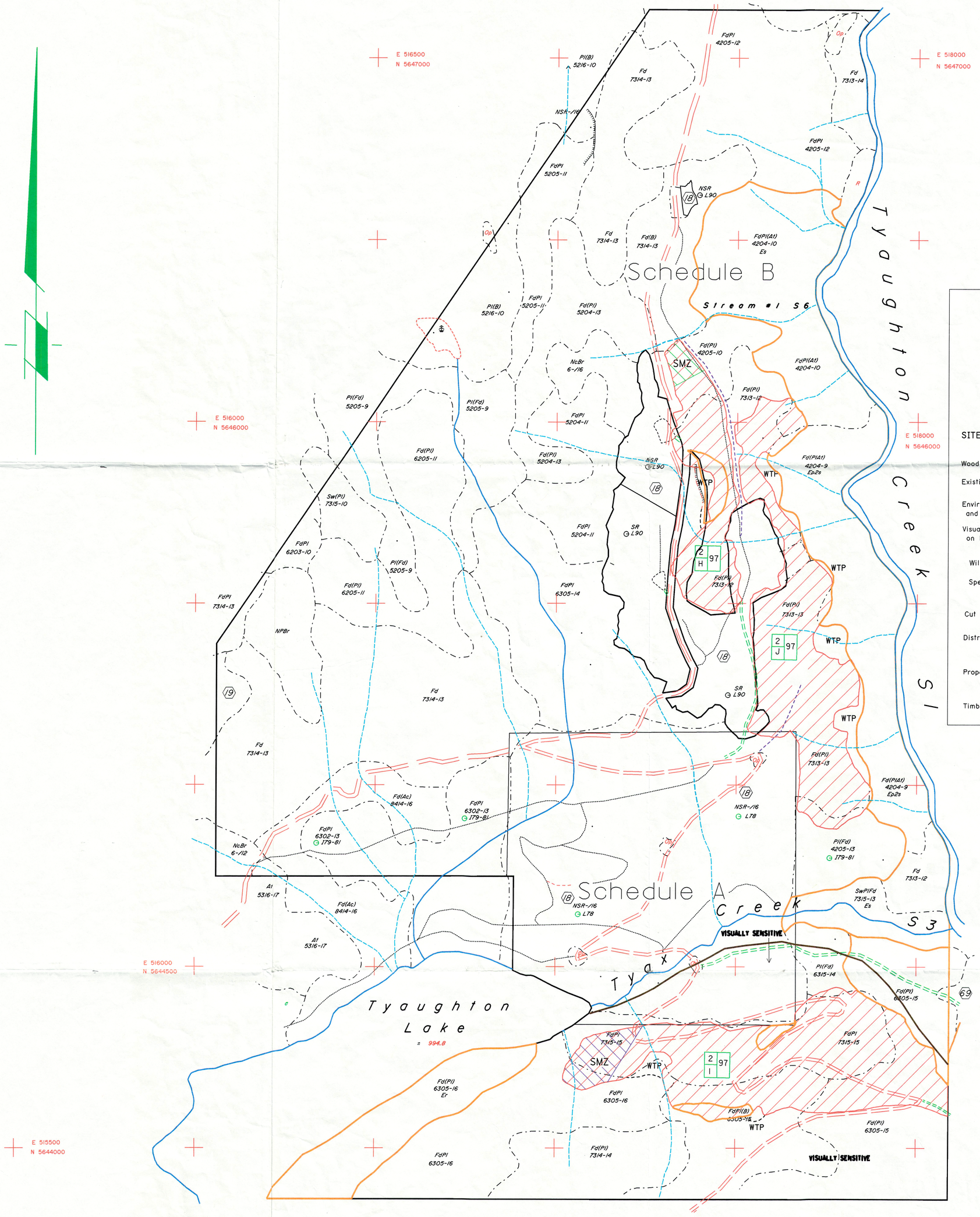
MAP REFERENCE	92 J / 15w
JOB NUMBER	941458
CONTROL	FCI
CRUISE MAP BY	
COMPILED FROM	15000 photos, flown in 1993
GRID ORIENTATION	UTM NAD 27
DATE DRAWN	MARCH 1995
DATE REVISED	JANUARY 1997

INDUSTRIAL FORESTRY SERVICE LTD.
1595 Fifth Avenue, Prince George, B.C. V2L 3L9 564-4115

JANUARY 1997

Silvertip GIS Mapping Ltd.
Box 1716, RR1, Clearwater, BC V0E 1N0 Ph. 674 3078

FDP map



BLOCK ID	Gross Ha	Net Ha
H	8.56	8.56
I	20.29	19.55
J	18.22	17.65

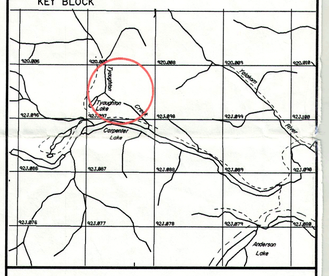
SITE SENSITIVITY / CRITICAL MANAGEMENT

- Woodlot Licence 361 Boundary
- Existing Block Boundary
- Environmentally Sensitive Areas and slopes > 60 %
- Visually Sensitive Area on Block I
- Wildlife Tree Patches ..... WTP
- Special Management Zones ..... SMZ
- Cut Block Boundary (proposed) ..... SELECTION
- District Lot Line
- Proposed Road
- Timber Type Line

FOREST LICENCE CP # 2
WOOD LOT 361 BLK. H,I,J

ABEL
BCGS 92 J.097

KEY BLOCK



SCALE 1 : 5 000
(1 Centimetre = 50 Metres)
50 0 100 200 300
contour interval at 10 m intervals

BASE MAP INFORMATION

- Photo Centre
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- Gravel Pit
- Tower
- Pole
- Building (Symbolized)
- Building (To Scale)
- Index Contour (Def. Indef. Dep.)
- Intermediate Contour
- Drop Off
- Ridge
- Rock
- Brush
- Open
- Windfall
- Immature
- Logged
- Alpine
- Slide
- Ditch

Notes:
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JANUARY 1997
Silvertip GIS Mapping Ltd.
Box 1716, RR1, Clearwater, BC V0E 1N0 Ph. 674 3078

WOODLOT LICENCE #361
FOREST DEVELOPMENT PLAN

Period
December 1,2004 to December 31, 2007

Southern Interior Forest Region,
Cascades Forest District,

Gus Abel of General Delivery Goldbridge, BC V0K 1P0 250-238-2201

Authorized Licensee Signature: Name: Gus Abel

Gus Abel
[Signature]

Date: Jan 4th, 2005

RPF Signature:[1] Name: COLIN HEGAN RPF #3881

Date: January 3, 2005

Ministry Approval: Signature: _____

_____
[Print Name of DM or designate]

Date: _____

[1] Please note that a small but significant content of this FDP has been adopted from the previous FDP prepared by John Foster, signed and sealed by Michael Shipp, RPF 2809. Colin Hegan RPF 3881 accepts accountability for the entire document.

TABLE OF CONTENTS

1.0 Introduction

WL#361
Forest Development Plan (2004-2007)
January 3, 2005
Gus Abel
Location: Tyaughton Lake.

This FDP includes the addition of one new block and the addition of three new roads.

Developments covered by this FDP:

Proposed blocks

- Block 6 — 21.64 ha: The silviculture system will be a clearcut with reserves.

Proposed road developments

- Road 361.100 — 680 metres. Of which 153 metres is outside of the woodlot and will be built under authority of a road permit. This section is within an existing greened up cutlblock. The remaining 527 metres are within proposed block 6 and will be built under authority of a cutting permit.
- Road 361.110 — 72 metres. This spur road is entirely inside of block 6.
- Road 361.120 — 220 metres. This spur road is entirely inside of block 6.

1.1 Higher level plans:

- There are no higher-level plans that cover WL #361. A draft of the Lillooet Land and Resource Management Plan is currently in circulation but has not yet been made into a Higher Level Plan. For the purpose of inventory information, this will be considered best information.

1.2 Referral Summary

Activity	Date (yy/mm/dd)	Location (and media with respect to Public Review)	Comments Received	
			Y/N	Date (yy/mm/dd)
Submission of FDP				
MOF, Cascades Forest District	2004/09/13	FDP referral	Y	2004/12/02
First Nations				
[Lillooet Tribal Council]	2004/09/14	FDP referral	Y	2004/11/16
Other Tenure Referral Letters				
Guide Outfitter	2004/09/14	Letter	N	
Trapper 0332T008	2004/09/14	Letter	N	
Water Licensee Z116904	2004/09/14	Letter	N	
Public Review				
Advertising	2004/09/15	Bridge River – Lillooet News, Lillooet	N	
Public Viewing Forum(s)	2004/09/15 through 2004/10/13	Tyax Mountain Lake Resort. Tyaughton Lake, BC.	N	
Proposed Agency Meeting(s)				
N/A	n/a	n/a		
Comments Deadline	(30 days from the date of the newspaper advertisement, *unless extended by the DM)*			2004/10/13
Submission for approval				2005/01/06
Anticipated Approval Date				2005/02/06

2.0 Engineering.

Proposed road to be developed for this FDP. Construction of these roads is planned for late 2004/early 2005.

- Road 361.100 — 680 metres. Of which 153 metres is outside of the woodlot and will be built under authority of a road permit. This section is within an existing greened up cutblock. The remaining 527 metres are within proposed block 6 and will be built under authority of a cutting permit. This road will be semi-permanently deactivated following completion of harvesting operations.
- Road 361.110 — 72 metres. This spur road is entirely inside of block 6. This road will be semi-permanently deactivated following completion of harvesting operations.
- Road 361.120 — 220 metres. This spur road is entirely inside of block 6. This road will be semi-permanently deactivated following completion of harvesting operations.

3.0 Harvesting.

Proposed harvesting for FDP. Harvesting is proposed for late 2004/early 2005.

- Block 6 — Gross area = 21.64 ha; Net harvest area = 20.99 ha.

3.1 Harvesting Strategy

The cutting priorities for the woodlot are ranked as follows with the highest priority given the first ranking:

1. blowdown, fire kill or priority insect attacks;
2. other serious insect attacks;
3. stands suffering a net volume loss from disease or parasitism and decadent stands;
4. susceptible stands and other mature stands; and
5. other stands.

3.2 Harvesting Methods

Block 6 will be harvested by a combination of cable and ground based methods.

The terrain within Terrain polygon 1172 (class III) is too steep to yard by conventional methods. However, ground based equipment will be used as a tail-hold where necessary and to forward wood into deflection where necessary. Ground based equipment will access these areas via an access route located on the gentler terrain and benches within this area.

The terrain within the rest of the block is not steep and may be harvested and yarded using conventional ground based methods.

4.0 Silviculture systems

This section describes the silviculture systems for block 6.

Block 6: Clearcut with patch, group and individual reserves.
Because of the steepness of terrain (economic and operational efficiency) and the northwest aspect (reforestation issues) this unit will be clearcut. The reserve patch is a 0.65 ha wildlife tree patch which contains high value wildlife trees. The group and individual reserves are high value large diameter Douglas-fir where they exist outside of necessary yarding corridors. In the cable ground they will be marked to leave. These reserve trees will act as vertical diversity for birds and bats, wildlife habitat for cavity nesting species, future coarse woody debris, and will help to visually screen the block to mitigate for visual quality goals.

5.0 Deleted

6.0 Cultural Heritage Resources.

The Lillooet Tribal Council and Canoe Creek Indian Band were contacted to determine the level and extent of any cultural resources in the vicinity of proposed harvesting and road building covered by these proposed developments. The LTC reviewed the FDP (formerly called FDP amendment #2) and Canoe Creek Indian Band representative Sam Phillips stated that they do not have the resources to review these documents.

The Lillooet Tribal Council conducted a Heritage Field Reconnaissance (HFR) on July 22, 2003. This HFR covered the area proposed for development under this amendment. No cultural heritage or archaeological features were found.

A follow-up HFR was conducted on 2004/10/19. Two mining trails were found and recommended to be maintained as useable.

7.0 Watershed

7.1 Terrain Stability

There is one source of terrain stability information available for WL 361 .

1. Terrain stability mapping 2000 Marshall/Mud mapsheet (Intensity Level C. Uses classifications I –V) Please see FDP map.

Block 6: Described in the Terrain Stability mapping as half terrain class III and half terrain class II. This block will be harvested using both cable and ground based methods. There are no areas within this block that are considered to be sensitive for terrain stability.

Road 361.100 This road is described in the 2000 Marshall/Mud Terrain stability map as terrain class II with some terrain class III.

Road 361.110 This short stretch of spur road is described in the 2000 Marshall/Mud Terrain stability map as terrain class II.

Road 361.120 This road is described in the 2000 Marshall/Mud Terrain stability map as terrain class III.

7.2 Watershed Assessments

The District Manager will determine if a watershed assessment is required.

7.3 Community Watersheds

There are no community watersheds designated within the woodlot area.

8.0 Riparian Management

The FDP map contains the forest cover layer for riparian features. Known fish bearing riparian features within the woodlot and riparian features adjacent to proposed harvesting and road building operations are identified on the map and below.

This section describes the riparian features found in the riparian field assessment for block 6, and the proposed roads 361.100, 361.110, 361.120 and 361.200.

8.1 Issues

Block 6:	Stream 6-1 (S1)	Tyaughton Creek runs below the block.
	Stream 6-2 (S6)	Runs adjacent to the north boundary of this block.
	Stream 6-3 (S6)	Runs through the middle of the block, and through the Wildlife Tree Patch.
361.100	Stream 6-3 (S6).	An appropriately sized culvert will be installed.
361.110	No riparian features.	
361.120	No riparian features.	

8.11 Measures to Protect

Stream 6-1 (S1) This fish-bearing creek has a 50m Riparian Reserve Zone and a 20m Riparian Management Zone. There will be retention of a minimum of 15 mature conifers within the riparian management zone (equivalent of 100 s/ha). Of these 15, there will be a minimum of 4 large diameter Douglas-fir vets greater than 50cm DBH. These trees will be marked to leave. There will be no harvesting or yarding of timber in the vicinity of this stream.

Stream 6-2 (S6) This creek has a 20 metre Riparian Management Zone. There will be retention of a minimum of 7 large diameter Douglas-fir trees (equivalent of 10 veterans/ha) and a further 18 mature Fd and Sx trees (equivalent of 25 mature/ha) within the riparian management zone Immature conifers will be left where operationally feasible. These trees will be marked to leave. Because cross-stream cable yarding across this stream is required, a greater amount of retention around this stream is not possible. This stream is heavily incised and is comprised completely by large bedrock fragments - because of this, channel stability will not be affected by the proposed harvesting operations. The measures to protect the stream bank are outlined below. The removal of all merchantable stems within the RMZ of this stream will reduce the probability of windthrow caused damage to the stream bank. These measures to protect, along with the retention of a minimum of 10 mature stems/ha will ensure that the channel stability and stream bank integrity is maintained for the long term.

