

SCHEDULE B
MANAGEMENT OBJECTIVES FOR LAND USE
ZONES AND MANAGEMENT AREAS

The Gitanyow Huwilp Land Use Plan, set out in Schedule A and B, has evolved from work undertaken by the Parties on previous initiatives including:

- (a) the Gitanyow Forestry Agreement (2006);
- (b) the “Nass South Sustainable Resource Management Plan (SRMP) Terms of Reference,” (December 5, 2005) wherein the Parties committed to work together on a Government to Government basis, in a spirit of mutual recognition, respect, and reconciliation, to resolve land use conflicts and develop resource management direction for the southern portion of the Nass Timber Supply Area (Nass TSA); and
- (c) the “Reconciliation through Land Use Planning In Gitanyow Traditional Territory work plan” (October 23, 2008), which committed the Parties to collaboratively complete strategic land use planning for the remainder of the Gitanyow Lax’yip.

Scope

Unless otherwise indicated, management goals, objectives, measures/indicators and targets apply throughout the Gitanyow Lax’yip. Where specified, planning units are referred to as the Cranberry, Kispiox, Nass South, or Kalum planning units and are co-extensive with the provincial Sustainable Resource Management Planning areas with these names.

Definitions

“**Effectiveness**” in the context of wildlife management, means the continued use of a habitat by the species that historically utilized it.

“**Exposed erodible soil**” is a fine textured soil (fine sand, silt and clay) or erodible mineral deposit that water can readily wash into the adjacent stream.

“**Goshawk forage habitat**” means the hunting territory typically used by a pair of goshawks.

“**Hydroriparian zone**” means the area that extends to the edge of the influence of water on land, or land on water, as defined by plant communities (including high bench or dry floodplain communities) or landforms, plus one and one-half site specific tree heights horizontal distance (Hydroriparian Planning Guide, Coast Information Team, Jan. 30, 2004). Landforms include:

- The stream channel, lake or wetland and adjacent riparian ecosystem, where no floodplain exists.
- The full width of the floodplain for streams
- Adjacent active fluvial units
- Up to the top of the inner gorge or where slopes become less than 50% for reaches of streams that are gullied, or are in a ravine or canyon
- Immediately adjacent unstable slopes (class IV and V terrain) where it is located such that a surcharge of sediment may be delivered to the stream, lake or wetland.

“Hydrologically connected” means any bare, erodible soil that can reasonably be expected to reach the riparian area if exposed to rainfall or stream flows. This includes:

- bare soil on non-vegetated slopes immediately adjacent to the 10 m riparian zone
- bare soil on vegetated slopes of 10% gradient or steeper that are immediately adjacent to the riparian area, up to the first topographic break.
- bare soil past the topographic break if there is a channel showing a clear connection to the first 10 m of the riparian area
- bare soil on active road surfaces within the 10 m riparian area, including the crossing, if there is evidence that fines eroded off the road surface can reach the stream. This includes the road surface, plus all cut-and-fill slopes associated with the road, within the first 10 m of the riparian area
- bare soil on active road surfaces beyond the first 10 m of the riparian area if there is evidence that fines eroding off these road surfaces will reach the stream. Evidence of hydrologic linkage should be conspicuous, such as ruts or eroding tracks down the road to a spot at the crossing where water spills directly off the edge of the road into the stream or a ditch that is clearly connected to the riparian feature.

(FREP *Protocol for Evaluating the Condition of Streams and Riparian Management Areas*, Version 5.0; March 2009, and, FREP *Field Supplement to Evaluating the condition of Streams and Riparian Management Areas*, Version 3.0; March 2009).

“Moisture Regime” describes the relative amount of soil moisture; can be determined from slope position and gradient, soil depth and texture, coarse fragment content, aspect, and sources of seepage. For purposes of terrestrial site description, soil moisture regimes are ranked in the following order from driest to wettest: very xeric (very dry), xeric (dry), subxeric (moderately dry), submesic (slightly dry), mesic (fresh), subhygric (moist), hygric (very moist), subhydric (wet).

“Planning unit” describes the area of the applicable Sustainable Resource Management Plan that falls within Gitanyow territory.

“Productive pine mushroom sites” means those sites that can best produce pine mushrooms. i.e., sites that currently produce pine mushrooms and those sites undisturbed, previously logged or burned that can produce pine mushrooms. These sites are generally pine or hemlock leading stands below 800 m elevation in the following ecological site series: ICMmc1/01b, ICHmc2/01b, and CWHws2/03. The minimum size of area to be considered is 0.3 ha for homogenous site series and 1 ha for site series complexes.

“Properly functioning” for a stream, river, wetland or lake and its riparian area means:

- the ability to withstand normal peak flood events without experiencing accelerated soil loss, channel movement or bank movement;
- the ability to filter runoff;
- the ability to store and safely release water;
- ability of riparian habitat to maintain an adequate root network or large woody debris supply;
- ability of riparian habitat to provide shade and reduce bank microclimate change; and,
- fish habitat in streams and riparian areas are fully connected so that fish habitat is not lost or isolated as a result of some management activity.

“Regeneration delay” means the period of time between harvesting and the date at which an area is occupied by a specified minimum number of acceptable well-spaced trees.

“**Security Cover**” means sufficient vegetation cover and/or terrain features that permit a species to feel secure, comfortable and not threatened despite adjacent activities or predator movement that would otherwise displace the animal.

“**Thermal Cover**” means canopy cover that moderates atmospheric temperature – thermoregulation resulting in cooling during the summer and reduction of wind chill in the winter.

Table A: Land Use Objectives to be put Forward as Legal Objectives

Chapter	Legal Mechanism	Objectives
Water Resources	LUOR*	2.0; 3.0; 4.0
Biodiversity Resources	LUOR	1.0; 2.0; 3.0; 4.0; 5.0; 6.0; 7.0
Pine Mushroom Resources	LUOR	1.0
Goshawk	LUOR	1.0; 2.0
Fur-Bearers	LUOR	1.0
Grizzly Bear	LUOP/GAR**	LUOR (2.0; 3.0; 4.0) – GAR (1.0)
Moose Resources	GAR	All
Mountain Goat Resources	GAR	Legal orders exists for Goat in Nass & Cranberry
General Wildlife Resources	LUOR	1.0
Fisheries Resources	LUOR	1.0
Cultural Heritage Resources	LUOR	1.0; 2.0; 3.0; 4.0; 5.0
Timber Resources	LUOR	2.0 possibly – rest are FRPA default except Gitanyow Treaty Parcels.
Water Management Resources	LUOR	1.0

*Land use objective regulation

**Government Action Regulation

Management Direction for Water

Plan Goals for Water Resources

Protect and maintain surface and groundwater to:

- provide a safe and sufficient drinking water supply that supports healthy communities.
- maintain water quality, quantity, peak and low flows within the range of natural variability in rivers, streams, lakes, and wetlands to protect the hydrological integrity of their watersheds (water quality includes temperature, turbidity and chemistry).

Objectives	Measures/Indicators	Targets
<p>1.0 <i>Limit the potential for soil surface erosion.</i></p>	<p>1.1 Number of occurrences of exposed erodible soil >50 m² (Nass South) or >5 m² (Cranberry, Kispiox and Kalum), caused by industrial activities:</p> <ul style="list-style-type: none"> • that are within the first 10 metres of the riparian area past the edge of the stream, river, lake, or wetland, or, • that are hydrologically connected to a river, stream, lake or wetland, except: <ul style="list-style-type: none"> ▪ active, seasonally or temporarily de-activated haul roads, or, ▪ where no practicable alternative exists and timely mitigating measures are implemented to prevent siltation of water bodies.ⁱ 	<p>0</p>

Objectives	Measures/Indicators	Targets
	<p>Management Considerations</p> <ul style="list-style-type: none"> • The intent of this measure is that there will be no erodible soil exposure. The maximum area is intended to provide flexibility to licensees for occasional small, dispersed incidental occurrences. • The intent is that construction of new roads and future deactivation of existing roads will be completed to a standard, using Best Management Practices that will result in no roads being hydrologically connected to any stream, river, lake, or wetland. • Best Management Practices (BMP) should be established for minimizing soil surface erosion within the plan area. • BMP's should consider road density, road proximity to water courses and number of stream crossings. • Application of best available information to be applied in managing soil surface erosion prior to the development of BMP's. • Hydrologically connected is not intended to be applied to active, seasonally, and temporarily de-activated roads; these roads will be managed by implementation of Best Management Practices and Measure 1.2. • Monitoring should be done over time to determine if the area is a reasonable figure. This figure may be increased or decreased as appropriate. 	
	<p>1.2 Percent of stream crossings on new roads that have appropriate mitigating measures implemented to prevent soil deposition into the stream in accordance with a professionally-conducted risk assessment.</p>	<p>100%</p>
<p>2.0 <i>Manage human activities to maintain the hydrologic stability of watersheds.</i></p>	<p>2.1 Number of watersheds identified as Watersheds with ECA Thresholds on Schedule A, Maps 1-10 where a hydrologic assessment is completed prior to any harvesting that would cause the thresholds identified in Table 1: Equivalent Clearcut Area (ECA) Thresholds for Watersheds to be exceeded, except for cut blocks that:</p> <ul style="list-style-type: none"> • are approved under section 196(1) of the <i>Forest and Range Practices Act</i>; • are declared areas under section 14(4) of the <i>Forest Planning and Practices Regulation</i>; or • have a cutting permit in place. 	<p>All</p>

Objectives	Measures/Indicators	Targets
	<p>Management Considerations</p> <ul style="list-style-type: none"> • The intent is to permit the harvest of existing blocks, but to require hydrologic assessments prior to any further harvesting that would cause the thresholds to be exceeded. • Hydrologic assessments should be conducted by a qualified professional who will use the assessment to provide guidance for future operations. The assessment does not necessarily have to be a complete Coastal or Interior Watershed Assessment. 	
<p>3.0 <i>Maintain ecological functioning of streams, rivers, wetland complexes and lakes, including those that do not support populations of fish.</i></p>	<p>3.1 Number of rivers and streams where industrial activity has caused significant consequences for fish habitat or human water consumption by the following disturbances to channel beds or banks:</p> <ul style="list-style-type: none"> • channel bank erosion; • channel aggradation, degradation or dewatering; or • change in channel morphology. 	0
	<p>3.2 Number of rivers, streams, lakes, and wetlands that maintain riparian reserves and resource management zones around riparian features as outlined in Table 2.</p>	100%
	<p>3.3 Number of rivers, streams, lakes, and wetlands where blow down within the RRZ and/or RMZ is retained as large woody debris.</p>	All
	<p>Management Considerations</p> <ul style="list-style-type: none"> • “Significant” relates not to the level of disturbance but to the consequence of disturbance. A small disturbance could have a large consequence and a large disturbance could have a small consequence. • Industrial developments include, but are not limited to; timber harvesting, road construction, building of permanent facilities. • Operations should consider larger Riparian Reserve Zones (RRZ) than specified under the <i>Forest and Range Practices Act</i> for retention where possible. • Where economically and operationally feasible, selectively remove only the high value trees within the Riparian Management Zones (RMZ). • Where feasible, concentrate wildlife tree retention areas around riparian ecosystems. • Consider preservation of riparian habitat values, water quality, rare ecosystems and windthrow susceptibility when assessing and designing RMZs. • Consider retention levels of 70% to 100% basal area on all streams of Riparian Class S4. <p>Monitoring of retention levels to consider:</p>	

Objectives	Measures/Indicators	Targets
	<ul style="list-style-type: none"> - Level of retention; - Incidence of windfall; - Changes in stream temperature and turbidity; - Effectiveness of small scale connectivity habitats through cutblocks. <ul style="list-style-type: none"> • Apply adaptive management principles in management of riparian features. • Establish water monitoring stations on selected water bodies for long term evaluation of water quality and quantity attributes (water quality includes temperature, turbidity and chemistry). • Terrain stability to be considered in relation to its impact on water quality and quantity before logging. Baseline information should be gathered for watershed sub-basins prior to development. Information to consider: <ul style="list-style-type: none"> - Equivalent Clearcut Area. - Road densities in high elevations. - Road densities for the entire sub-basin. 	
	<p>3.4 Number of rivers and streams in riparian classes S1 to S4 where industrial activity has either:</p> <ul style="list-style-type: none"> • added large woody debris that would not naturally be in the channel; or • removed naturally deposited large woody debris; <p>Except where necessary to satisfy safety considerations.</p>	0
	<p>3.5 Number of new roads and trails that prevent ground water from reaching natural groundwater receiving sites.</p>	0
	<p>Management Considerations</p> <ul style="list-style-type: none"> • Natural groundwater drainage patterns can be maintained with adequate cross drains in roads and trails. 	
<p>4.0 <i>Maintain the functional integrity of floodplains and alluvial fans.</i></p>	<p>4.1 Proportion of floodplains and alluvial fans where functional integrity is maintained.</p>	100%
	<p>Management Considerations</p> <ul style="list-style-type: none"> • Timber harvesting is generally not recommended on floodplains and alluvial fans. • Road building on fans and floodplains is risky and requires the advice of a qualified professional. • Access across floodplains and alluvial fans is permitted to access timber beyond these features. 	

Objectives	Measures/Indicators	Targets
<p>5.0 <i>Restore the water quality and hydrologic integrity of damaged watersheds throughout the plan area.</i></p>	<p>5.1 Proportion of watersheds with damaged water quality or hydrological integrity where primary causes of watershed damage have been adequately addressed by:</p> <ul style="list-style-type: none"> • natural processes; or, • operationally and financially feasible activities that do not cause further damage or interfere with natural restoration processes, where funding is available. 	<p>100%</p>
	<p>Management Considerations</p> <ul style="list-style-type: none"> • Intent is to pursue funding to conduct watershed restoration work, but recognize that funding is not guaranteed. • A Watershed Restoration Plan (WRP) should be developed that includes: <ul style="list-style-type: none"> • Identification of damaged or threatened watersheds; • A cost benefit analysis to prioritize watershed restoration opportunities with respect to conserving, restoring and improving fisheries values in the plan area; • Prioritization of WRP projects should be based on vulnerability of fish stocks, social and economic value of fish stocks, level of negative impact, and ecological and economic feasibility; • A risk assessment should be undertaken to prioritize road deactivation work with respect to water quality and fisheries impacts; • Conduction of an assessment of the 26-Mile Road within the flood plain of the Kitwanga River; determine measures required to restore the integrity and function of the flood plain. • Conduction of an assessment of the sockeye beach spawning habitat; determine measures required to restore the spawning habitat associated with Gitanyow Lake. • Conduction of an assessment of the Hanna and Tintina watersheds to determine impacts from encroachment of beavers in relation to past forest development practices, and implementing mitigative measures. 	
<p>6.0 <i>Maintain the watershed of Ten Link Creek as a community watershed to provide domestic water supply to Gitanyow village</i> Cranberry Planning Unit</p>	<p>6.1 Number of industrial developments within the Ten Link Creek watershed</p>	<p>0</p>