Cross stream cable yarding is proposed for this stream. While this stream is heavily incised (1-2 metres within a small gully) stream bank protection will be necessary.

- Timber adjacent to the stream will be felled directly across the stream.
- The timber that is to be cross-stream yarded will be yarded across the stems felled across the stream.
- The timber lying across the stream will be removed once the cross-stream yarding has been completed.

A back-spar trail is necessary to facilitate the cable yarding of this block.
A designated stream crossing is required and has been established above this block. Brow logs will be placed to maintain stream bank integrity. The brow logs will be removed following the completion of harvesting operations.

Stream 6-3 (S6) This creek has a 20-metre Riparian Management Zone. There will be retention of a minimum of 5 large diameter Douglas-fir trees within the riparian management zone. These trees will be marked to leave. Immature conifers will be left where operationally feasible. A wildlife tree patch has been established around a 55m section of this stream.

Above the wildlife tree patch a designated stream crossing is required to facilitate ground based yarding. Brow logs will be placed to maintain stream bank integrity. The brow logs will be removed following the completion of harvesting operations.

Below the wildlife tree patch, cross-stream cable yarding is proposed. While this stream is heavily incised (1-1.5m) stream bank protection will be necessary.

- Timber adjacent to the stream will be felled directly across the stream.
- The timber that is to be cross-stream yarded will be yarded across the stems felled across the stream.
- The timber lying across the stream will be removed once the cross-stream yarding has been completed.

A designated stream crossing is required for passage of an excavator for the back-spar trail. Brow logs will be placed to maintain stream bank integrity. The brow logs will be removed following the completion of harvesting operations.

For Streams 6-2, 6-3:

- Any harvest-related debris deposited in the stream that may cause a significant change in stream morphology will be removed in order to maintain natural drainage patterns.
- The Logging Superintendent will monitor harvesting operations within riparian areas to ensure deleterious impacts are avoided.
- No machines are allowed within 5m of these streams, except for at designated stream crossing points.

8.2 Fisheries

8.21 Issues

The following features within the woodlot area are known to be fish bearing (see FDP map):

- Tyaughton Lake-L1
- Tyaughton Creek-S1.
- Tyax Creek-S3

Within the area proposed for development under this FDP, Tyaughton Creek is a fish bearing S1 stream. There are no other fish bearing streams in or adjacent to the blocks and roads being developed in this plan.

8.22 Measures to Protect

Tyaughton Creek S1: There is a 50 m riparian reserve zone (RRZ) and a further 20 m riparian management zone (RMZ). The management within the RMZ will consist of retaining a minimum of 15 mature conifers (the equivalent to 100 stems/ha). There will be no harvesting near Tyaughton Creek.

8.3 Water

8.31 Issues

There are two water licenses currently located within WL 361, and one water license holder outside of WL 361 on Tyaughton Creek (see FDP map). Water license holders will be identified in operational plans where proposed harvesting is upslope of the water license point of diversion or water lines.

The one power-general water licensee for Tyaughton Creek is located at the confluence of Liza Creek and Tyaughton Creek.
License Z116904

NORTHWEST CASCADE POWER LTD
1710 1177 W HASTINGS ST VANCOUVER BC V6E2L3

The point of diversion for this license holder is greater than 4 km distance from WL 361.

8.32 Measures to Protect

For any new proposed harvesting, the water license information will be updated, and the map will include current known information. Any license holder with a points of diversion materially affected by proposed harvesting operations will be contacted in writing for their input into the planning around this feature. Materially affected, for the purposes of this FDP will be points of diversions and water lines within 500m downslope of proposed harvesting operations.

- License holders will be identified in any amendment, if applicable.
- Within 100m upslope of a licensed point of diversion, harvesting will be limited to partial cutting with retentions greater than 30% of basal area.
- A 20 m machine free zone must be respected surrounding any licensed points of diversions that may be materially impacted by harvesting.
- Operational planning must outline mitigation measures that will ensure that harvesting practices do not deleteriously increase siltation and turbidity at the point of diversion.

For Block 6 and roads 361.100, 361.110 and 361.120:

There is a 50m riparian reserve zone (RRZ) and a further 20 m riparian management zone (RMZ). The management within the RMZ will consist of retaining a minimum of 15 mature conifers. The harvesting system is uphill cable.

These measures will ensure that the shading on Tyaughton Creek is maintained, and that there are no negative effects from the proposed logging treatment on Tyaughton Creek. The water license point of diversion is greater than 4 km downstream from this proposed harvesting operation.

9.0 Forest Protection

9.1 Forest Health

There are no major pest damage and need for control measures currently within the area of WL #361.

An annual forest health review will be conducted. The results of the forest health evaluation will be used to prepare management strategies to reduce significant risks to land and forest values.

Forest pathogens and pests that are endemic to WL #361 and which have shown sporadic outbreaks are: Douglas-fir bark beetles, mountain pine beetles, armillaria root disease, lodgepole pine dwarf mistletoe, and silkworm moth. There are no current epidemic outbreaks on WL #361.

It is expected that a trap tree program will be required to reduce mature tree mortality associated with Douglas-fir bark beetles when and where smaller outbreaks occur. These will be implemented where recommended by a forest health evaluation and if access is available to Douglas-fir beetle impacted sites.

Please see section 3.1 for harvesting priority which will act as a measure to reduce any losses that are identified after evaluation of the occurrence of significant forest health factors which may cause damage to forest stands.

10.0 Visual Resource Management

10.1 Issues

VQOs were established for the draft Lillooet Land and Resource Management Plan (See VQO map for WL 361).

Block 6 is considered Not Visually Sensitive as shown on the Lillooet LRMP mapsource. However, this block will be managed to a higher level (as described below) given the goals outlined in the Management Plan for WL#361 dated July 1, 2004.
The harvesting system for this block is clearcut with reserves.

The viewpoint that was considered is the Tyaughton Lake Road. While this road currently has trees screening the view towards Block 6, this screening is not complete. There is no stopping point on this road where this block will be especially visible. The viewpoint being considered is therefore from a moving vehicle passing by gaps in the tree line adjacent to Tyaughton Lake Road. From this perspective Block 6 has the potential to be quite visible, and would not meet a VQO of partial retention if it were clearcut.

The official viewpoint used to determine Visual Quality Objectives for the Lillooet LRMP is Tyaughton Lake. This block is not visible from Tyaughton Lake.

10.2 Measures to Protect

The ground based portion of this block, southeast of the 361.100 road system (approximately 11 hectares) is not especially visually sensitive due to the gentle terrain. The plan to perspective ratio for this section will be lower than for the cable section. To mitigate for visual quality, a minimum of 15 stems/ha of large diameter Douglas-fir veterans will be retained. As well, the wildlife tree patch has been placed to screen the north section of the ground-based portion. The southern portion will be further screened by timber below the block boundary. With this combination of boundary screening, WTP screening, and individual reserved trees, this section will easily meet a VQO of partial retention.

The cable portion of this block, northwest of the 361.100 road system (approximately 10 hectares) is more visually sensitive due to the steeper terrain facing directly towards the viewpoint. The plan to perspective ratio will be higher than that of the ground based portion (a greater percentage of the ground will be visible). There are few possibilities available to mitigate for this due to the necessity of cable yarding. However, the riparian reserve zone will provide some screening for the lower portion of this block. There will be a minimum of 15 mature conifer stems reserved within the riparian management zone of Tyaughton Creek that will further screen the lower section of this block. There will be a minimum of 12 large diameter conifer stems reserved within the riparian management zones of streams 6-2 (S6) and 6-3 (S6). Overall, there will be a minimum of 5% basal area retention for the entire block.

While the mitigating tactics for the cable section will not provide excellent screening for this section they will lessen the impact somewhat. Because the mitigating tactics for the ground based section are excellent, the impact of the cable section on the entire block is minimized. This block will appear from the viewpoint to be much smaller than it actually is.

11.0 Range.

11.1 Issues

There are no range tenures covering the proposed developments. This area had formerly been under tenure to Empire Valley Ranch, but is currently vacant.

11.2 Measures to Protect

No management objectives are prescribed for range management.

12.0 Forest Recreation.

12.1 Issues

On the west side of Tyaughton Creek, the objective for forest recreation is to improve recreation opportunities for the following values:

- horseback riding, hiking, cross-country skiing, wildlife viewing and snowmobiling and ATV use.

On the east side of Tyaughton Creek, there are no known recreation features, and no current opportunities to improve recreation potential relating to Tyax Mountain Lake Resort.

There are no recreation features within or immediately adjacent to the road and block developments proposed under this FDP. These developments will not occur within view of Tyaughton Lake.

12.2 Measures to Protect

To ensure that forest development activities are consistent with the achievement of the recreation objectives, the following will be accomplished where harvesting activities overlap with recreation features:

- restoration of trails by removing slash and debris such as rock, and grass seeding;
- construction of new trails where feasible after harvesting; and
- the retention of large diameter Douglas-fir along trail routes where possible.

No measures to protect are prescribed for Block 6.

13.0 Biodiversity

13.1 Issues

Within block 6 there is a uniform age stand with scattered veterans. This is consistent with the natural disturbance type 3 (NDT3). This disturbance type has frequent stand maintaining fires that maintain even aged stands. Within this type there will be trees that escape to become veteran trees throughout several disturbance events.

13.11 Measures to Protect

The proposed silviculture system Clearcut with reserves will mimic the natural disturbance type found within Block 6, and in the adjacent landscape. There is a significant corridor below the block that will not ever be harvested because it is in a riparian reserve zone. Also, there is significant environmentally sensitive terrain adjacent to the block that will maintain older attributes to maintain wildlife habitat. This is significant in that all levels of habitat will be maintained within and immediately adjacent to this block.

A 0.65 hectare wildlife tree patch has been established as an island of older habitat within the block, maintaining forest floor structure, and vertical diversity. The riparian reserve zone will provide more of this habitat.

The large diameter wildlife trees scattered throughout the block will add to vertical diversity and future coarse woody debris within the block.

13.21 General objectives for retention of Coarse Woody Debris (CWD)

The general objective for retention of Coarse Woody Debris is:

- to maintain the current amount of coarse woody debris found in each stand,
- to maintain a post harvest volume minimum of 5m2 CWD per hectare averaged over harvested stands. Where recreation features run through or adjacent to proposed harvesting, CWD may be lower as long as the average is met for the entire block. Lower CWD levels adjacent to recreation features acts as a mitigation measure for fire protection, and maintains a "park-like" visual quality for recreationists.
- to retain a sufficient number of leave trees to ensure the above CWD volume is provided into the future.

13.22 Measures to Protect

Current levels of course woody debris will be maintained in Block 6 for small mammal and insect habitat.

A minimum of 5% basal area will be retained throughout the block. This may be clumpy in nature, due to location of suitable large diameter Douglas-fir and the nature of the cable harvesting system where planned. This measure will ensure that the current level of coarse woody debris is maintained through mortality and blowdown. Blowdown and mortality may be harvested, as long as the objective for CWD can be realistically maintained for the long term.

14.0 Wildlife management.

14.1 Issues

Block 6 is within identified ungulate winter range as shown as suitable on the Lillooet LRMP Mule Deer Winter Range map (see map clip, attached). Moose dropping were noted near Tyaughton Creek. There is a moderate amount of spring-fall use by deer and bears. Woodpeckers are present in moderate numbers due to the endemic presence of Douglas-fir beetles.

14.2 Objectives for Known Ungulate Winter Ranges

As identified in the draft Lillooet Land and Resource Management Plan. S. 4.2.4.

1. Ensure snow interception and thermal cover are well distributed over the mule deer capability range.
2. Where possible, maintain snow interception cover that is linked.
3. Within each cutblock maintain a minimum of 5% of basal area of the largest diameter Douglas-fir available, preferably distributed in clumps throughout the block.

14.3 Measures to Protect

1. There is significant suitable wildlife habitat surrounding this block. Block 6 is located on steep northwest facing slope. Better habitat is located to the south.
2. A significant wildlife corridor is located within the riparian reserve zone of Tyaughton Creek. This will allow free migration of moose and deer along this important riparian feature. Moose habitat along Tyaughton Creek will be unaffected. There is much terrain north and south of block 6 that is unsuitable to timber harvesting and very suitable as wildlife corridors. The evidence for this is that while there is some deer trails found within block 6, there is a significantly larger deer trail network within the adjacent steep dry forested slopes.
3. A wildlife tree patch has been established within block 6 to act as a refuge for any ungulates. A minimum of 5% basal area will be retained throughout the block. This may be clumpy in nature, due to location of suitable large diameter Douglas-fir and the nature of the cable harvesting system where planned.

15.0 Minor Salvage Operations

During the term of this forest development plan minor salvage operations may be undertaken to harvest timber that is dead or damaged as a result of wind, fire, insects, disease or other causes. These operations will be carried out in a manner that limits the removal of healthy timber, the creation of soil disturbance and damage to existing regeneration or residual standing timber. Minor salvage operations may involve the harvesting of single trees, small patches of timber or larger areas depending on the particular situation requiring salvage. In each instance the volume of timber to be salvaged, excluding any volume from a road clearing width that is required to facilitate the salvage, shall not exceed 2,000 cubic meters. A map of any proposed minor salvage operation will be presented to the Forest Service in order to confirm operational planning requirements and to request authority to harvest.

15.1 General Description

The salvage portion of this FDP refers to the harvesting of minor volumes of timber that are in imminent danger of being lost or destroyed or that otherwise should be harvested to control the spread of forest pests such as bark beetles. Generally, the timber has been infested, damaged or killed by insects, disease, wind, fire or some other cause.

15.2 Maximum Volumes

The maximum volume of timber for a given salvage situation under this plan is 2000 m^3. Wherever practical, the timber will be recovered on a single-tree, selection basis, with the objective being to minimize the amount of healthy timber that is also removed or damaged.

15.3 Priorities

First priority for salvage are trees that are attacked by insects such as pine, spruce, Douglas-fir and balsam bark beetles, where the infestation will not only kill the affected trees, but if un-harvested, will intensify and spread to adjacent areas. These trees will normally be scheduled for harvest prior to the next flight of the insect, where operationally possible.

Second priority for salvage are blowdown trees and other damaged trees that are highly susceptible to insect attack and subsequent spread such as spruce and Douglas-fir. These trees will be harvested as soon as possible, and if infested by a bark beetle, will be scheduled for harvest prior to the next flight of the insect, where operationally possible.

The third priority for salvage is all remaining damaged timber where pest control is not an objective. These trees will be harvested, where possible, prior to significant deterioration of timber.