Table 1. Equivalent Clearcut Area (ECA) Thresholds for Watersheds

Map ID	Base Watershed (WSD) Unit Code and Order	Unit Name	ECA Threshold %
Cranberry and Kispiox Planning Units Watersheds (ECA Thresholds expert water panel)			
1		Aluk	26.2
2		Borden	21.7
3		Cranberry	27.1
4		Cranberry East	24.8
5		Cranberry West	24.9
6		Derrick	22.5
7		Douse	25.3
8		Extra	26.2
9		Ginmiltkun	28.5
9		Kiteen	27.6
9		Kitwancool	28.5
9		Lower Kitwanga	22.5
10		McKnight	27.3
		Mill	25
11		Moonlit	26.5
12		Nangeese	26.7
		Tsugwinselda	25
13		Upper Kitwanga	26.2
14		Upper Kispiox	28.1
15		Weber	28.3
Kalum Planning Unit Watershed (ECA Thresholds expert water panel)			
16		Kiteen (Kalum District)	27.6
Nass South Planning Unit Watersheds (ECA Thresholds established by Regional Hydrologist)			
1	KINRWSD000020 – 3	Meziadin River tributary(contains Yaakin Lk)	25
2	KINRWSD000025 – 3	White River tributary 1 (west of Femur Lk)	35
3	KINRWSD000030 – 3	White River tributary 2 (west of Scrub Lk)	35
4	KINRWSD000033 – 3	Niska Creek	25

Map ID	Base Watershed (WSD) Unit Code and Order	Unit Name	ECA Threshold %
5	KINRWSD000035 – 4	Kinskuch River	25 (in ICHmc1/in Plan area)
6	KINRWSD000036 – 3	Outlet of Arbor Lake	25
7	KSHRWSD000010 – 3	Bear River tributary (east of Le Sueur Crk)	25 (in CWHwm)
8	KSHRWSD000011 – 3	Le Sueur Creek	25 (in CWHwm)
9	KSHRWSD000012 – 3	grouped(1) Bitter Creek	25 (in CWHwm)
9	KSHRWSD000013 – 4	grouped(1) Bitter Creek	25 (in CWHwm)
9	KSHRWSD000014	grouped(1) Bitter Creek	25 (in CWHwm)
9	KSHRWSD000015	grouped(1) Bitter Creek	25 (in CWHwm)
10	KSHRWSD000016 – 3	Glacier Creek	25 (in CWHwm and MHun separately)
11	11 LBIRWSD000112 – 3	Bell-Irving River tributary 4 (east flank on Mt. Bell-Irving)	30 (in ICH)
12	LBIRWSD000113 – 3	Bell-Irving River tributary 3 (east flank on Mt. Bell Irving)	30 (in ICH)
13	LBIRWSD000122 – 3	Bell-Irving River tributary 2 (east flank on Mt. Bell-Irving)	30 (in ICH)
14	14 LBIRWSD000125 – 3	Bell-Irving River tributary 1 (east flank on Mt. Bell-Irving)	30 (in ICH)
15	LNARWSD000008 – 4	Tchitin River	30 (in ICHmc1 and CWHws2 separately/in Plan area)
16	LNARWSD000010 – 8	Nass River tributary 1 (east of Kinskuch confluence)	30 (in ICHmc1/in Plan area)
17	LNARWSD000020 – 3	Kshadin Creek tributary (west of Taylor Lk)	25 (in ICHmc1 and CWHws2 collectively/in Plan area)
18	NASRWSD000040 – 5	Kwinageese River	20 (in Plan area)
19	NASRWSD000049 – 3	Nass River tributary 5 (across river from Meziadin Junction)	30
20	NASRWSD000066 – 4	Grouped (2) Bonney Creek (unit also contains Alpha Lk)	25 (in Plan area)
20	NASRWSD000069 – 3	Grouped (2) Bonney Creek (unit also contains Alpha Lk)	25 (in Plan area)
21	NASRWSD000072 – 3	Wolverine Creek	30
22	NASRWSD000073 – 4	Grouped (3) Axnegrelga Creek (unit also contains Hughan and Jigsaw Lks)	20 (in Plan area)

Map ID	Base Watershed (WSD) Unit Code and Order	Unit Name	ECA Threshold %
22	NASRWS000074 – 3	Grouped (3) Axnegrelga Creek (unit also contains Hughan and Jigsaw Lks)	20 (in Plan area)
22	NASRWS000076 – 4	Grouped (3) Axnegrelga Creek (unit also contains Hughan and Jigsaw Lks)	20 (in Plan area)
23	NASRWS000075 – 3	Kitanweliks Creek	30
24	NASRWS000077 – 5	Paw Creek	30
25	NASRWS000078 – 3	Van Dyke Creek	30
26	NASRWS000079 – 3	Brown Bear Creek	20 (in Plan area)
27	NASRWS000081 – 4	Little Paw Creek	30
28	NASRWS000082 – 3	Axnegrelga Creek tributary (west of Brown Bear Lk)	20
29	NASRWS000083 – 3	Outlet of Noordam Lake	35
30	NASRWS000084 – 3	Nass River tributary 4 (east of Kinskuch Peak)	35
31	NASRWS000086 - 4	Nass River tributary 2 (contains Abbi Lk)	35
32	NASRWS000088 – 3	Nass River tributary 3 (across river from Sideslip Lk)	35

Table 2. Retention Targets in Riparian Reserve Zones (RRZ) and Riparian Management Zones (RMZ)

Riparian Class	Reserve Zone Width - Minimum (m)	Retention - Minimum (%)	Management Zone Width - Minimum (m)	Retention - Minimum (%)
<u>Streams:</u>				
S1 (large rivers ≥ 100m width)	See Biodiversity Objective 7 (Ecosystem Network) and associated Measures, Targets and Management Considerations for large, ≥ 100 m width rivers such as the Nass River – <u>K'alli Aksim Lisims</u> .			
S1 (specific rivers)	See Biodiversity Objective 7 (Ecosystem Network) and associated Measures, Targets and Management Considerations for specific S1 rivers.			
S1 (except large and specific rivers)	50	100	20	0
S2	30	100	20	0
S3	20	100	20	0
S4	0	n/a	30	0
S5	0	n/a	30	0
S6	0	n/a	20	0
<u>Wetlands:</u>				
W1	10	100	40	0
W2	Not applicable: no W2s in the plan area			
W3	0	n/a	30	0
W4	Not applicable: no W4s in the plan area			
W5	10	100	40	0
<u>Lakes:</u>				
L1	10	100	20	0
L2	Not applicable: no L2s in the plan area			
L3	n/a	n/a	30	0
L4	Not applicable: no L4s in the plan area			
Notes:				
1. Reserve and RMZ retention percentage means the percentage of naturally occurring pre-harvest forest basal area and structure of mature and old forest that occupies (or historically occupied) the site.				
2. Reserves and management zones around all riparian features may be increased in size and % retention to meet management objectives for other resources.				

Management Direction for Biodiversity

Plan Goals for Biodiversity

- Ensure ecosystem function across the range of ecosystem types, reflective of the historic natural disturbance regime at the landscape and stand level over time.
- Maintain habitat connectivity throughout the landscape.
- Connect old-growth management areas (OGMAs).
- Provide a continuum of relatively undisturbed habitats that possess interior forest conditions for indigenous species that depend on mature and old-growth forests.
- Facilitate movement and dispersal of organisms across the landscape by providing core areas and dispersal corridors that will help a variety of organisms re-colonize their historic range.
- Protect and maintain effectiveness of riparian habitats; all riparian habitats have disproportionately high biodiversity values relative to their proportional occupancy of the landscape.
- Preserve Gitanyow traditional use sites and maintain opportunities for traditional uses of the land.

Objectives	Measures / Indicators	Targets
1.0 <i>Maintain a landscape pattern of patchiness that, over the long term, reflects the natural disturbance pattern.</i>	1.1 Distribution and range of patch sizes by natural disturbance type within the forested area of each landscape unit.	Refer to Table 3. Patch Size Distribution
	Management Considerations <ul style="list-style-type: none"> • Small patch sizes (<40 ha) should include a range of openings, from 0.1 ha to 40 ha. • Large patches should be cut to form the large openings (80 ha to 250 ha). In order to achieve large patches through time, they should also be identified as leave areas, and retained to provide future opportunities for large patches for harvest. • Patch-size analysis will include existing openings greater than 250 ha; no new openings are to exceed 250 ha. • Patch sizes in Table 3 and management considerations should be updated based on best available information (e.g., monitoring data; assessments of the range of historic variability in landscape patterns when these become available). 	
2.0 <i>Maintain or recruit structural attributes of old</i>	2.1 Percent of representative wildlife tree retention within cutblocks.	Refer to Table 4. Wildlife Tree Targets

Objectives	Measures / Indicators	Targets
<i>forests to support stand-level biodiversity.</i>	<p>Management Considerations</p> <ul style="list-style-type: none"> Refer to Appendix A: General Wildlife Tree Management Guidelines. Document the contribution of wildlife tree retention in an appropriate record system. Where practicable, promote partial logging in stands conducive to shade tolerant tree species management. 	
<p>3.0 <i>Preserve red-listed (endangered or threatened) plant communities, as classified by the B.C. Conservation Data Centre</i></p>	<p>3.1 Hectares of red-listed plant communities¹ harvested, except:</p> <ul style="list-style-type: none"> where required to access timber that otherwise would be isolated from harvest beyond the core area. where terrain conditions such as slope, gradient, or terrain stability constrain road locations and dictate that sections of road enter and leave red-listed plant communities to access timber that otherwise would be isolated from harvest. where access is required for mineral development. where no practicable alternative exists. 	0 ha
	<p>Management Considerations</p> <ul style="list-style-type: none"> For the most up-to-date list of rare ecosystems, refer to the Conservation Data Centre list of rare and endangered plant communities, located online at www.env.gov.bc.ca/cdc/index.html Red-listed plant communities encountered during field operations are to be preserved from harvesting. Although red-listed plant communities smaller than the stated minimum size are not required to be preserved, it is desirable to preserve them by including them in wildlife tree retention areas or other forms of stand-level retention. 	
	<p>3.2 Percentage of red-listed plant communities having their ecological integrity maintained, except:</p> <ul style="list-style-type: none"> to access timber that otherwise would be isolated from harvest beyond the core area. where terrain conditions such as slope, gradient, or terrain stability constrain road locations and dictate that sections of road enter and leave red-listed plant communities to access timber that otherwise would be isolated from harvest. where access is required for mineral development. where no practicable alternative exists. 	100%

¹ The minimum size of red-listed plant community to be preserved is 0.25 ha. Where the red-listed plant community exists as the dominant component of a complex, the minimum size of complex to be preserved is 1 ha.

Objectives	Measures / Indicators	Targets
	<p>Management Considerations</p> <ul style="list-style-type: none"> Best efforts are to be made to establish wind firm buffers around red-listed plant communities, to preserve their ecological integrity from industrial development. The intent of the buffer is to maintain conditions of soil chemistry, moisture, light, and temperatures that sustain the ecosystem. It is recognized that wind firm buffers are not always practicable. 	
<p>4.0 <i>Conserve blue-listed (at risk) plant communities, as classified by the B.C. Conservation Data Centre.</i></p>	<p>4.1 Proportion of each blue-listed plant community² within a cutblock retained, when 100% retention is not practicable.</p>	<p>Minimum of 70% by area or basal area</p>
	<p>Management Considerations</p> <ul style="list-style-type: none"> For the most up-to-date list of at-risk ecosystems, refer to the Conservation Data Centre rare and endangered plant communities list online at http://www.env.gov.bc.ca/cdc/index.html Although blue-listed plant communities smaller than the stated minimum size are not required to be preserved, it is desirable to preserve them by including them in wildlife tree retention areas or other forms of stand level retention. 	
<p>5.0 <i>Maintain a diversity of coniferous and deciduous species that represent the natural species composition at the landscape and stand levels.</i></p>	<p>5.1 Proportion of cutblocks, at free-growing stage, with a diversity of species ecologically appropriate to the site.</p>	<p>100%</p>
	<p>Management Considerations</p> <ul style="list-style-type: none"> Wherever practicable, site prescriptions should accept and retain, advanced regeneration, poles and saplings, to contribute to the regeneration of the site. Best efforts are to be made, during planting and other post-harvesting operations, to promote western red cedar where ecologically suitable. Incremental silviculture (stand-tending) is to consider maintaining all existing ecologically acceptable (including deciduous) species in the developing stand. On ecologically suitable sites where hemlock, balsam, and cedar are not planted, facilitate natural regeneration by maintaining these species as a component of full-cycle retention trees dispersed throughout cutblocks. 	
	<p>5.2 Net loss of area, other than for infrastructure, of areas greater than one contiguous hectare, having more than 50% deciduous trees by basal area.</p>	<p>0 ha</p>

² The minimum size of blue-listed plant community to be preserved is 0.25 ha. Where the blue-listed plant community exists as the dominant component of a complex, the minimum size of complex to be preserved is 1 ha.