15.4 Protection of Other Resources

All provisions of the Forest Practices Code of British Columbia Act will be followed during salvage operations to ensure that other values are adequately protected, unless specifically identified in individual salvage applications and approved by the district manger or the district managers designate. In addition, it is recognized that salvage logging should not lead to the complete sanitation of forests. A certain amount of dead and down and dead standing timber (e.g. wildlife trees), approximating normal endemic levels, will be maintained to contribute to wildlife habitat, stream stability, biological diversity and soil building processes.

15.5 Notice and Review

The salvage situations covered by this portion of the plan can not be predicted in advance. However, to achieve pest control and utilization objectives, they must be harvested expeditiously. For these reasons, individual salvage patches are not shown in this plan, nor will there be any further notice prior to harvest.

Where a party has requested, individual salvage proposals will be referred for specific areas. Referrals will be submitted to the Designated Environment Official in the following situations:

- within Wildlife Habitat Areas and ungulate winter ranges identified in the FDP;
- within wildlife tree patches identified in an operational plan; and
- within a riparian reserve zone.

15.6 Minor Harvesting Operations

During the term of this forest development plan minor harvesting operations may be undertaken to harvest up to 500 cubic meters (or 10 % of the volume specified for the 5 year cut control period) of "green" timber. This minor harvesting volume could include poles, broomsticks, building logs or an intention to expand an approved cutblock to take advantage of markets or overcome volume shortages at the end of the cut control period. Minor harvesting operations may involve the harvesting of special forest products, single trees, small patches of trees or larger areas depending on the particular situation. These operations will be carried out, providing the timber can be made accessible and harvested profitably without causing excessive soil disturbance, damage to existing regeneration or residual standing timber. A map of any proposed minor harvesting operation will be presented to the Forest Service prior to harvesting to confirm operational planning requirements and request authority to harvest.

16.0 Referral Process

This forest development plan was referred to the following:

- Lillooet Tribal Council, Lillooet BC
- Ministry of Forests, Cascades Forest District, Merritt, BC

The Canoe Creek Indian Band was contacted to determine if they wished to be referred this FDP. Band representative Sam Phillips declined, stating that the band does not have the resources to review and comment on this FDP.

This FDP (formerly called amendment #2) was advertised in the Bridge River Lillooet Newspaper on 2004/09/15. No comments were received from the public.

The range permittee, downstream water licensee, trappers, and guide outfitter were contacted by mail to inform them of the FDP, and its availability should they wish to review the Plan at the Tyax Mountain Lake Resort. No comments were received.

The public review and agency referral period was from 2004/09/15 until 2004/10/13. A copy comments received is appended to this FDP in Appendix C..

17.0 First Nation Consultation Process

The ministry designated official responsible for woodlots within the Lillooet TSA was contacted to determine whom this FDP must be referred. Ralph Kossinn e-mailed that the LTC and Canoe Creek Indian Band should be referred the amendment.

The Lillooet Tribal Council (LTC) has been sent a copy of the Forest Development Plan (formerly called Amendment #2, which is substantially the same document as this) on 2004/09/08.
The Canoe Creek Indian Band has been contacted and their representative, Sam Phillips, has told me that they do not have the capacity to review any referrals at this time (see comments below).

On September 21, I visited Larry Casper of LTC. He said that he had received the FDP amendment package but had not yet looked at it. We talked about meeting the next week to go over it.

On September 29 I phoned Larry Casper and was told he was s.22

On October 12 I phoned Larry Casper, was told he was in, and got his voicemail. I left a message for him to call me. I followed up in the early afternoon and he was in the office, but leaving the phone for voicemail. I sent an e-mail at the end of the day giving a brief summary of the proposed development and asked if he had any input or concerns.

On October 15 Larry Casper responded to my e-mail with a concern that the road permit road and a small area to the south of the block hadn't been visited by the HFR crew or reported on. We agreed to have one of their crew go have a look. .

On October 18th we signed a contract with LTC to revisit the site and gave LTC crew maps for their work. I discussed the permit with Larry Casper.

On November 16, 2004 Michelle Edwards from the LTC e-mailed me the results of the revised HFR with detailed recommendations to be addressed in the FDP. This completes the referral to LTC as Larry Casper had said that we were to follow the recommendations found within the HFR report.

On November 17, 2004, Ralph Kossinn advised by e-mail that Canoe Creek Indian Band should be contacted.

On November 22, 2004 I e-mailed and phoned Sam Phillips of the Canoe Creek Band and left messages.

On November 25, 2004 Sam called me back and we discussed the woodlot, it's situation, consultation in general. He said that they did not have the resources to look at the referral, but to send maps for their records. He asked if it was in a highly contentious archeological area. I let him know about the completed HFR and the results. He asked that a verbal go-ahead be accepted as he did not have time to write a letter. I sent him digital copies of the maps for this proposed development.

Appendix A Basic Cutblock Information

Basic Cutblock Information			
Cutting Permit: C	**Block Number:** 6	**Opening #:** 92J097 -	**Approximate Cutblock Area (ha):** 21.64
Harvesting Method: Cable and Ground based			
Silviculture System: Clearcut with reserves			
This cutblock proposes harvesting within a riparian management zone: Y		**Harvesting is proposed within a riparian reserve zone:** N	

General Objectives for Riparian Management Zone

Assumed Riparian Class of Stream, Wetland or Lake: S1 **Designation on Map:** Tyaughton Ck. 6-1-S1

Harvesting is proposed in a S4 to S6 stream that is a direct tributary to a known S1 to S4 temperature sensitive stream and currently has sufficient numbers and distribution of shade trees:	N
Harvesting is proposed in a S4 to S6 direct stream tributary to a S1 to S3 stream or a marine-sensitive zone with sufficient numbers and distribution of trees for stream bank or channel stability:	Y

General Objective for Riparian Mgt. Zone

Riparian Class: 6-1 (S1)

Retention: The number of trees that will be retained is a minimum 15 mature conifers of which a minimum of 4 Douglas-fir >50cm DBH
The density of trees that will be retained is a target of 100 stems per hectare with a range of 0-200 s/ha (due to presence of NCBr patches within the RMZ).

General Objectives for Riparian Management Zone

Assumed Riparian Class of Stream, Wetland or Lake:	**S6**	**Designation on Map: 6-2-S6**
Harvesting is proposed in a S4 to S6 stream that is a direct tributary to a known S1 to S4 temperature sensitive stream and currently has sufficient numbers and distribution of shade trees:		**N**
Harvesting is proposed in a S4 to S6 direct stream tributary to a S1 to S3 stream or a marine-sensitive zone with sufficient numbers and distribution of trees for stream bank or channel stability:		**Y**
General Objective for Riparian Mgt. Zone Riparian Class: 6-2 (S6)	**Retention:**	**Minimum 7 Fd > 50cm DBH and 18 Fd/Sx between 18-50cm DBH. The density of conifers that will be retained is a target of 10 stems/hectare of Fd > 50cm DBH and 25 stems/ha of Fd/Sx between 18-50cm DBH. Immature stems will be retained where operationally feasible.**

General Objectives for Riparian Management Zone

Assumed Riparian Class of Stream, Wetland or Lake:	**S6**	**Designation on Map: 6-3-S6**
Harvesting is proposed in a S4 to S6 stream that is a direct tributary to a known S1 to S4 temperature sensitive stream and currently has sufficient numbers and distribution of shade trees:		**N**
Harvesting is proposed in a S4 to S6 direct stream tributary to a S1 to S3 stream or a marine-sensitive zone with sufficient numbers and distribution of trees for stream bank or channel stability:		**N**
General Objective for Riparian Mgt. Zone Riparian Class: 6-3 (S6)	**Retention:**	**Minimum 5 Fd > 50cm DBH**

APPENDIX B ACCESS MANAGEMENT

5.1 Access Management Tables

5.1.1 Road Construction, Major Culvert and Bridge Table

Road Name or Identification	Length (0.1 km)	Timing, if critical	Major Culvert	Bridge Type
361.100	0.7	N/a	N	N/a
361.110	0.1	N/a	N	N/a
361.120	0.2	N/a	N	N/a

Appendix C Review and Comment / Documentation and Referral

Written comments received from Public Review

- There were no written or other comments received from the public review

Written comments received from First Nations

- There were no written comments received from the first nations referral.
- Larry Casper from LTC asked that an HFR be conducted, and that the recommendations be complied with. This has been completed and the recommendations will be followed.
- Sam Phillips from the Canoe Creek Indian Band stated that they did not have the resources to review this FDP.

Written comments received from Agencies.

- Ralph Kossinn of the MoF Cascades Forest District had the following comments.

Section 2.0 Engineering: *The text may not need any changes, but just to clarify - semi-permanent deactivation falls under the "maintenance" category, i.e. the roads would have to be maintained by the licensee. A road is either maintained or permanently deactivated and any deactivation should be done according to the Act and regulation.*

Section 7.1 Terrain Stability *Road 361.120 - Is this a typo ("...terrain class III with some terrain class III")?*

Section 8.11 Measures to Protect *I don't think this is mentioned in the text, but the map shows the 50m RRZ extending into the proposed block. Does this mean that there will be a small area within Block 6 where no harvesting will occur, or will the boundary be adjusted in the site plan to follow the RRZ boundary? The plan mentions retention of a number of mature conifers in the 3 RMZ's (15, 7 and 5). Are these the actual numbers of trees or are these # of stems/ha?*

Appendix A Basic Cutblock Information

The "Y" you placed in the General Objectives for RMZ table indicates that you are proposing to harvest in an S6 RMZ that is tributary to an S1 and currently has enough trees to provide/maintain stream bank or channel stability. In that case the regulation requires the licensee to specify a stand structure in the RMZ that will continue to provide stream bank or channel stability.
I am not sure if leaving 7 conifers in the 6-2 RMZ or 5 in the 6-3 RMZ will achieve that objective? Will the retention of the immature stems provide such a stand structure?
This should be clarified in table or text.

Changes and comments to address the review comments:

- Section 2.0 comment. No change required.
- Section 7.1 comment. Typo, change made to the text.
- Section 8.11 comment. RRZ extends into the block. No harvesting will occur within the RRZ. Retention numbers within RMZs are actual numbers of reserved trees. Clarified in text and table.
- Appendix A comments. Better desription of stand retention structure. Description of how channel and stream bank stability will be protected and maintained is clarified and rationalized in the text of 8.11. The "Y" for stream 6-3 was a mistake, changed to "N".

Appendix D **Summary of Revisions**

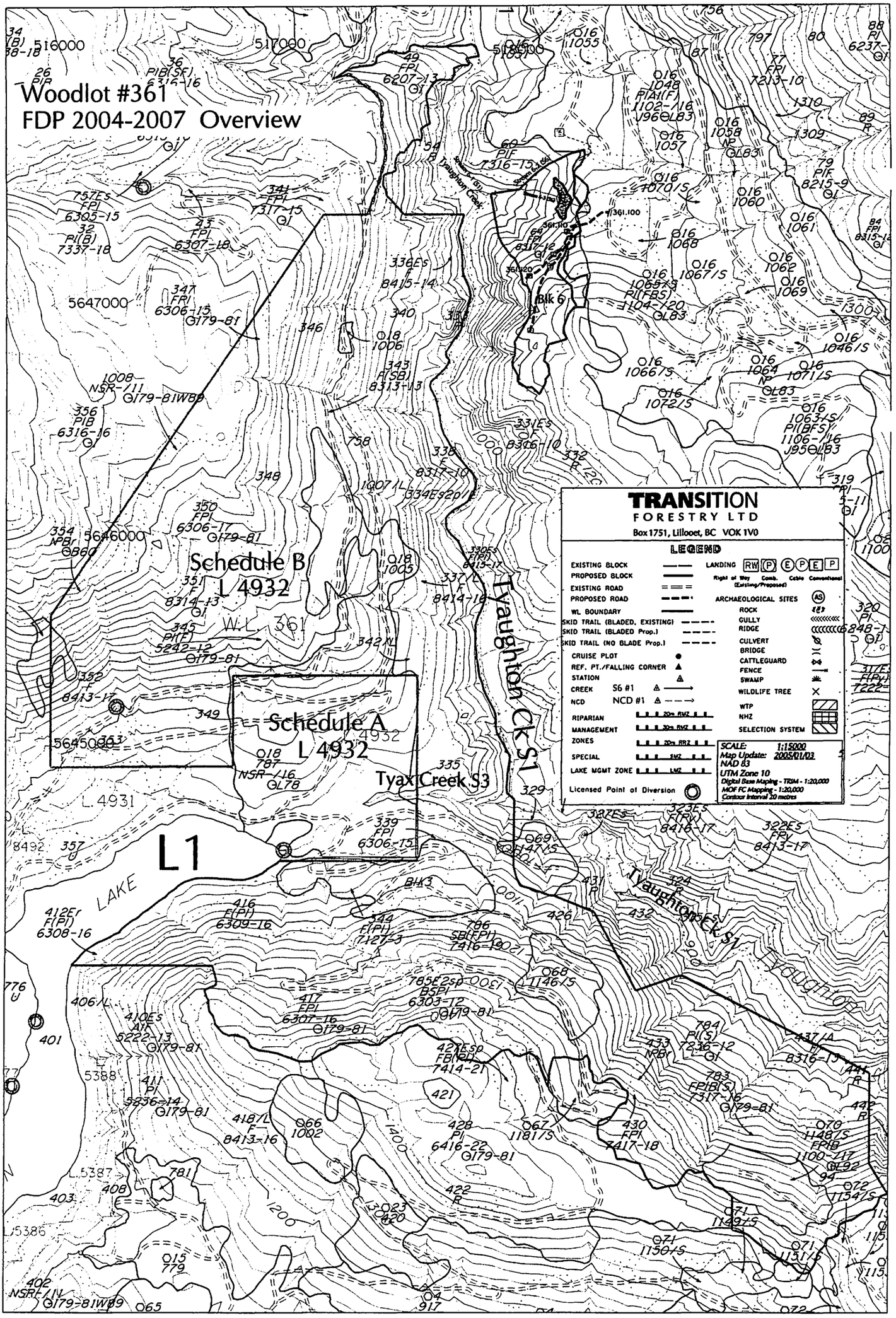
- Title Page: changed to FDP from FDP amendment. Term changed. Acknowledgment of intellectual property rights given to John Foster and Michael Shipp RPF 2809.
- Table of contents: housekeeping changes.
- Introduction: changed to FDP from FDP amendment. Term changed.
- Section 2.0 Engineering: changed to FDP from FDP amendment.
- Section 3.0 Harvesting: changed to FDP from FDP amendment.
- Section 3.1 Harvest strategy: added some text from previous FDP. Only added harvesting priorities.
- Section 3.3 through 3.5 deleted as superfluous content.
- Section 4.0 housekeeping change. Changed "the added block 6" to "block 6".
- Section 5.0 Stand Management, deleted.
- Section 6.0 Seton Lake Indian Band is changed to Canoe Creek Indian Band.
- Section 6.0 refers to a follow-up HFR requested by Larry Casper of LTC.
- Section 6.0 housekeeping change. Change 'this amendment' to 'proposed developments'.
- Section 7.1 housekeeping change: Deleted the words "in amendment #2".
- Section 7.1, road 361.120, clarified terrain stability issue for this road.
- Section 7.2 delete the sentence "This section remains unchanged from the original FDP".
- Section 8.0 Enter sentence referring to riparian features located on the map. Housekeeping change. Changed "the added block 6" to "block 6".
- Section 8.11 describe a stand structure that will satisfy S14(8)(c) and a rationale of why it will do so. Add the reserve tree stems per hectare equivalent for comparison purposes. Add description of mature tree retention to that of veteran tree retention.
- Section 8.21 Enter the Known fish bearing riparian feature information.
- Section 8.31 Enter sentence identifying the presence of water licensees.
- Section 8.32 Enter the process necessary to contact water license holders and measures to protect licensed water intakes.
- Section 9. Delete section 9.1, change 9.2 forest health to 9.1 forest health, delete the sentence "This section remains unchanged from the original FDP". Add wording from the original FDP to apply to the entire WL area.
- Section 12.1 Housekeeping change. Change the word "amendment" to "FDP".
- Section 12.1 Addition of wording from previous FDP to apply recreation values to the entire woodlot.
- Section 13.1 Housekeeping change. Change the words "the block" to "block 6".
- Section 13.2 Create a new section titled Objectives for retention of coarse woody debris. Describe CWD objectives for the woodlot, and measures to protect for block 6.
- Section 14.1 Housekeeping change. Change the words "this entire block" to "block 6".
- Section 14.3 Housekeeping change. 3 instances: change the words "this block"

to "block 6"