Objectives	Measures / Indicators	Targets
	<p>Management Considerations</p> <ul style="list-style-type: none"> • It is recognized that natural loss of deciduous stands occurs. Best efforts are to be made to minimize the loss of deciduous stands resulting from primary forest activities. • Periodic disturbance (e.g. harvesting and wildfire) is required to perpetuate deciduous dominated stands. • Management of deciduous stands will require stocking standards that allow for deciduous species as preferred and acceptable species. 	
<p>6.0 <i>Maintain a range of forest seral stages by BEC variant, within each landscape unit, that reflects the natural disturbance regime.</i></p>	<p>6.1 Percentage of early, mature and old seral forest retained in each landscape unit, by BEC variant.</p>	<p>Refer to Table 5. Seral Stage Targets</p>
	<p>6.2 Hectares of forest harvested in Old Growth Management Areas (OGMAs) shown in Schedule A, (Maps 1-10) without an approved amendment.</p>	<p>0 ha</p>
	<p>Management Considerations</p> <ul style="list-style-type: none"> • The OGMA amendment process is to follow the current approved policy: Old Growth Management Area Amendment Policy – Skeena Region. • Allow natural processes (e.g. fire, insects) to occur within OGMA ecosystems, except where these processes threaten resources outside the OGMA. • OGMAs are to provide a percentage of old-growth retention by BEC variant across each landscape unit within the plan area. • Primary considerations to determine the location of OGMAs include: <ul style="list-style-type: none"> • Old growth forests (greater than 250 years old). • Biogeoclimatic Variant and Landscape Unit representation. • Areas not contributing to the timber harvesting land base first, followed by constrained areas; strive for overlap with the Ecosystem Network, Grizzly Bear Specified Areas, Moose Winter Range, Mountain Goat Winter Range, Gitanyow Offer Parcels and Cultural Sites, and Visual Quality Objectives. • Avoid proposed cutblocks and proposed roads. • Spread timber harvesting land base impact evenly amongst all forest licensees. • Interior forest conditions within OGMAs (>600 metres length and width). • Gitanyow House Territory representation. • Follow natural features (streams, ridges, roads, cutblock edges, etc.) and metes and bounds as opposed to forest cover lines. • Capture small amounts of non-forest or young forest if completely surrounded by old growth in a larger OGMA. • Secondary considerations to determine the location of OGMAs, secondary to the listed primary considerations: <ul style="list-style-type: none"> • Connectivity values. • Rare or uncommon ecosystems, where known and mapped. 	

Objectives	Measures / Indicators	Targets
	<ul style="list-style-type: none"> Special habitats (e.g. goshawk habitat areas, fur-bearer denning sites). 	
<p><i>7.0 Maintain structural connectivity in the Ecosystem Network identified in Schedule A, Maps 1-10.</i></p>	<p>7.1 Proportion of the Ecosystem Network hydroriparian zone harvested for reasons other than those listed in Table 6: Rationale for Amending the Ecosystem Network.</p>	0%
	<p>Management Considerations</p> <ul style="list-style-type: none"> The hydroriparian zone is a key value of the Ecosystem Network (EN). In general, the EN depicted in Schedule A, (Maps 1-10) is the best approximation of the hydroriparian zone utilizing aerial photos, mapped topography and digital elevation models. Linework delineating the upper edge of the EN is intended to mirror the edges of the hydroriparian zone. The EN identified in Schedule A, (Maps 1-10) for Nass River-Beverly Creek, Gitanyow Lake, Moonlit, Kitwancool, Tsugwinselda, and Aluk creeks, and Kitwanga, Cranberry, Kispiox, Kiteen, and Nangeese rivers account for the hydroriparian zone and Gitanyow interests. The amendment process for the EN will be the same as for spatially identified OGMAs, with the exception of the following circumstance: <ul style="list-style-type: none"> Under item 4 of Table 6, licensees can proceed in the field with minor amendments to the EN, with notification of these amendments to the Gitanyow after the fact, except for the rivers, streams, and lakes listed in item 4, which will require a major amendment. Allow natural processes (e.g. fire, insects) to occur within the EN, except where these processes threaten values or resources adjacent to EN. 	
	<p>7.2 Road length within the EN other than roads constructed:</p> <ul style="list-style-type: none"> To access timber that otherwise would be isolated from harvest beyond the EN. Where terrain conditions such as slope, gradient or terrain stability constrain road locations and dictate that sections of road enter and leave the EN to access timber that otherwise would be isolated from harvest. Where no practicable alternative exists. 	0 km
	<p>7.3 Proportion of the 200 metre width Ecosystem Network buffers identified on Schedule A, Maps 1-10 that meet the forest conditions listed in Table 7 (Cranberry, Kispiox and Kalum Planning Units).</p>	100%

Objectives	Measures / Indicators	Targets
	<p>7.4 Proportion of the 100 metre width Ecosystem Network buffers identified on Schedule A, Maps 1-10 that meet the forest conditions listed in Table 7 (Nass South Planning Unit).</p>	100%
	<p>Management Considerations</p> <ul style="list-style-type: none"> In the Nass South Planning Unit, the 100-metre buffers plus the Ecosystem Network hydroriparian core reserve are intended to achieve, where possible, interior old forest conditions within sections of the EN but not necessarily the full length of the corridor, and to contribute to connectivity and wildlife movement functions, Gitanyow cultural and subsistence use, and representative ecosystem retention. Additional buffer width, where practicable, would further contribute to the effective functions of the ecosystem network. Where the hydroriparian zone (HRZ) reserve and/or the buffers include portions of harvested cutblocks, the interior old forest conditions will be developed over time by re-growth of the harvested forest. In the Cranberry, Kispiox and Kalum Planning Units, the EN (HRZ plus buffers) is intended to provide interior old forest conditions <u>throughout the full length of each EN corridor</u>. 	

Table 3. Recommended Distribution of Patch Sizes (harvest units and leave areas) (*Biodiversity Guidebook 1995*)

Natural Disturbance Type (NDT)	Biogeoclimatic (BEC) Zone Variant	Percentage of Forest Area within Landscape Unit		
		<i>Small patches (<40 ha)</i>	<i>Medium patches (40 to 80 ha)</i>	<i>Large patches (80 to 250 ha)</i>
NDT 1	CWHwm (Nass South)	30 to 40	30 to 40	20 to 40
	ICHvc (Nass South)	30 to 40	30 to 40	20 to 40
	MHun (Nass South)	30 to 40	30 to 40	20 to 40
	MHmm2	30 to 40	30 to 40	20 to 40
	ESSFwv	30 to 40	30 to 40	20 to 40
NDT 2	CWHws2 (Cranberry, Kispiox & Kalum)	30 to 40	30 to 40	20 to 40
	ICHmc2 (Cranberry, Kispiox & Kalum)	30 to 40	30 to 40	20 to 40
	ICHmc1	30 to 40	30 to 40	20 to 40

Table 4. Wildlife Tree Targets

Landscape Unit	Percent area of any individual cutblock to be retained as wildlife trees (not less than)	Percent area of total harvested cutblocks (annual harvest) to be retained as wildlife trees (not less than)
All units (Cranberry, Kispiox and Kalum Planning Units)	3.5	≥12%
All units (Nass South Planning Unit)	3.5	7%

Table 5(a). Seral Stage Targets for the Cranberry and Kispiox Planning Units

Planning Unit	Biodiversity Emphasis option	Biogeoclimatic ecosystem classification variant	Seral Stage	Age (yrs)	Forest Area (%)
Gitanyow Territory in the Cranberry and Kispiox Planning Units (except Upper Kispiox Special Management Zone)	Intermediate	ESSFwv	Early	<40	<22
			Mature + Old	>120	>36
			Old	>250	>19
		MHmm2	Early	<40	<22
			Mature + Old	>120	>36
			Old	>250	>19
		CWHws2	Early	<40	<36
			Mature + Old	>80	>34
			Old	>250	>9
		ICHmc1	Early	<40	<36
			Mature + Old	>100	>31
			Old	>250	>9
		ICHmc2	Early	<40	<36
			Mature + Old	>100	>31
			Old	>250	>9
Gitanyow Territory in the Cranberry and Kispiox Planning Units (only Upper Kispiox Management Zone portion)	High	ESSFwv	Early	<40	<17
			Mature + Old	>120	>54
			Old	>250	>28
		ICHmc1	Early	<40	<27
			Mature + Old	>100	>46
			Old	>250	>13

Table 5(b). Seral Stage Targets for the Nass South Planning Unit

Landscape Unit	Biodiversity Emphasis Option	Biogeoclimatic ecosystem classification variant	Seral Stage	Age (yrs)	Forest Area (%)
Bear	Intermediate	CWHwm	Early	<40	<30
			Mature + Old	>80	>36
			Old	>250	>13
		ESSFwv	Early	<40	<22
			Mature + Old	>120	>36
			Old	>250	>19
		MHmm2	Early	<40	<22
			Mature + Old	>120	>36
			Old	>250	>19
		MHun	Early	<40	<17
			Mature + Old	>120	<22
			Old	>250	>36
Bowser	Low	ESSFwv	Early	<40	n/a
			Mature + Old	>120	>19
			Old	>250	>19
		ICHvc	Early	<40	n/a
			Mature + Old	>100	>17
			Old	>250	>13
Brown Bear	Low	ESSFwv	Early	<40	n/a
			Mature + Old	>120	>19
			Old	>250	>19
		ICHmc1	Early	<40	n/a
			Mature + Old	>100	>15
			Old	>250	>9
Cambria Icefield	Low	ESSFwv	Early	<40	n/a
			Mature + Old	>120	>19
			Old	>250	>19
		MHmm2	Early	<40	n/a
			Mature + Old	>120	>19
			Old	>250	>19
Kinskuch	Intermediate	ESSFwv	Early	<40	<22
			Mature + Old	>120	>36
			Old	>250	>19
		ICHmc1	Early	<40	<36
			Mature + Old	>100	>31
			Old	>250	>9
		ICHvc	Early	<40	<30
			Mature + Old	>100	>34
			Old	>250	>13
Kwinamuck	Low	CWHws2	Early	<40	n/a

Landscape Unit	Biodiversity Emphasis Option	Biogeoclimatic ecosystem classification variant	Seral Stage	Age (yrs)	Forest Area (%)
			Mature + Old	>80	>17
			Old	>250	>9
		ICHmc1	Early	<40	n/a
			Mature + Old	>100	>15
			Old	>250	>9
		MHmm1	Early	<40	n/a
			Mature + Old	>120	>19
			Old	>250	>19
		MHmm2	Early	<40	n/a
			Mature + Old	>120	>19
			Old	>250	>19
Madely	Intermediate	ESSFwv	Early	<40	<22
			Mature + Old	>120	>36
			Old	>250	>19
		ICHmc1	Early	<40	<36
			Mature + Old	>100	>31
			Old	>250	>9
		ICHvc	Early	<40	<30
			Mature + Old	>100	>34
			Old	>250	>13
Tchitin	High	CWHws2	Early	<40	<27
			Mature + Old	>80	>51
			Old	>250	>13
		EssFwv	Early	<40	<17
			Mature + Old	>120	>54
			Old	>250	>28
		ICHmc1	Early	<40	<27
			Mature + Old	>100	>46
			Old	>250	>13
MHmm2	Early	<40	<17		
	Mature + Old	>120	>54		
	Old	>250	>28		
Tintina	Low	ESSFwv	Early	<40	n/a
			Mature + Old	>120	>19
			Old	>250	>19
		ICHmc1	Early	<40	n/a
			Mature + Old	>100	>15
			Old	>250	>9
		ICHvc	Early	<40	n/a
			Mature + Old	>100	>17
			Old	>250	>13
White	Intermediate	ESSFwv	Early	<40	<22
			Mature + Old	>120	>36

Landscape Unit	Biodiversity Emphasis Option	Biogeoclimatic ecosystem classification variant	Seral Stage	Age (yrs)	Forest Area (%)
			Old	>250	>19
		ICHmc1	Early	<40	<36
			Mature + Old	>100	>31
			Old	>250	>9
		ICHvc	Early	<40	<30
			Mature + Old	>100	>34
			Old	>250	>13
		MHmm2	Early	<40	<22
			Mature + Old	>120	>36
			Old	>250	>19
Wildfire	Intermediate	ESSFwv	Early	<40	<22
			Mature + Old	>120	>36
			Old	>250	>19
		ICHvc	Early	<40	<30
			Mature + Old	>100	>34
			Old	>250	>13

Table 5(c). Seral Stage Targets for the Kalum Planning Unit

Landscape Unit	Biodiversity Emphasis Option	Biogeoclimatic ecosystem classification variant	Seral Stage	Age (yrs)	Forest Area (%)
Nass River (K'ali Aksim Lisims)	High	ICHmc1/mc2	Early	<40	<27
			Mature + Old	>100	>46
			Old	>250	>13
Kiteen (Ksi Gahl't'in)	Intermediate	CWHws2	Early	<40	<36
			Mature + Old	>80	>34
			Old	>250	>9
		ICHmc1/mc2	Early	<40	<36
			Mature + Old	>100	>31
			Old	>250	>9
		ICHmc1	Early	<40	<36
			Mature + Old	>100	>31
			Old	>250	>9

Table 6: Rationale for Amending the Ecosystem Network

Acceptable Rationale for Amendment	Major or Minor Amendment	Allowable Amendment
1. Access issues that were overlooked or unknown during the initial Ecosystem Network delineation, where no practicable alternative exists (refer to Biodiversity Measure 7.2).	Minor	<ul style="list-style-type: none"> To establish an appropriate road width through the Ecosystem Network.
2. To account for cut blocks in place prior to the establishment of the Ecosystem Network, including those: <ul style="list-style-type: none"> approved under section 196(1) of the <i>Forest and Range Practices Act</i>; as declared areas under section 14(4) of the <i>Forest Planning and Practices Regulation</i>; or that have a cutting permit in place 	Minor	<ul style="list-style-type: none"> To the edge of the cut block, temporarily, to allow timber harvest. Return to original location following completion of timber harvest and silvicultural responsibilities.
3. To address a compelling forest health issue (e.g. a forest pest or disease is established in the Ecosystem Network and spreads to the point where it threatens adjacent values and resources outside the Ecosystem	Minor	<ul style="list-style-type: none"> To the extent necessary to eliminate the threat to the land and water adjacent to the Ecosystem Network.

Network).		
<p>4. New data and information such as ground-truthing of the hydroriparian zone, new resource inventories, First Nations cultural sites and updated wildlife mapping. Notwithstanding the exceptions detailed under items 1 to 3 above, in no case will the Ecosystem Network be smaller than the hydroriparian zone.</p>	<p>Major for the following rivers and creeks:</p> <ul style="list-style-type: none"> • Nass River mainstream/ Beverly Creek • Gitanyow Lake • Moonlit Creek mainstream • Kitwanga River mainstream • Kitwancool Creek mainstream • Cranberry River mainstream • Kiteen River mainstream • Tsugwinselda Creek • Kispiox River mainstream • Nangeese River mainstream • Aluk Creek • Kinskuch River • Nass River • Bell-Irving River • White River • Paw Creek • Axnegrelga Creek • Brown Bear Creek <p>Minor for all other portions of the EN.</p>	<ul style="list-style-type: none"> • To improve the degree to which the Ecosystem Network captures Gitanyow values, provides habitat for wildlife, or generally benefits biodiversity. • To increase the accuracy of the Ecosystem Network in terms of how it maps the hydroriparian zone.