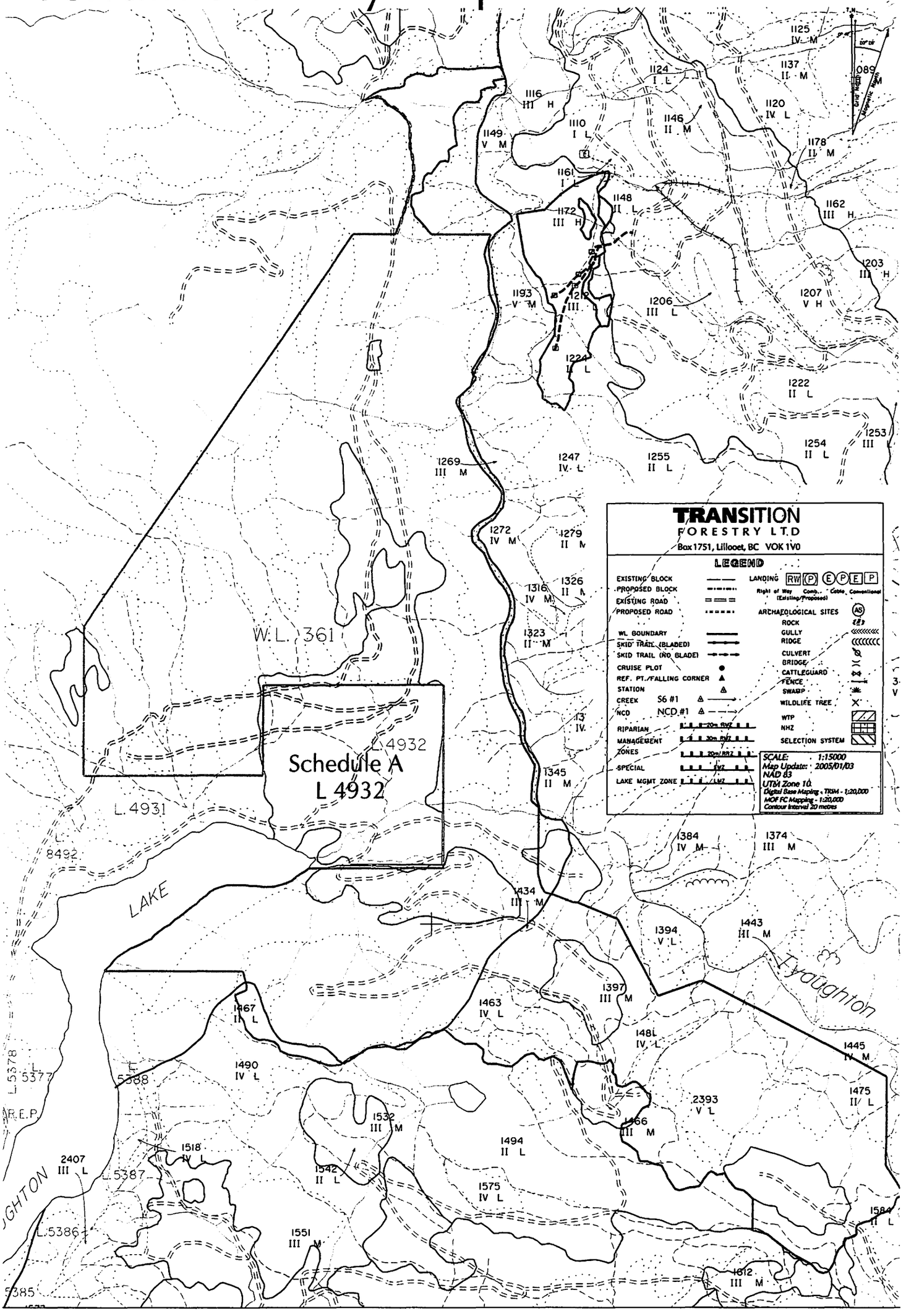
- Section 16.0, delete reference to Seton Lake Indian Band.
- Section 16.0, correct the advertising/public comment period dates to make consistent with Section 1.2, and the text of the advertising.
- Section 16.0 rewritten to reflect the past tense and the outcome of the advertising, and MoF referral.
- Section 17.0, fill in the efforts to consult with the Lillooet Tribal Council and Canoe Creek Indian Band.
- Section 18 deleted and moved in entirety to Appendix D.
- Appendix A:
- 1 General objectives for riparian zone Stream 6-3. *Harvesting is proposed in a S4 to S6 direct tributary to a S1 to S3 Stream or a marine sensitive zone with sufficient numbers and distribution of trees for stream bank or channel stability.* Answer changed to No.
- 2 Stream 1 Addition of stems/ha target and range of retention in RMZ. Addition of mature reserve tree retention targets.
- 3 Stream 2 Addition of stems/ha target and range of retention in RMZ. Specify species as Fd.
- 4 Stream 3 Specify species as Fd.
- Appendix C added: Agency referral comments.
- Appendix D added, Section 18 moved to Appendix D. Summary of revisions.
- Appendix E added, Summary of Attached Maps.

Appendix E **Summary of Attached Maps**

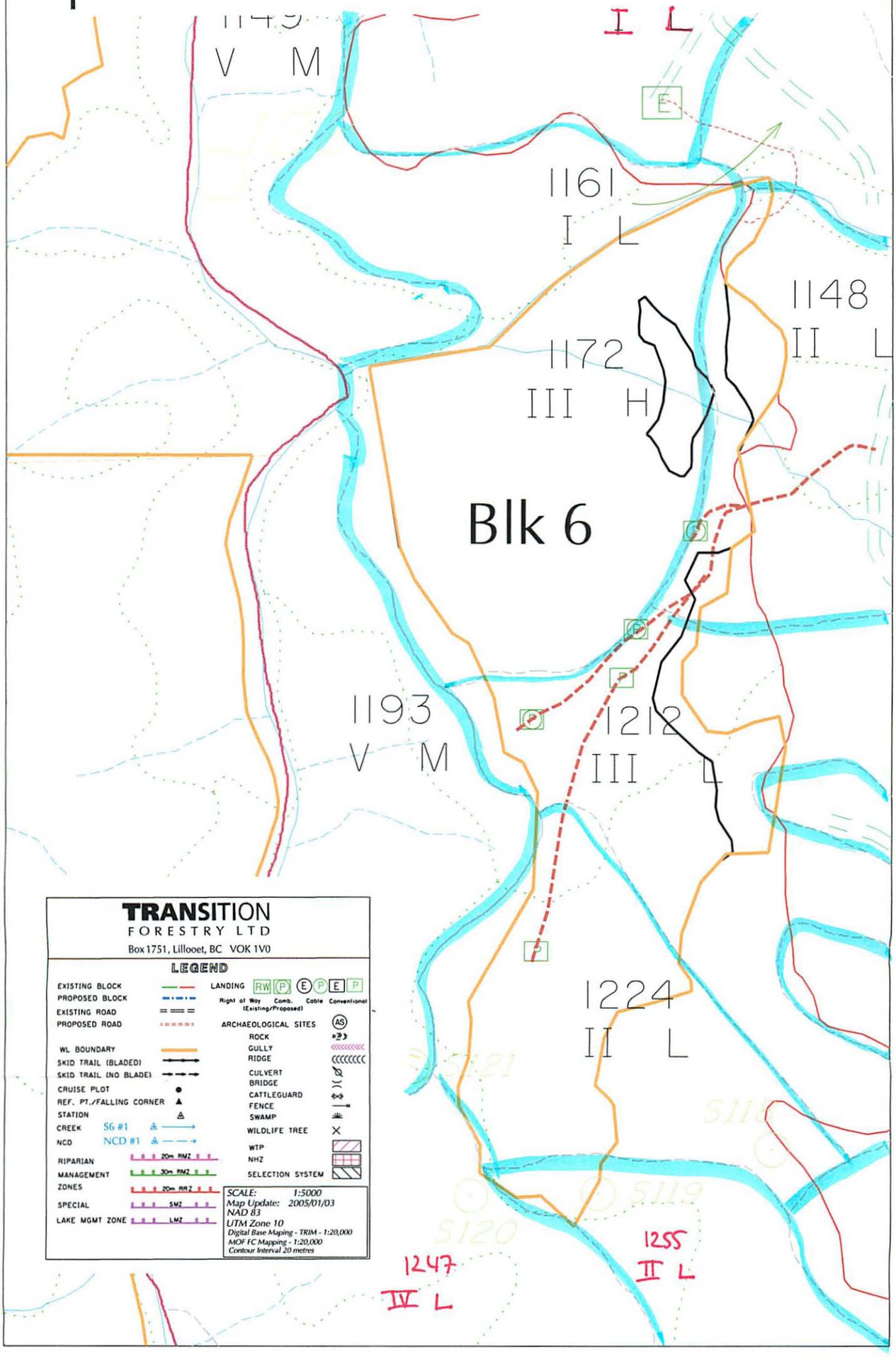
- FDP map overview of woodlot at 1:15000
- FDP map overview of proposed operations at 1:5000.
- Terrain Stability overview map of woodlot at 1:15000
- Terrain Stability overview map of proposed operations at 1:5000
- Visual Quality Objective map covering WL 361 at 1:71000 from MSRM
- Mule Deer Winter Range map covering WL 361 at 1:90000 from MSRM.


Woodlot #361
FDP 2004-2007 Overview
Schedule B
L 4932
Schedule A
L 4932
L1
Tyaughton Ck S1
Tyax Creek S3
LAKE
TRANSITION
FORESTRY LTD
Box 1751, Lillooet, BC V0K 1V0
LEGEND
EXISTING BLOCK
PROPOSED BLOCK
EXISTING ROAD
PROPOSED ROAD
WL BOUNDARY
SKID TRAIL (BLADED, EXISTING)
SKID TRAIL (BLADED Prop.)
SKID TRAIL (NO BLADE Prop.)
CRUISE PLOT
REF. PT./FALLING CORNER
STATION
CREEK
NCD
RIPARIAN
MANAGEMENT ZONES
SPECIAL
LAKE MGMT ZONE
Licensed Point of Diversion
LANDING
ARCHAEOLOGICAL SITES
ROCK
GULLY
RIDGE
CULVERT
BRIDGE
CATTLEGUARD
FENCE
SWAMP
WILDLIFE TREE
WTP
NHZ
SELECTION SYSTEM
SCALE: 1:15000
Map Update: 2005/01/03
NAD 83
UTM Zone 10
Digital Base Maping - TRIM - 1:20,000
MOF FC Mapping - 1:20,000
Contour Interval 20 metres

Terrain Stability Map for WL 361 East



WL 361 Block 6
Terrain Stability Map for Blk 6 plus associated roads.



TRANSITION
FORESTRY LTD
Box 1751, Lillooet, BC V0K 1V0

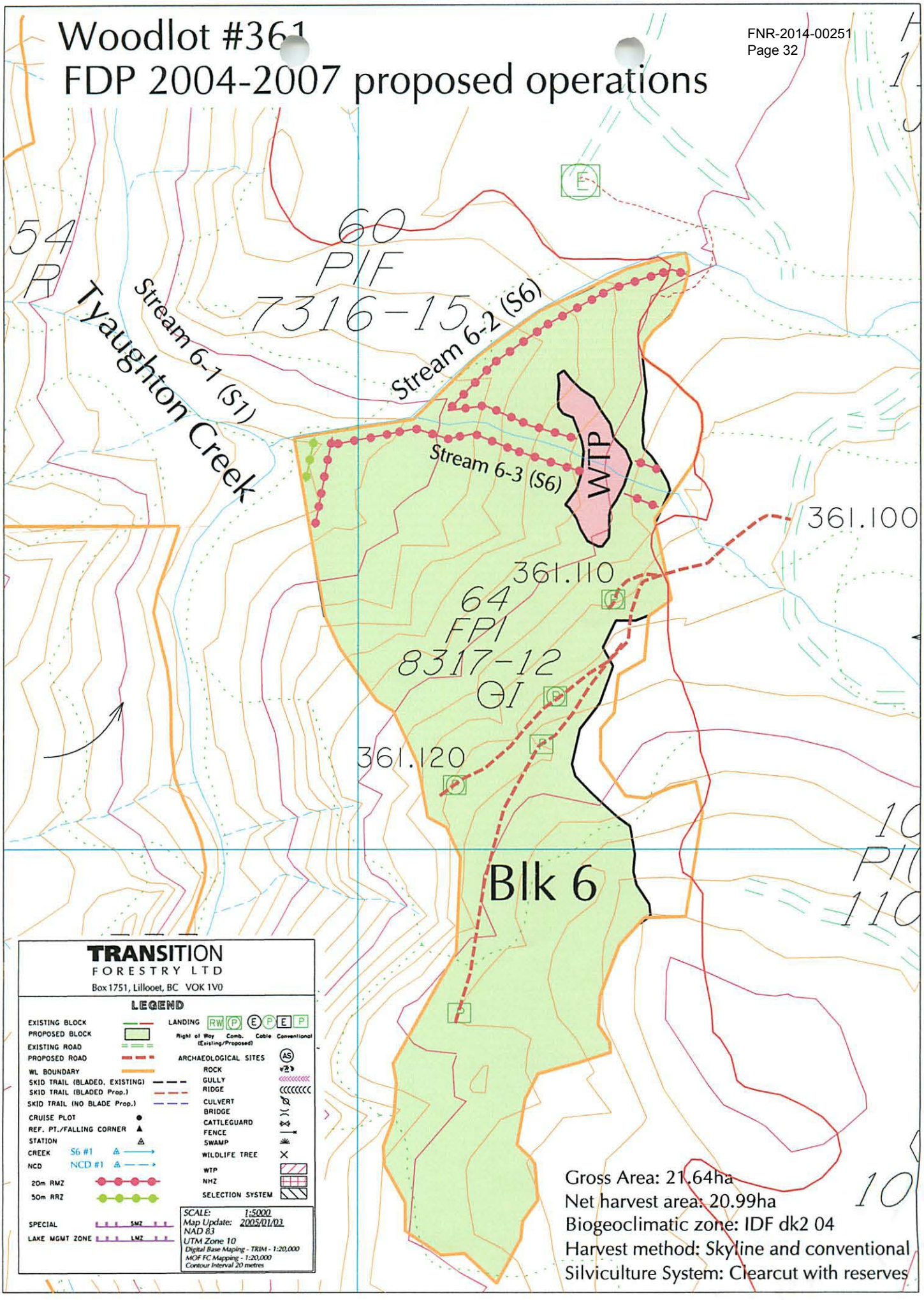
LEGEND

- EXISTING BLOCK
- PROPOSED BLOCK
- EXISTING ROAD
- PROPOSED ROAD
- WL BOUNDARY
- SKID TRAIL (BLADED)
- SKID TRAIL (NO BLADE)
- CRUISE PLOT
- REF. PT./FALLING CORNER
- STATION
- CREEK S6 #1
- NCD NCD #1
- RIPARIAN 20m RMZ
- MANAGEMENT ZONES 30m RMZ / 20m RRZ
- SPECIAL SMZ
- LAKE MGMT ZONE LMZ
- LANDING RW (Right of Way) P (Comb. (Existing/Proposed)) E (Cable) P E P (Conventional)
- ARCHAEOLOGICAL SITES AS
- ROCK #2
- GULLY
- RIDGE
- CULVERT
- BRIDGE
- CATTLEGUARD
- FENCE
- SWAMP
- WILDLIFE TREE
- WTP
- NHZ
- SELECTION SYSTEM

SCALE: 1:5000
Map Update: 2005/01/03
NAD 83
UTM Zone 10
Digital Base Maping - TRIM - 1:20,000
MOF FC Mapping - 1:20,000
Contour Interval 20 metres

TERRAIN CLASS BDY.

Woodlot #361
FDP 2004-2007 proposed operations



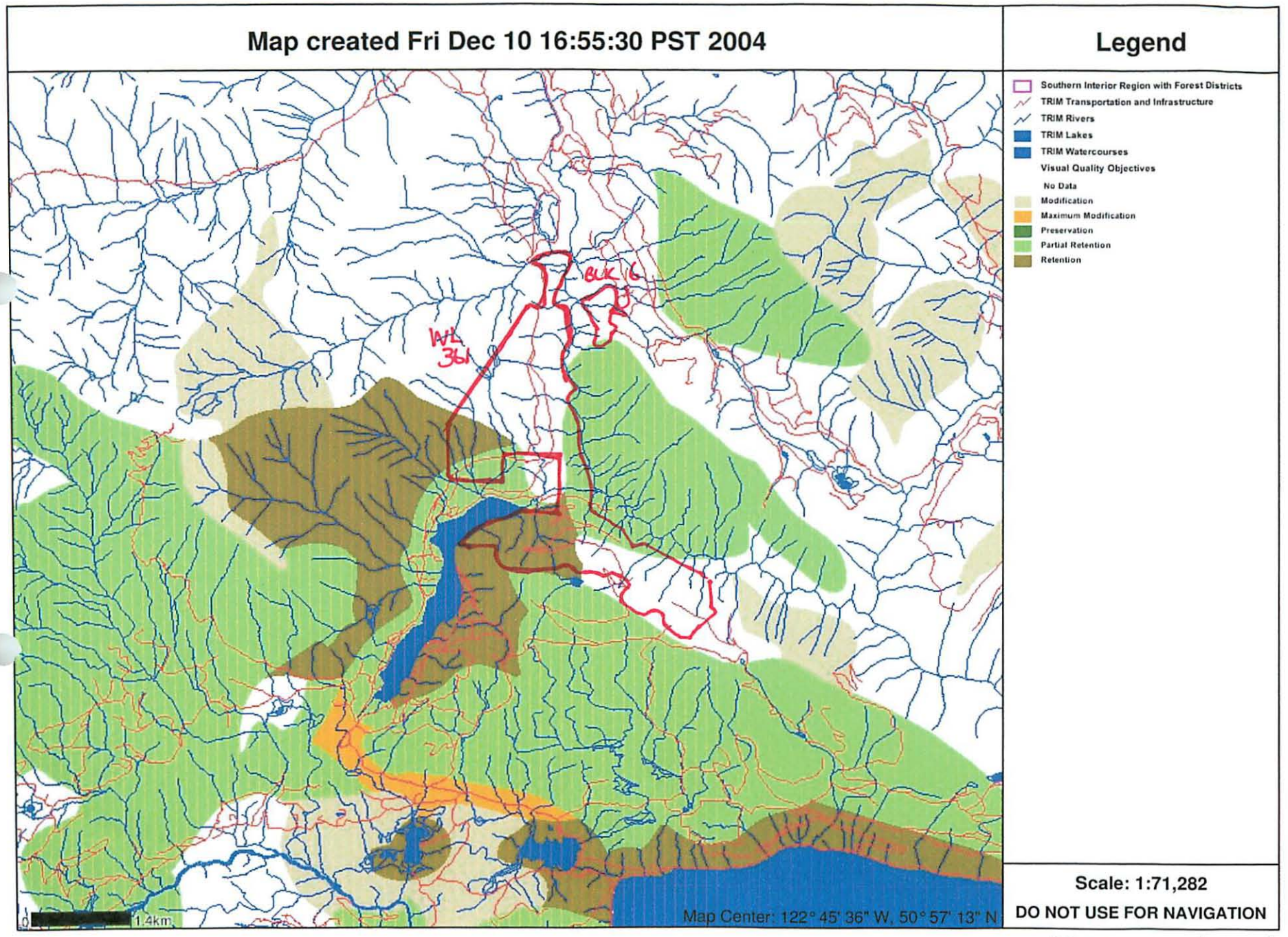
TRANSITION
FORESTRY LTD
Box 1751, Lillooet, BC V0K 1V0

LEGEND

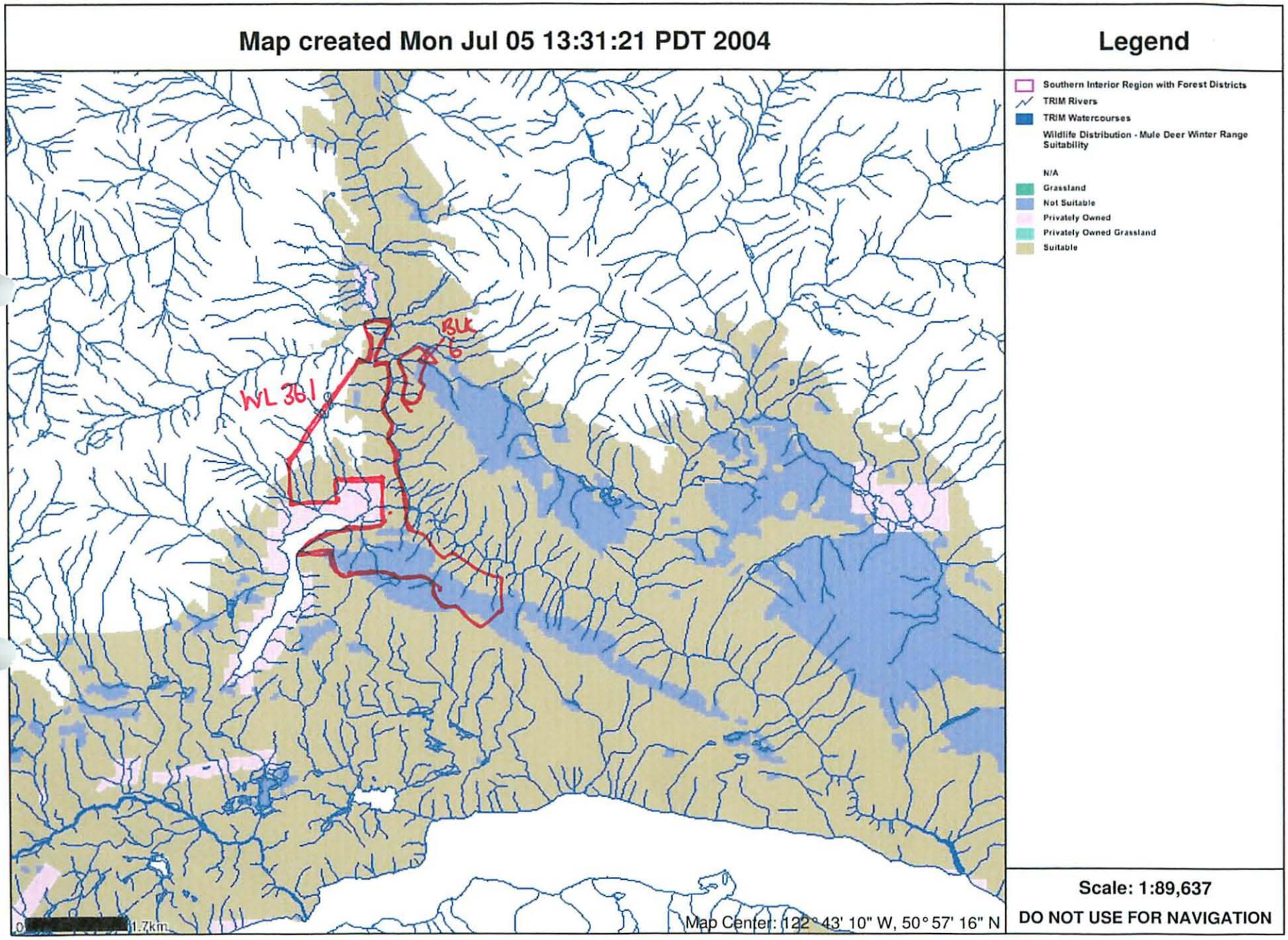
- EXISTING BLOCK
- PROPOSED BLOCK
- EXISTING ROAD
- PROPOSED ROAD
- WL BOUNDARY
- SKID TRAIL (BLADED, EXISTING)
- SKID TRAIL (BLADED Prop.)
- SKID TRAIL (NO BLADE Prop.)
- CRUISE PLOT
- REF. PT./FALLING CORNER
- STATION
- CREEK S6 #1
- NCD NCD #1
- 20m RMZ
- 50m RRZ
- SPECIAL SMZ
- LAKE MGMT ZONE LMZ
- LANDING (Right of Way (Existing/Proposed): RW P; Comb.: E P; Cable: E; Conventional: P)
- ARCHAEOLOGICAL SITES
- ROCK
- GULLY
- RIDGE
- CULVERT
- BRIDGE
- CATTLEGUARD
- FENCE
- SWAMP
- WILDLIFE TREE
- WTP
- NHZ
- SELECTION SYSTEM

SCALE: 1:5000
Map Update: 2005/01/03
NAD 83
UTM Zone 10
Digital Base Maping - TRIM - 1:20,000
MOF FC Mapping - 1:20,000
Contour Interval 20 metres

Gross Area: 21.64ha
Net harvest area: 20.99ha
Biogeoclimatic zone: IDF dk2 04
Harvest method: Skyline and conventional
Silviculture System: Clearcut with reserves



WL #361 Forest Development Plan 2004-2007
Tyaughton Lake
Visual Quality Objective map from MSRM website.


Map created Mon Jul 05 13:31:21 PDT 2004
WL 361
BLK 16
Legend
Southern Interior Region with Forest Districts
TRIM Rivers
TRIM Watercourses
Wildlife Distribution - Mule Deer Winter Range Suitability
N/A
Grassland
Not Suitable
Privately Owned
Privately Owned Grassland
Suitable
Scale: 1:89,637
DO NOT USE FOR NAVIGATION
1.7km
Map Center: 122° 43' 10" W, 50° 57' 16" N

Forest Development Plan

Woodlot Licence
#361
January 1, 1997 to December 31, 2001

Licensee: Gus Abel

Licensee Signature: Gus Abel

Kamloops Forest Region

Lillooet Forest District

Lillooet Timber Supply Area

Location: Tyaughton Lake

Submission date: January 17, 199

RPF signature and seal: _____ Date: 97-01-18

REGISTERED PROFESSIONAL FORESTER OF BRITISH COLUMBIA MICHAEL A. SHIPP No. 2809

Michael Shipp

Prepared by:

Signature: John Foster Date: 97-01-18

John Foster

MOF Approved by: _____ Date: _____

MoELP Approved by: _____ Date: _____

Forest Development Plan

Appendices

Appendix	**1a**	Forest Development Plan: Key Map and Legend
Appendix	**1b**	Forest Development Plan: Status Map of Plan Area and Legend
Appendix	**11**	Forest Development Plan Map and Legend
Appendix	**111**	Table 1 - Five Year Plan Timber Resource Table Table 11 - Integrated Resource Management Summary Table 111 - Five Year Plan Harvest Priority Summary
Appendix	**IV**	Forest Development Plan Transition Periods
Appendix	**V**	Table 1 - R(i) - Key Road Map Supplement- Maintenance/Deactivation. Table 11 - R(ii) - Key Road Map Supplement- Existing and proposed structures
Appendix	**VI**	Completed Silviculture Prescriptions and Stand Management Prescriptions
Appendix	**VII**	Summaries, Report: Snags and Wildlife Trees, persons and organizations consulted and referrals list with advertisements.

Forest Development Plan

Introduction

The purpose of this plan is to provide information on the location and scheduling of proposed roads and cutblocks for timber harvesting. The woodlot is situated within the Cascade Mountains, approximately 110 km northwest of Lillooet. The owner of the woodlot Mr. Gus Abel manages a backcountry resort nearby at Tyaughton Lake.

Management objectives and higher-level plans

The general management objectives for the woodlot are:

- provision of a sustained timber supply;
- maintain and improve existing recreational facilities;
- apply sustainable forest practices;
- plan for multiple use;
- integrate timber harvesting and silviculture to manage for other forest resources.

Some specific objectives are:

- protect water quality, quantity, flow regimes;
- promote biological, species and habitat diversity;
- protect wildlife;
- conserve naturalness and visual quality; and
- other specific resource objectives.