Table 7. Forest Conditions within Ecosystem Network Buffers

<ul style="list-style-type: none"> • Continuous forest cover • Small discontinuous canopy gaps • $\geq 70\%$ structure and function³ retained, including large, old trees, snags, and coarse woody debris • Multi-canopy levels, multi-aged forest • In conjunction with the forested core, maintain interior old forested conditions ≥ 200 metres in width (for the Cranberry and Kispiox only) • 0% permanent road access, except where, for ecological or economic reasons, no other alternative is possible.
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Management Direction for Pine Mushrooms

Plan Goal for Pine Mushroom Resources

- Maintain pine mushroom resources and provide opportunities for a sustainable harvest.

Objectives	Measures / Indicators	Targets
<p>1.0 <i>Maintain productive pine mushroom sites across the plan area.</i></p>	<p>1.1 Percentage of productive pine mushroom sites⁴ maintained in an age range from 80 to 200 years.⁵</p>	<p>not less than 50%</p>
	<p>Management Considerations</p> <ul style="list-style-type: none"> • Pine mushrooms usually grow in forests with an age of 80 to 200 years. The intent is to have at least 50 percent of the productive area in an age range that can grow mushrooms, recognizing that mushrooms may not grow every year in a particular location. The entire age range does not have to be represented to achieve this target. • Best efforts are to be made to map all highly productive pine mushroom sites in the plan area. 	

³ Any harvest unit within the buffer portions of the EN will, within the buffer, retain $\geq 70\%$ of the naturally occurring mature and old forest structure (live trees, range of diameter classes, snags, coarse woody debris, tree species etc.) of the harvest unit measured either as basal area (M²) or forest area (hectares). No further harvesting may occur within the harvest unit (within the EN buffer area) until such time as the harvested portion has returned to a mature or older condition (ie. ICH 100 years, ESSF 120 years).

⁴ “Productive pine mushroom” sites means those sites that can best produce pine mushrooms. i.e., sites that currently produce pine mushrooms and those sites undisturbed, previously logged or burned that can produce pine mushrooms. These sites are generally pine or hemlock leading stands below 800 m elevation in the following ecological site series: ICMmc1/01b, ICHmc2/01b, and CWHws2/03. The minimum size of area to be considered is 0.5 ha for homogenous site series and 1 ha for site series complexes.

⁵ If future research shows that silviculture systems (other than clearcut harvesting) can perpetuate pine mushroom production, the areas having these silviculture systems will contribute to meeting the target.

Objectives	Measures / Indicators	Targets
	<ul style="list-style-type: none"> Best efforts are to be made to research the effects of various harvesting and silvicultural regimes in the re-colonization and maintenance of productive pine mushroom sites. 	

Management Direction for Moose

Plan Goals for Moose

- Manage moose winter range to help ensure a healthy moose population.
- Minimize pressure on the moose population from legal and illegal harvest through human access management.

Objective	Measures / Indicators	Targets
1.0 <i>Maintain, enhance or restore the moose winter range habitats identified on Schedule A Maps 1-10.</i>	1.1 Number of subhygric to subhydric ⁶ sites, large enough to be considered a silvicultural treatable unit ⁷ , where moose forage production is facilitated post timber harvest.	All
	1.2 Percent of mature forest retained as thermal cover ⁸ within 100 m of mapped forage areas. Nass South Planning Unit	10%
	1.3 Percent of mature + old forest canopy retained for snow interception in each winter range outside of mapped forage areas. Nass South Planning Unit	>30%

⁶ For definitions of “subhygric” and “subhydric” see “Moisture regime”

⁷ The minimum size for a treatable unit is:

- One hectare for pure subhygric to subhydric sites;
- Two hectares of noncontiguous subhygric to subhydric sites within ecosystem complexes where the individual sites are greater than 0.25 ha and such sites comprise 20% or more of the ecosystem complex area.

⁸ Thermal Cover is defined as canopy cover that moderates atmospheric temperature – thermoregulation resulting in cooling during the summer and reduction of wind chill in the winter.

Objective	Measures / Indicators	Targets
	1.4 Percent of mature + old forest canopy retained for snow interception in each winter range polygon with distribution weighted to natural forage area adjacency. Cranberry, Kispiox and Kalum Planning Units	>30%
	1.5 Security cover ⁹ within or adjacent to cut blocks must be provided.	80% of the security cover shall be separated by no greater than 200 metres.
	1.6 Percent of security cover retained directly adjacent to moderate, high and very high value mapped forage areas. Nass South Planning Unit	100%
	1.7 Percent of security cover retained directly adjacent to willow and red-osier dogwood complexes. Cranberry, Kispiox and Kalum Planning Units	100%
	1.8 Amount of timber harvesting within moderate, high and very high value mapped forage areas. Nass South Planning unit	None
	1.9 Amount of timber harvesting within willow and red-osier dogwood complexes. Cranberry, Kispiox and Kalum Planning Units	None
	1.10 Percentage of the area of any given cutblock that is more than 100 m away from adjacent mature forest cover for snow interception.	<20%

⁹ Security Cover is defined as sufficient vegetation cover and/or terrain features that permit a moose to feel secure, comfortable and not threatened despite adjacent activities or predator movement that would otherwise displace the animal.

Objective	Measures / Indicators	Targets
	<p>Management Considerations</p> <ul style="list-style-type: none"> • Within identified moose winter range, harvest using silviculture systems, block configurations, patch sizing and patch distribution that will provide forage, visual screening, thermal and security cover, and snow interception while integrating timber and silvicultural management objectives. • Emphasis for thermal cover, snow interception and security cover management is adjacent to mapped forage areas. A forested buffer of 50 to 100 m wide is recommended, depending on topography. Also recommended that forest types be retained adjacent to moderate, high and very high value mapped forage areas. • Moose forage production can be facilitated post timber harvest by promoting gap openings through reduced stocking standards, cluster planting, spacing and pruning at the silvicultural treatment unit level. • Develop General Wildlife Measures for managing moose winter range through Ungulate Winter Range designation under <i>FRPA</i>. • Moose winter range management plans to be prepared for winter ranges that are subject to forest development, where funding is available. These plans should include a monitoring component to ensure adaptive management can correct any errors, should they be found, in moose winter range placement or the management regime. • Refer to Appendix B: Moose Habitat Attributes for Life Requisites and Appendix C: Best Management Practices for Moose Winter Range for supporting information. 	
<p>2.0 <i>Through access management, minimize mortality and disturbance to moose within and adjacent to the moose winter ranges identified on Schedule A, Maps 1-10.</i></p>	<p>2.1 Number of roads, excluding mainlines, within 500 m of a moose winter range, where access is controlled following achievement of regeneration delay to effectively reduce motorized accessibility to the winter range.</p>	All
	<p>2.2 Number of roads within moose winter range to be deactivated, or have motorized vehicle access restricted following achievement of regeneration delay or within 1 year if roads are inactive.</p>	All
	<p>2.3 Number of roads and right-of-ways of industries other than the forest industry, within 500 metres of Moose Winter Range, where access is controlled to effectively reduce motorized accessibility to the winter range. Cranberry, Kispiox and Kalum Planning Units</p>	All
	<p>2.4 Number of proposed non-forestry developments that have prepared access management plans prior to</p>	All

Objective	Measures / Indicators	Targets
	<p>initiating any development construction, as an integral part of their license for occupation and operation. Cranberry, Kispiox and Kalum Planning Units</p>	
	<p>Management Considerations</p> <ul style="list-style-type: none"> • Access control includes road deactivation, restrictions that attempt to prevent access by 4WD and off-road vehicles, and legislative authorities for vehicle closure. • Within a moose winter range, primary forest activities to focus within a short time frame, followed by a long phase of inactivity to reduce access related impacts to wintering moose. • Moose winter range management plans should address both the risk of disturbance and methods for limiting access to moose winter ranges during their wintering period (November 1 to May 1). • Moose winter range management plans should be prepared by all non-forestry industries that plan developments within the plan area, prior to any development clearing or construction activities, as a condition to receiving a license or permit from the Province of B.C. to proceed with the project. 	