The plan is consistent with the requirements of the higher level plans in effect and include *Management and Working Plan # 3.* The 5-year development plan is consistent with the requirements of the *Forest Practices Code of B.C. Act* and *Operational Planning Regulations* of B. C. The general objectives of the *Management - Working Plan 3* are stated above.

Key, or critical, issues that impact on the management of forest resources in the vicinity are visual quality, wildlife and wilderness recreational opportunities both for residents and non-residents. The area is regarded as a world class wilderness recreation area.

The effective term of this plan is from January 1, 1997 to December 31, 2001. This plan will, therefore, demonstrate how timber management will integrate other forest resources such as wildlife, water, biodiversity, recreation, biological diversity, soil conservation and other forest resources; and how timber management will sustain communities and persons who depend on the economic and cultural value of natural resources.

2.0 Engineering

2.1 Road Development

Engineering schedules detailing the road construction, maintenance and deactivation for the term of this development plan are summarized in tables R(i) and R(ii) in Appendix V and identified on the development plan map, Appendix 1b. All access development will conform to BCFS Forest & Logging Trail Engineering Practices.

Existing access is provided by the West Tyaughton Forest Road. Access to block I is provided through Schedule A land and a permanent access road on Schedule B lands. Existing access is provided to blocks H and J by the west Tyaughton Creek Road.

The proposed road development for this term is for the construction of 189 meters of new road (Branch 1) and construction is planned for the summer of 1997. Approximately 45 meters of new road will be located within the Schedule A land and the remainder is located within the crown land portion. The proposed road is located on favourable terrain and is necessary to access timber within block J.

The deactivation schedule for the 5-year plan is to semi-permanently deactivate Branch 1 (Br 1) and spur branch 2 (Br 2). Temporary deactivation of the road within block I will be completed within 2 months of completion of logging or by the following fall season if logging is completed in the winter. The deactivation will be completed in 1997 or 1998 depending on the season when harvesting is completed. All landings and road sides will be grass seeded with an appropriate grass/seed mixture to minimize surface erosion. Waterbars and cross ditches will be constructed and maintained.

2.2 Access Management

The forest development plan map (appendix 1b) identifies the location of access roads and bridges to be used in the following year.

The following projects are proposed for the term of this 5-year plan:

1) construction of 189 meters of new road within CP A, block J (Br 1);
2) construction of 4 landings;
3) semi-permanent de-activation of 189 meters of new road (Br 1); and
4) temporary deactivation of the access road located in block I.

Construction is of new road and landings is scheduled for 1997. Semi permanent de-activation and temporary de-activation is also scheduled for 1997. If harvesting is completed into the winter season, then de-activation will occur in 1998. The Licensee understands that public access to the Crown land portion of the Woodlot cannot be restricted and that only the Ministry of Forests has the jurisdiction to close forest roads. A junction permit is required for branch 1.

3.0 Harvesting

The allowable annual cut level for the woodlot is 1160 M^3. For the 5 Year Plan the rate of harvest is 5800 M^3, plus or minus 5 percent. On the schedule A land the AAC is 30 M^3 while the AAC is 1130 M^3 on the schedule B lands.

3.1 Harvesting Strategy

The cutting priorities for the woodlot are ranked as follows with the highest priority given to the first ranking:

1) blowdown, fire kill or priority insect attacks;
2) other serious insect attacks;
3) stands suffering a net volume loss from disease or parasitism and decadent stands;
4) susceptible stands and other mature stands; and
5) other stands.

The harvesting pattern for the area under this development plan for the next 5 years is indicated on the development plan map. Harvesting development will honour the strategies and objectives contained in *Management and Working Plan #3* , a higher level plan. The *Forest Act* and *Forest Practices Code Act* are reguarded as statutory requirements for operational plans (forest practices) and include silviculture green-up, biodiversity, for instance. This plan will follow district priorities as closely as possible.

The following stand level planning objectives have been addressed in the proposed silviculture prescriptions:

- maintenance of old seral attributes;
- retention of hydrologic, silvicultural and thermal or escape cover;
- restoration and conservation of soil productivity;
- reduced windthrow in susceptible species and areas; and
- maintenance of the necessary critical site factors favoring natural regeneration.

In addition to the objectives outlined above, the following strategies have been developed and have been incorporated within the operational plans as proposed in silviculture prescriptions for blocks H, I and J:

- location of 6 wildlife tree patches;
- maintenance of a minimum of 27 stems per hectare of old or large diameter trees (50 cm dbh or greater);
- meeting the visual quality of retention for block I as seen from Tyax Lake Resort;
- managing for windthrow within block H;
- the maintenance of multi-cohort/layered stands (3 or more age classes) to facilitate natural regeneration through development of cutting priorities and stand structure goals;
- retention of 56-80 % of the original basal area to provide hydrologic cover for protection of forage, water, ungulate habitat (cover) and soil productivity;
- protection of riparian habitat through various stand level practices such as locating harvesting outside of reserves and by deferring harvesting within riparian management zones (Tyax Creek and stream # 1);

- grass seeding and restoration of skid trails and roads, landings and recreational trails; and
- other specific practices including measures to retain large woody debris, and protection of willow, ponderosa pine and paper birch.

3.2 Harvesting Methods

The harvesting methods and silviculture systems for proposed cutting permit 2, block H, I and J are indicated on the forest development plan map. Harvesting will conform to the appropriate regulations and standards as required in the *Forest Practices Code of BC*, *Forest and Range Act* and recommended best practices as stated in various guide books.

"A Guide to Site Identification and Interpretation for the Kamloops Forest Region", *"Establishment to Free Growing Guidebook for the Kamloops Region"* and the *"Correlated Guidelines for Management of Uneven-aged Drybelt Douglas-fir Stands in Bristish Columbia"* provided background information that lead to the silviculture and harvesting system that was chosen. In addition, local knowledge and experience also indicated the reliability of these systems. The choice of harvesting method and silviculture system is as follows for each block and standard unit:

- for block H and J the preferred harvesting methods (ground skidding, skyline) are due to economics, slope and soil factors;
- for block I the preferred harvesting methods (ground skidding, skyline) are due to slope and soil factors; and
- the use of a single tree selection system is based on the silvics and ecological requirements of the preferred commercial trees species and the forest management objectives of the woodlot to manage wildlife and recreation values; and
- blocks H, I and J have been designed to eliminate skid trail and road construction from areas where slopes are greater than 60 %.

3.3 Utilization Standards

All Commercial timber will be harvested to the minimum utilization in effect at the time of harvest.

Species	Stump Height (cm)	Top Diameter (cm)
All species	30	10

Species	Stump diameter outside bark
Pl	15 cm
Other species (Except that Fd and Py may often have a silvicultural diameter limit)	20 cm

The current utilization standards will be identified in the separate cutting permits.

3.4: Cutting of Hazardous or Damaged Trees

Hazardous Trees Located Adjacent to Industrial Activities:

During operations within cutblocks or along roads and road right of ways, trees hazardous to the safety of workers need to be removed according to Worker's Compensation Board standards. We request exemption from the requirement to identify these areas in the Forest Development Plan under section 28.1(a)(i).Trees that will be removed are immediately adjacent to areas of operation and not more than 1.5 tree lengths away from the block boundary or road right of way. Only trees that pose a safety hazard or trees that need to be removed to allow removal of the hazardous trees may be cut.

3.5 **Changes to the Forest Development Plan Due to Salvage** (sec. 42 of the of the Forest Practices Code of British Columbia Act):

Section 17 of the Operational Planning Regulation allows the District Manager to waive the requirement of showing minor salvage areas (up to 500m3) and the access to these areas will not require an amendment to the FDP, subject to the following exceptions:

1) where add-ons to clearcut blocks result in net opening sizes exceeding the 40 hectare maximum, or where add-on blocks are beyond what is defined above (for clearcut only);

2) where changes in activities or development are proposed within identified wildlife habitat areas;

3) where changes in activities or development are proposed within the riparian management areas of S1 to S4 classification streams, W1, W2 or W5 wetlands, L1 or L2 lakes.

The Licensee will comply with the Lillooet Forest District's standard operating procedures regarding minor salvage operations. Wherever practical, the timber will be recovered on a single tree basis, with the objective being to maximize the amount of healthy timber that is also removed or damaged.

The licensee will work with Ministry of Forests staff to determine and verify minor salvage areas on the woodlot.

4.0 Silviculture

4.1 Silviculture Systems

Harvesting plans for this 5-year term include prescriptions and cutblocks scheduled for 1997. Appendix II indicates the location and silviculture system proposed. Block's H, I and J are designed to concentrate harvesting in areas where harvesting was completed earlier and where roads and landings may be re-used. Block H and J are located in the east portion of the woodlot adjacent to the gorge of Tyaughton Creek, in the area of polygons 343, 758, 338, and 337. Polygon's 334 and 416 were also proposed for harvesting due to bark beetle infestation/risk.

Single tree selection is the silviculture system that will be used to manage the forest resources within these blocks. Sufficient leave trees and natural regeneration will be retained to ensure a free growing crop of preferred trees. Within two years of harvesting, a stocking/free growing survey will be completed within the disturbed areas. In the event that natural regeneration has been destroyed or is insufficient to re-stock the area, fill planting will be completed.

In 1996 a stocking/free growing survey was completed on CP A, block 1, 2, 3, and 4. Approximately 20 hectares of CP A is free growing. Another 6 hectares will require planting. A free growing and pre-stand tending survey will be completed on the Schedule A land. Silviculture activities including surveys are indicated in **Appendix III**.

The north portion of CP A, block 1 is not greened-up since the stand height is 1.1 meters and is NSR. This NSR stratum will be planted in the spring of 1997. The adjacent proposed CP A, blocks H and J, although located within 400 meters of the non-greened up block, are permissible since they are not clearcuts and retain at least 40 % of the original basal area.

5.0 Stand Management

The following activities are planned for the term of this plan following the completion of silviculture surveys:

- sanitation and juvenile spacing on Schedule A land; and
- brushing on CP A, block 1.

The juvenile and sanitation spacing project located on Schedule A land will improve the current Annual Allowable Cut from 30 M^3 to an expected 180 M^3 or more. This expected increase will require approval from the District Manager of the Lillooet Forest District. Funding to complete juvenile spacing will be pursued with *Forest Renewal BC*. If the survey indicates that mistletoe damage is preventing the crop trees from becoming free growing within the lodgepole pine strata, then an alternate resistant species may be planted.

Brushing may be required on CP A, block 1 to improve growth and yield and to obtain a free growing stand. A free growing and pre-stand tending survey will be completed in 1998 or 1999. Brushing will be completed during the optimum season (late June to late July).

6.0 Cultural Heritage Resources

Cultural heritage resources have not been identified on the proposed cutting permit blocks H, I and J.

If the district manager directs that an archeological impact assessment (AIA) is required, then the results of the AIA will be appended to this plan in Appendix VII.

All First Nations whose asserted traditional territories fall within or adjacent to the forest development plan have been contacted, given the opportunity to review the forest development plan and "encouraged to comment on and provide involvement in preparing the plan."

The woodlot owner recognizes the consitutional right of persons of aboriginal ancestry to hunt and fish, to gather and trap food, to use the land and natural resources for shelter, medicine, spiritual and ceremonial purposes as protected by the *Constitution Act*. This development plan prescribes a silviculture regime which maintains many of the resources referred to in the *Consitution Act*.

If archeological sites are discovered during harvesting or roadbuilding operations, they will be immediately brought to the attention of the Ministry of Forests and operations in that area will cease until an assessment has been carried out.

7.0 Watershed

7.1 Terrain Stability

The location and nature of areas with unstable or potentially unstable terrain are identified on the forest development plan map in Appendix II. Prior to harvesting an appropriate level terrain and slope stability assessment will be completed for CP A, blocks H, I and J. A detailed terrain stability will be conducted at terrain survey intensity level C, in accordance with the specifications in Table 1 (Terrain suvey intensity levels (TSIL) of the *Mapping and Assessing Terrain Stability Guidebook* for areas within and immediately adjacent to these proposed blocks. Indicators of instability have been noted for the Tyaughton Creek gorge which is located outside of block H and J. These indicators include dry ravelling, slumping, gullies and previous landslides.

Summary of Terrain Stability Actions	
Location of area with unstable or potentially unstable terrain	**Actions**
block H & J	**1.** prohibit clearcut logging and the construction of skid trails and landings on slopes greater than 40 %;
	2. locate cut block boundaries outside potentially unstable terrain;
block I	**3.** prohibit clearcut logging and the construction of skid trails and landings on slopes greater than 40 %; and
	4. locate cutblock boundaries outside of potentially unstable terrain.

7.2 Watershed Assessments

In the interior of British Columbia a stand is considered to have achieved hydrologic green up when it is 9 meters in height. The residual stands will exceed this height. There will be a small increase in the Equivalent Clearcut Area due to landings and new roads. Between 56 and 66 % of the basal area will be retained within CP A blocks H, I and J.

The District Manager will determine if a watershed assessment is required.

7.3 Community Watersheds

There are no community watersheds designated within the woodlot area.

8.0 Riparian Management

The forest development plan map shows all streams, wetlands, and lakes (<5 Ha) in the areas proposed for operations and gives their riparian classification.

The practices that will be followed and implemented to protect streams, and lakes within or adjacent to proposed cut blocks are as follows:

Summary of Riparian Management Actions

CP and block	Stream or Lake Class	Stream, wetland or lake	Actions to accommodate
CP A, blk I	**L1**	**Tyax Lake**	1. maintain a windfirm forest along lakeshore riparian reserve; 2. reduce harvest within 200 meters of lakeshore to 20 % of volume; 3. defer harvest within a 40 meters of the lakeshore.
CP A, blk 1	**S3**	**Tyax Creek**	4. maintain a 40 meter forested riparian buffer where the block boundary lies adjacent to the riparian management area; 5. reduce the windthrow risk by reducing the volume harvested to 20 % or less within 100 meters of the creek; 6. locate eastern boundary outside of potentially unstable slopes and gullies to protect Tyaughton Creek;
CP A, blk J	**S1**	**Tyaughton Creek**	7. Exclude potentially unstable areas within the gorge of Tyaughton Creek (eg. exclude gullies, seepage areas, and slopes greater than 60 %);
CP A, blk H & J	**S6**	**Stream # 1**	8. locate block boundary outside of the riparian area of stream; and 9. retain 80 % of volume within 200 meters of the stream.

9.0 Forest Protection

9.1 Fire

General measures to protect the forest from fire and to support other forest management practices from the impact of fire include alternate site preparation practices to prescribed burning, and waste and residue management. For the term of this 5-year plan no prescribed burning will take place as a site preparation technique. Landing debris which includes waste, decay and breakage will be managed as follows:

- where possible firewood will be collected from landings;
- large woody material that cannot be sold for pulp or sawlogs will be yarded to the block after bucking to ensure that there are 20 M^3 per hectare;
- some large woody material that cannot be sold may be buried in landings where cut & fill slopes may result in dry raveling on block I;
- burning will take place annually in the fall after fire season is over when there is snow on the ground; and
- the debris will be fireguarded with mineral soil and landings located more than 5 meters away from live trees.

All Provincial *Forest Practices Code of B.C.* fire Prevention and Control Regulations will be adhered to. Logging debris along roads and landings will be disposed as described in the Cutting Permit. Any burning must be covered by a burning permit. In the event that initial attack is required to prevent a serious wildfire, the Forest Service will be advised as soon as possible as to what resources are needed. Once the fire fighting resources are fully committed, additional assistance will be provided by the Forest Service. This will be done in accordance with Sections 120 and 121 of the *Forest Act.*

9.2 Forest Health

As a requirement to evaluate known forest pests in the woodlot, an annual forest health survey will be completed. The results of the forest health survey will be used to prepare management strategies to reduce significant risks to land and forest values. It is expected that an annual trap tree program will be required to reduce mature tree mortality associated with Douglas-fir bark beetles.

In the past the woodlot was subjected to high levels of lodgepole pine bark beetle infestation and subsequent mortality of much of the mature lodgepole pine resulted (*Dendroctonus ponderosae).* There are no observed red attacked trees within the proposed cut blocks. Dwarf mistletoe is endemic within most of the mature forest types where lodgepole pine is a major leading species. Root rot (*Armillaria ostoyae*) is scattered in distribution and is not a serious pest problem. Douglas fir bark beetle (*Dendroctonus psuedotsuagae*) has caused mortality to many large trees. The woodlot was surveyed for forest pests in the summer of 1995.

A trap tree program was instituted to control Douglas fir bark beetles in 1996. Salvage of the trap, sanitation, salvage trees and leaners was completed prior to the spring of 1997. Sites B96-1A, 2A, 3A, 4A, 5A, 6A, 7A, and 8A are located within CP A, block I. Salvage of Douglas fir killed by bark beetles in 1995 within blocks H, I and J will take place except within wildlife tree patches .

A walkthrough to determine forest health concerns was completed for the silviculture prescriptions. Several areas of *Armillaria ostoyae* were located and mapped on the prescription maps. When approval is given for a cutting permit these areas will serve as temporary wildlife tree patches. The recorded incidence is less than 2 % in blocks H, I and J; inoculum reduction, therefore, is not recommended as per the *Root Disease Management Guidebook.*

The management of mistletoe within the schedule A land will commence with a free growing & pre-stand tending survey. This survey should be done in order to prioritize treatment within the affected area, and to stratify the lodgepole pine types. A request for forest renewal funding is being

pursued. Areas where mistletoe eradication is required, where residual lodgepole pine is infected, then should be treated.

10.0 Visual Landscape Management

The following areas have established visual quality objectives (VQO's):

Visual Landscape Unit # 729 This landscape unit is visible from Tyax Resort and from the Lake since it is located within the south portion of the woodlot. The VQO is retention. The existing visual condition is retained.

Visual Landscape Unit # 730 This landscape unit is visible from Tyax Lake and various private lots. The VQO is partial retention and the existing condition is partial retention. This landscape unit covers only the schedule A land.

Visual Landscape Unit # 734 This landscape unit is visible from Tyax Lake. The landscape unit is located within the south west portion of the woodlot.

Several silviculture practices to protect the visual landscape objectives will be applied. Cutting Permit 2, block I will practice single tree selection to achieve the VQO of retention. Along the lakeshore portion of the landscape unit, there will be a reduction in the volume harvested. Less than 20 % of the timber will be harvested to reduce windthrow risk and to provide a fully forested landscape. Void size is limited to less than 20 meters in diameter. A visual impact assessment has been completed to ensure that the VQO will be met.

11.0 Range

There are two range tenure holders within the crown land portion of the woodlot licence. The range tenure holders are Kevin Bracewell and Barry Menhinick. Mr. Bracewell is a guide-outfitter and Barry Menhinick is an outfitter. Several horses are owned by the woodlot owner and are allowed to graze on private lands during the summer. A Range Management Access Plan should not be required since the amount of grazing is low in the operating areas. Grass seeding will be with a mixture approved by the Lillooet Ministry of Forests.

Range Management Summary

Location	Impact	Mitigating Measures
CP A, block H & J	truck traffic forage disturbance	• notify tenure holders • grass seed landings, and roads
CP A, block I	truck traffic disturbance of forage	• notify tenure holders • grass seed landings and roads
CP A	roads	• temporary and semi-permanent deactivation

12. 0 Forest Recreation

The objectives for forest recreation are stated in *Management-Working Plan 3*. The objective is to improve opportunities for the following values:

- horse back riding;
- hiking;
- cross country skiing;
- wildlife viewing; and
- snowmobiling and ATV use.

Several horseback and hiking trails constructed by the woodlot owner are located on CP A, blocks H, I and J. Located between block H and J is an ATV trail used primarily by snowmobilers. To ensure that forest development activities are consistent with the achievement of these objectives, the following will be accomplished:

- restoration of trails by removing logging slash and debris such as rock, and grass seeding;
- construction of new trails where feasible after harvesting; and
- the retention of large diameter Douglas fir along trail routes where possible.

The known recreation features include a viewing point of the Tyaughton Creek gorge and the trails mentioned above.

13.0 Biodiversity

Direction is taken from the *Biodiversity Guidebook* for both forest level and stand level measures to conserve biodiversity. The natural disturbance type for the blocks is characterized as having frequent stand-maintaining disturbances. The *Biodiversity Guidebook* recommends

> "Partial cutting, combined with occasional smaller dispersed clearcuts, will approximate the pattern of the natural landscape. Each seral stage should be represented by the distribution of patch sizes (harvest units and leave areas)...."
>
> "Connectivity should be maintained or provided for -especially in those areas identified as "high" ...using variable width linkages as part of forest ecosystem networks. Orientation of linkages should be both along valleys and across elevational gradients."

Natural connectivity will be maintained within the IDFk2 portion of the woodlot through the retention of old seral attributes, tree cover and canopy and the reduction of void sizes to less than 20 meters. Interior old seral forest conditions will be protected within CP A block H & J by retaining 56 % of the original basal area. This will eliminate the edge effects associated with increased wind, light and lower humidity (microclimate) and some biological edge effects within the gorge area and upland forests of Tyaughton Creek. Natural regeneration will augment the biodiversity of the local area and result in an increase in young seral patches.

The following stand structure and species composition recommendations are featured as a check list for the silviculture prescriptions CP A block H, I and J:

Stand Structure and Species Composition Recommendations
from the Biodiversity Guidebook recommendations for Natural Disturbance Type 4.

⇒	**Biodiversity Guidebook**	**5-Year Plan (woodlot 361)**
	Silviculture systems that maintain multi-storied stands should be used in Ponderosa pine and Douglas-fir forests.	Stand structure goals for CP A block H, I and J designed to maintain or increase diameter class distribution
⇒	Some mature Ponderosa pine should be maintained in stands where it occurs.	Ponderosa pine reserved from treatment in CP A blocks H, I and J.
⇒	Stand management activities should maintain the natural variety of canopy layers and gaps among and within stands across the landscape	CP A blocks 1, 2, and 3 will maintain the existing canopy layers and gaps during brushing.
⇒	A significant component of the landscape unit should be maintained in communities with plant species composition similar to that in communities that have developed through natural succession	Prescribed burning, mechanical site preparation are not recommended; microclimate favourable to moss dominated forest floors will be maintained.
⇒	The proportion and distribution of the deciduous broadleaf components of stands should be maintained within the range found in unmanaged stands in the landscape unit.	Large willow, maple, cottonwood, aspen and paper birch will be reserved from felling and harvesting in CP A block H, I and J.
⇒	Extensive conversion from climax to young seral species, or from young seral to climax or non-native species, should be avoided	Silviculture surveys completed on CP A blocks 1, 2, 3 and 4 show that lodgepole pine is regenerating well on the Treatment units 1 & 2. Similar results will occur within block H and J. In block I spruce will regenerate with less lodgepole pine than in block H and J.
⇒	Rare forest types within the landscape unit (that is those accounting for less than 2 % of the area, such as birch, cottonwood, aspen, alder, and maple) should be maintained over the rotation.	All paper birch are reserved from harvest.

Woodlot *Management - Working Plan* #3 states that

> "One of the main objectives adhered to in all aspects of managing and developing this licence area will be to maintain or enhance the natural complexity and biodiversity already present on the site."
>
> "Designated wildlife trees will be identified and reserved from harvesting or falling and these will serve as additional valuable habitat for many species of birds and animals. Large woody debris (Class 8 & 9 snags) will also be reserved and provide additional variety in the habitat complexes present on the woodlot area."

A report entitled "Snags and Wildlife Trees" in **Appendix VII** provides some technical background information on the management of wildlife trees.

Strict control of hunting on the private land portion of the woodlot is occurring. To do this a series of gates has been constructed to restrict access onto the private land.

During the field work required for silviculture prescription's for CP A blocks H, I and J it was determined that block I is habitat for terricallous lichens such as *Peltigera apthosa* and many mosses such as *Ptilium christa-christensis*, *Rhytitiopsus undulatum*, *Polysticum strictum*, and various other species. The general measures that will be implemented to protect biodiversity are:

- to protect the moss communities it will be necessary to maintain sufficient canopy to ensure that a favourable micro-climate is maintained through canopy retention;
- all aspen, birch and cottonwood will be reserved from harvest;
- shrubs that are necessary for songbirds and insects such as willow dependent *Lepidoptera* (butterflies and moths) order will be preserved unless they interfere significantly with free growing requirements;
- small Douglas maple will be protected to provide mast for small flocks of black headed grosbeaks, *Pheucticus melanocephalus* during the winter;
- at least 27 trees with diameters at breast height will be retained on the standard units to provide future wildlife trees, snags and large down woody material;
- all acceptable but minor coniferous species present within CP A blocks H, I and J will be treated as priority species for leave trees and future crop trees, for example ponderosa pine and white bark pine;
- thickets of advance regeneration will be reserved from juvenile spacing to ensure that snowshoe hare and other dependent wildlife will be protected; and
- at least 20 cubic meters of large coarse woody debris per hectare resulting from harvesting will be left on the cut blocks.

14.0 Wildlife Management

The objectives for wildlife management are to conserve and maintain habitat for ungulates, songbirds, bears, and various cats, foxes, wolves, as well as small mammals. There is no critical deer winter habitat within the woodlot; however, deer populations are high during the other seasons. Thermal, escape, rearing and security cover are conserved through the single tree selection system. Ungulate use of CP A block I is expected to increase since there will be an increase in forage and hiding cover due to the partial removal of the canopy. Road deactivation will restrict motor access within CP A block J.

Riparian and adjacent upland forest habitat is deferred from harvest for all standard units. This will result in greater population densities of riparian & debris dependent wildlife such as the *Mustelidae* family which include the pine martin, long tailed weasel, and fisher, for instance. Tree canopy gaps will be reduced to less than 20 meters in diameter. This should reduce nest predation and predation of small owls associated with large birds of prey, ravens, grey and blue jays. The reduction of distances between trees will improve habitat for the northern flying squirrel which nests in tree cavities in the winter.

The 6 wildlife tree patches reserved from harvest will provide habitat for various species of *Piciformes* (woodpeckers) and the retention of at least 27 trees per hectare, with diameters of 50 cm dbh or greater, will ensure an adequate density of future large diameter trees. Primary tree cavity excavators such as the Pileated woodpecker depend on large, hard snags and veterans for nesting and foraging.

15.0 Public Consultation and Advertising

Advertisements notifying the public of this forest development plan were placed in the British Columbia Gazette and a local newspaper. These plans were advertised at least twice within two consecutive weeks, with the last advertisements appearing at least one week before the first date on which the proposed operational plans or strategic objectives were available for public viewing. Silviculture prescriptions for cutblocks not yet under cutting permits were available for viewing at the Lillooet Forest district office and at the Tyax Lake Mountain Lodge. Respondents must have at least 60 days to be able to review and comment on the development plans.

This 5 Year Forest Development Plan has been referred to the following persons and organizations:

Ted Horstings
Box 716
Cache Creek, B.C.
VOK IHO
Ph: 457-6546

Barry Menhinick
General Delivery
Goldbridge, B.C.
VOK IPO

Kevin Bracewell
Box 152, Whistler, B.C.
VON IBO

British Columbia, Ministry of Environment
Lillooet, B.C.

Fisheries and Oceans
Lillooet, B.C.

This Forest Develpment Plan was referred to following First Nations:

Chief Gary John
Seton Lake Indian Band
Site 3, P.O. Box 76,
Shalath, B.C. VON 3CO

Larry Casper
Lillooet Tribal Council
Box 1420
Lillooet, B.C. VOK IVO

Terry Saul
Bridge River Indian Band

On April 28, 1997 14 people attended with the licensee, Mr. Gus Abel and John Foster, FIT, to view and comment on the Forest Development Plan. Not all the people provided their names and addresses. Some of the persons names are: from Goldbridge Phillip Branko, Russ Oakley, Scott McKenzie, Fred Chodmon; Clint Menhinick and Dave Fehr of Lillooet; and Nick and Linda Skutnick of Bralorne.

In response to the comments received, the following measures were taken:

1. To meet the requirements of the FPC of B.C. act, the woodlot owner in consultation with a qualified profession will map all unstable terrain to the required intensity level prior to harvesting.

2. To ensure that harvesting does not impact winter recreation it will be necessary to carry out harvesting in the late summer or early fall. Extensive use of the woodlot for skiing and snowmobiling within CP A is occurring; winter, therefore, harvesting is not a preferred time.

3. Location of skid trails on slopes greater than 40 % is not permitted. This requirement is to help prevent accidents and injury to skidder operators.

Appendix VII contains the refferals and the comments recieved from interested individuals and organiztions.

Appendix 111

Table 1 - Five Year Plan Timber Resource Table

Licencee: **Gus Abel** Forest District: **Lillooet**
Tenure: WL 361 Year of Harvest: 1997-1999

Geographic Location	Key Map Ref#	CB#	CB Year	CP Status	Total Area (ha)	Total Volume (m3)	Timber Type	Slope (% of block) 0-30 %	30-50 %	50 %+	Harvest Equip.	Silvi. System	Biogeo Class	Cutting Priority	Season	Elevation (midpoint) m	Aspect
Tyax Lake	92J097	H	1997	SS	8.56	1113	F631-M	10	80	10	SK , LL,	Selection	IDFdk2 MSdc	4	S, F, W	1150 m	90
Tyax Lake	92J097	J	1997	SS	18.22	2369	F631-M	30	60	10	SK, LL,	Selection	IDFdk2	4	S, F, W	1050 m	90
Tyax Lake	92J097	I	1997	SS	20.29	2435	F(Pl)631-M	20	60	20	SK, LL,	Selection	IDFdk2	4	S, F, W	1090 m	360

Table keys:

CP status

SS	Silculture Prescription submitted

Harvest Equipment

SK	Line Skidder
A	Aerial
LL	Skyline

Cutting Priority

1=	Blowdown, fire kill, epidemic insect attack
2=	Other serious insect attack
3=	Stands suffering a net volume loss (diseased and decadent stands)
4=	Susceptible & mature stands
5=	Other stands

Appendix 111

Table 2: Five Year Plan Silviculture /IRM Summary

Licencee: **Gus Abel** Forest District: **Lillooet**
Tenure: **WL 361** Year of Harvest: **1997-1999**

Area Description				Reforestation			Range	Other Resources Values						
Geographic Location	CB#	CB Year	Area (ha)	Site Prep Method	Site Prep Area (ha)	Regen N/P	Grass Seeding Eligibility	Landscape Sensitivity (L, M, H)	Watershed (name)	Water Licence (Y/N)	Critical Winter Range	Lakeshore Harvesting	Proposed Herbicide
Tyax Lake	H	1997	8.56			N	U	L	Tyaughton Creek	No	No	No	No
Tyax Lake	J	1997	18.22			N	U	L	Tyaughton Creek	No	No	No	No
Tyax Lake	I	1997	20.29			N	U	H	Tyaughton Creek	No	No	Yes	No

Activities on Existing Cutblocks

Area Description				Activity				
Geographic Location	CB#	CB Year	Area (ha)	Survey	Spacing	Brushing	Sanitation Spacing	Planting
Tyax Lake	CP A	1990	6.4	1999	No	1998-200	No	Yes
Tyax Lake	CP A	1990	15.5	No	No	1997	No	No
Tyax Lake	CP A	1990	5	1999	No	No	No	No
Tyax Lake	schedule A	1978	50	1997	Unknown	Unknown	Yes	No

Table Keys:

Regen N/P

N- Natural
P- Plant

Grass Seeding Eligibility
Y- Yes
N- No
U- Unknown(not yet discussed)
Yp- Yes, partial seeding

Forest Development Plan
Appendix III, Table III. Five Year Plan Timber Resource Table

Forest District: Lillooet
Year of Harvest: 1997-1999
Tenure: WL 361

Cutting Permit status	Total Harvest (Ha or M3)	Decadent of Over mature stands* Age Class 8 & 9	Salvage (Insect, fire or blowdown) %**	Slopes >50 %**	Selection or Shelterwood %***
a) current Years					
b) Approved CPs					
c) SP approval stage	5917 M3		1%	18%	100%
d) proposed CPs (advanced & Initial Plan)					
e) Annual Average of b, c,	5917 M3		1%	18%	100%

*- other than Dry Belt Fir Types
**- % based on area or volume
***- does not include seed tree or residual protection treatments

Forest Development Plan Transition Periods
Appendix IV

Transition Periods:

Forest Development Plans

i) from December 16, 1995, to June 15, 1997:

- before a FDP may be approved, it must meet public review requirements and must be in "substantial compliance" with the legislated content requirements.

ii) after June 15, 1997:

- a FDP may only be approved if it is in full compliance with the content and public review requirements of the code.

Transition periods for documents which may be submitted with the forest development plan:

Silviculture Prescriptions (excluding backlog SPs)

I) from December 16, 1995 (on)

SPs must meet all OPR content requirements; It is recommended that any completed prescriptions for cutblocks not yet under cutting permits also be made available for viewing at the same time as the forest development plan.

Stand Management Prescription (SMP)

I) from December 16, 1995, to December 15, 1996:

- an approved SMP must be in place prior to commencement of treatments;
- any SMPs approved in the first six month transition period remain valid;
- SMPs must be in substantial compliance with the FPC in order to be approved;
- Generally, SMPs approved during this transition period should be in full compliance with the FPC and in the FS 68 format; the legislation, however, allows the DM some discretion to waive content requirements if she believes the prescription will still ensure sound forest management.

ii) from December 16, 1996, (inclusive) on:

- in order to be approved, an SMP must be in full compliance with the FPC.

Backlog Silviculture Prescription (BSP)

- Sps for backlog areas must be in "substantial compliance" with the OPR content requirements and be covered by an approved FYSP. The SP process has been in place for several years so full compliance is expected after 6 months except in unusual circumstances;
- advertising and refferal are normally through the FYSP process.
-

Appendix V **Table1: R(i) Key Road Map Supplement - Maintenance/Deactivation**
Licencee: **Gus Abel**
District: Lillooet Tenure:WL 361 **WL 361** Year of Harvest **1997-1999**

						Deactivation				
CP/Blk	**Road #/Name**	**Road Permit #**	**Total length (m)**	**Community Watershed**	**Maintenance Type**	Year	Km - km	Road use	Level	Post-Access
CP A/ Blk J	Br 1 (sched. a to sched. b land)		189 m	No	IC	1998	0-0.19	A	S	TB
CP A/ Blk H	Br 2 (sched. a to sched. b land)		550 m	No	RSM	1998	0-0.55	A	S	TB
CP A/ Blk I	Br 3		3600 m	No	RSM	1998	0-3.6	I	S	TB

Table Keys:

Type of maintenance:

V- Visual
RSM- Routine surface ditch and culvert maintenance
R- Resurface
RSR- Road Subgrade Repair
CR- Culvert Replacement
IA- Improve Alignment
BR- Bridge Repair/Replacement
REA- Reactivation
IC- Initial Construction

Post-Access: (expected access after deactivation)

Road Use:

I- Industrial (continuous maintenance)
A- Administrative (periodic visual maintenance)

Level of Deactivation:

T- Temporary
S- Semi-permanent
P- Permanent
TB- Temporary blockage

FOREST DEVELOPMENT PLAN

Appendix v

Forest District: Lillooet

Plan Term: January 1997-January 2001

Tenure: Woodlot # 361

Table R(ii) Key Road Map Supplement - Existing/Proposed Structures

CP/Blk #	Rd #/ Name	Status	Road Type	Community Watershed Name	Terrain Assessment	TSSSEM	Bridges	Major Culverts	Scheduled Year
A-blk H	Branch 2	E	B	N/A	less than 60 % slope	Required	none	none	1997
A-blk I	Branch 3	E	O	N/A	Moderate landslide risk	Required	P	none	1997
A-blk J	Branch 1	P	B	N/A	less than 60 % slope	Required	none	none	1997

Table Key:

Status:			Existing - E Proposed - P (sec. 15(5) OPR)	
Block	-O		Terrain Stability and Surface Soil Erosion Mapping	
Gassetted	-O		(Note: TSSSEM - required for proposed roads - only in community watersheds. See OPR sec. 31) Show one or more of slope=>60%	
Snow	-S	Bridges	Permanent -P	
Highway	HY	Bridges	Semi-permanent	
		Bridges	Temporary -T Landslide likelihood/ Moderate - High Terrain Assessment - show one or more of slope =/> 60 %	MH
Major Culverts	>=20000 mm		Unstable or potentially unstable	US

Table 2. Visual impact assessment summary table

Licensee namer: Gus Abel Date 96/11/9

Licence number: WL361 CP#, Blk # CP 2, Block I

Completed by: John Foster

1	Visual Landscape Unit Label & No. (VSR/VAC/EVC/VQO)	# 729 H / L / R / R		
2	Area of Visual Landscape Unit in Plan (Ha.)	97.5 Ha.		
3	Area of proposed operation in Plan (Ha.)	23.0 Ha.		
4	List key Viewpoint(s) for assessment (number or name)	VP#1 14	VP #2 16	VP #3 15
5	Area of Visual Landscape Unit in perspective	97.5 Ha.		
6	Cuculate % of Visual Landscape Unit currently in non-VEG state in perspective view from key viewpoint(s).	0 Vp#1	0 Vp#2	0 Vp#3
7	Calculate % of Visual Landscape Unit occupied by proposed operation in perspective view from key viewpoints.	23 Vp#1	23 Vp#2	30 Vp#3
8	Calculate % alteration visible in perspective view from key viewpoint(s)	0 Vp#1	0 Vp#2	0 Vp#3
9	does the total % alteration fall within the VQO quidelines?	yes		
10	Note design concepts that have been utilized to improve block design.	1. Single tree selection. 2. Less than 20 % volume removal within Lakeshore Management Zone. 3. Basal area and volume retention of 65 % overall within the opening.		
11	Will this opening achieve basic definition for the VQO?	Yes. There will be no increase in the non-VEG.		
12	Additional considerations: Does the EVC in adjacent units exceed the established VQO for those units and how will this affect the management of this unit? Has this VIA incorporated all operations proposed within this visual landscape unit (i.e., other licensees or future blocks)?	The EVC does not exceed any VQO's in adjacent landscape units. This VIA incorporates operations of other blocks and licensee's proposed within this landscape unit.		
13	Summary of actions/strategies prescribed/proposed to ensure VQO is achieved.	1. Single tree selection. 2. No new roads to build. 3. Special management within lakeshore management zone (200 m) to retain 80 % of existing tree volume.		

Note:
Design and basic VQO definitions will influence approval process! Percent alteration is presented as a yardstick to help determine into which class the cumulative alterations on a landscape fall. Percent alteration applies to clearcut and seed tree cutting systems only. Volume per hectare in combination with basal area remaining are used to predict partial cutting results. VQOs must be achieved from all key viewpoints.

Appendix VII

Snags and Wildife trees

December, 1996.

Summary of papers:

1. ***In*** **MANAGEMENT OF WESTERN FORESTS AND GRASSLANDS FOR NONGAME BIRDS Workshop Proceedings, USDA For. Gen. Tech. Rep. INT-86, 1980., PERPUATING SNAGS IN MANAGED MIXED CONIFER FORESTS OF THE BLUE MOUNTAINS, OREGON, Evelyn L. Bull, Asa D. Twombly and Thomas Quiqley.**

2. Woodpeckers benefit forests by preying on insects and in excavating nest and roost cavities. The cavities when abandoned provide nest sites for birds and mammals which require nests for reproduction. These animals cannot excavate there own cavities and are called secondary cavity nesters. Woodpeckers nest in dead trees, generally. Foraging includes live trees, dead and downed material.

3. **Nest Tree Characteristics**

4. The pileated woodpecker excavates cavities 20 cm wide by 50 cm deep and at least 10 meters above ground. "It requires a tree of at least 51 cm d.b.h. to contain this size cavity at that height (Thomas et al. 1979)."

5. "Not all snags meeting the minimum d.b.h. will be used as nest trees. Woodpeckers are selective as to decay condition and nesting height. Larger snags have two advantages--more species can use the snag, and the snag will stand longer (Keen 1955, Lyon 1977, VanSickle and Benson 1978). It is best to provide snags larger than the minimum size (Conner 1979)."

6. "Miller et al. (1979) found that all woodpeckers *except the pileated,* which nested in sound wood 64 percent of the time, selected decayed wood for excavation. Some large snags without decay would enhance nesting opportunites for the pileated woodpecker."

7. "Snags showing signs of decay are the best candidates for use as nest trees by cavity excavators. Broken-topped trees usually have decay present."

8. "Snags with cavities present are good candidates for nest sites. Woodpeckers will often excavate new cavities in such snags, and **53 species of secondary cavity users**

occupied vacated woodpecker holes in the Blue Mountains (Thomas et al. 1979)."

9. "Snags in large openings are used by common flickers (Conner 1973). Other woodpeckers prefer forested stands with a canopy above the nest. Pileated woodpeckers and Williamson's sapsuckers prefer more dense forest stands than do other species. Live trees adjacent fo snags provide protection from weather and avian predators.

10. **"One way to maintain snags is to allow natural mortality to replace snags that die, a large number of live trees must be maintained to ensure that enough snags are produced. The majority of live trees will not die and may become crop trees at some later time."**

11. "...**we find that maintaining required numbers of snags in the two diameter classes requires 291 trees per hectare greater than the 31 cm d.b.h.** and 2.58 per hectare greater than 51 cm d.b.h. to have at least 3.91 snags per hectare (70 percent level of potential" carrying capacity). "Because smaller snags have a high rate of fall, more 31 cm trees are required."

12. **"snags greater than 51 cm d.b.h remain standing more than seven times longer than the smaller ones....if all snags that remain (3.91 per ha.) are at least this diameter, 45.77 live trees per ha with mortality at the observed rate will provide the required snag level throughout the rotation".**

from ***'Potential of Winter Range Reserves for Ungulates as Habitat for Cavity-Nesting Birds', Fred Bunnell and Ann Allaye-Chan.*** *In* Fish and Wildlife Relationships in Old-Growth forests., Proc. Symposium, April , 1982, Juneau Alaska.

13. "The size distribution or diversity of desired cavity-nesting species is also a complication. Like investigators elsewhere, we found that cavities of different size-classes were associated with snags of different dimensions (Table 5). We have reservations concerning the concept that "large snags can be substituted for small snags" (Thomas *et al. 1979, p.70)*....**It seems likely that diversity of bird species is also a function of the diversity of snag sizes. Production of smaller snags, however, should not be encouraged at the expense of larger snags....Special emphasis should be placed on the**

retention or production of snags 60+cm in d.b.h. 15 to 20+ m in height."

14."The time required to produce trees hear the mean dimensions of active snags is much longer than the rotations currently proposed for southern British Columbia (70 years). Mean values of d.b.h. for active snages were 69 cm in ungulate reserves and 59.6 cm in the riparian forest (Table 3). **Current age and yield relationships for southern British Columbia forests indicate it would take 295 years for Douglas-fir in a mixed conifer stand on a medium site to attain 66.2 cm d.b.h., and 205 years for wetern hemlock in a similar stand to reach 65.7 cm d.b.h.** The present target for the optimal d.b.h. in an intensively managed forest is 46 cm cm d.b.h. In the ungulate reserves, only 10 percent of the total nest sites were located on snags < 46 cm. In the riparian forest the comparable value was 16.7 percent. Proposed juvenile spacings and commercial thinnings would eliminate cull trees and potentially cause habitat loss for cavity-nesting species. **In short, all proposed forestry practices from juvenile spacing to rotation age would greatly reduce the ability of the forest to provide cavity sites.** It is still unclear whether British Columbia wil adopt measures similar to those to encourage cavity nesters in the National Forests of the United States. It clear that without such measures the avifauna of British Columbia has concomitantly provided habitat for cavity-nesting species. Ungulate winter-nesting species. Ungulate winter-range reserves provided a greater density of active snags than has been documented in other old-growth forests of the Pacific Northwest.", pp.357-365.