Management Direction for Mountain Goat

Plan Goals for Mountain Goat

- Manage mountain goat winter range to help ensure a healthy mountain goat population.
- Avoid disturbance and displacement of mountain goats during vulnerable periods.
- Minimize pressure on the mountain goat population from legal and illegal harvest through human access management.

Objectives	Measures / Indicators	Targets
<i>1.0 Minimize adverse disturbance to goats within mountain goat winter range identified on</i>	1.1 Area within mountain goat winter range harvested without approved exemptions.	0 ha
	1.2 Number of industrial activities, within 500 m horizontal distance of a mountain goat winter range, that cause adverse disturbance to mountain goats.	0

Objectives	Measures / Indicators	Targets
<p><i>Schedule A, Maps 1-10.</i></p>	<p>1.3 Percentage of industrial activities within 500 metres of goat winter range, that have not been exempted, that takes place between November 1 and June 15.</p>	<p>0%</p>
	<p>1.4 Number of industrial activities within 1000 metres of canyon dwelling goat winter range.</p>	<p>0</p>
	<p>Management Considerations</p> <ul style="list-style-type: none"> • Operators will (as per UWR regulations) refrain from felling trees within mountain goat winter range. • Felling of single trees, such as danger-trees, guy-line anchor, or tail-hold trees, is permitted within a mountain goat winter range when it is required to address worker safety. Trees felled for these purposes will be left on site to provide coarse woody debris for other animals. • Adverse disturbance is to be determined by a qualified professional biologist. • Retention of forest cover is required to deliver habitat attributes critical to the survival of this species. These attributes include patches of mature/old forest, in areas close to escape terrain, which provide winter forage production, snow interception, and thermal/security cover. • Where forests within mountain goat winter range have been disturbed by fire or logging, and where habitat is limited, these areas should be silviculturally treated to accelerate their restoration and rehabilitation, to achieve mature and old forest habitat attributes (snow interception, security and thermal cover, and forage production). Treatments should be based on the recommendations of a qualified professional forester and a qualified professional biologist. 	
<p>2.0 <i>Minimize the number of roads within 500 m of mountain goat winter range and 1000 m of canyon-dwelling goat winter range.</i></p>	<p>2.1 Percentage of roads within 500 m of mountain goat winter range and roads within 1000 m of canyon-dwelling mountain goat winter range that have not been exempted, deactivated within one year following the completion of industrial activities.</p>	<p>100%</p>
	<p>2.2 Percentage of existing roads within 500 m of mountain goat winter range and 1000 m of canyon dwelling mountain goat winter range that are deactivated or managed to mitigate adverse disturbance.</p>	<p>100%</p>
	<p>Management Considerations</p> <ul style="list-style-type: none"> • Access roads within 500 m of mountain goat winter range and 1 000 m of canyon-dwelling mountain goat winter range are to be constructed in a manner that facilitates effective deactivation. • Where no practicable alternatives to building roads within these buffer areas exist, roads and trails should employ strategies to protect goats and 	

Objectives	Measures / Indicators	Targets
	<p>their habitats from disturbance. These strategies may include:</p> <ul style="list-style-type: none"> • placing adequate timber buffers around mountain goat winter ranges; • locating roads and trails no closer to mountain goat winter range than made necessary by operational site constraints; or • other suitable techniques. <ul style="list-style-type: none"> • When demonstrated by a qualified professional wildlife biologist that there is a low level of risk to goats, exemptions may be considered for: <ul style="list-style-type: none"> • construction of roads or trails in mountain goat winter range where no other access options exist; or • construction of semi-permanent mainline roads within 500 m of mountain goat winter range to access timber beyond a specific mountain goat winter range • Existing roads and trails within 500 m of a mountain goat winter range, and within 1 000 m of canyon dwelling/escarpment goat winter range, should be assessed for disturbance risk to mountain goat populations. Mitigation plans should be developed accordingly. • Where road access has a potential impact on identified mountain goats, a risk assessment should be conducted and appropriate measures be taken to help ensure population viability. 	
<p>3.0 <i>Minimize adverse disturbance to mountain goat winter range from helicopter logging activities</i></p>	<p>3.1 Percentage of helicopter logging occurring within 2 000 metre line of sight of a mountain goat winter range, that have not been exempted, that takes place between November 1 and June 15.</p>	<p>0 %</p>

Management Direction for Grizzly Bear

Plan Goal for Grizzly Bear

- Provide adequate grizzly bear habitat to help ensure a healthy population of grizzly bears.

Objectives	Measures / Indicators	Targets
<p>1.0 Preserve the highest value grizzly bear habitat, identified in Schedule A, Maps 1-10 as either:</p> <p>a) Grizzly Bear Habitat Complex (GBHC)</p> <ul style="list-style-type: none"> • Class 1: Very High; provincially significant value • Class 2: High value; <p>Cranberry, Kispiox and Kalum Planning Units</p> <p>or</p> <p>b) Grizzly Bear Specified Areas (SA)</p> <p>Nass South Planning Unit</p>	<p>1.1 Within 100m of critical habitat types¹⁰ occurring within grizzly bear habitat identified on Maps 1-10, proportion of the forested area of each polygon identified and retained as functional thermal or security cover in mature and old growth condition, except for the following cases:</p> <ul style="list-style-type: none"> • access; • operational safety considerations; or • to minimize impacts on adjacent environmental values. <p>Cranberry, Kispiox and Kalum Planning Units</p>	100%
	<p>1.2 Proportion of the forested area of each polygon identified on Schedule A, Maps 1-10 retained as functional thermal or security cover in mature and old growth condition, except for the following cases, where the minimum retention of forested area in each polygon is 90%:</p> <ul style="list-style-type: none"> • access; • operational safety considerations; or • to minimize impacts on adjacent environmental values. <p>Nass South Planning Unit</p>	100%
	<p>Management Considerations</p> <ul style="list-style-type: none"> • The term, “Specified Areas” is replacing the term, “Wildlife Habitat Areas” for the Nass South and Cranberry Planning Units. The new term is 	

¹⁰ Critical habitat types include Sitka alder-spiny wood fern seepage sites; south aspect Trembling aspen-Douglas maple sites (minimum 5% cover of Douglas maple); Sitka alder-cow parsnip avalanche chutes; Spruce-black twinberry floodplain (ICHmc2/05); trembling aspen-beaked hazelnut sites (ICHmc2/51); paper birch-red osier dogwood fans (ICHmc2/03); south aspect Paper birch-falsebox sites; black cottonwood-red osier dogwood floodplains (CWHws2/08); Spruce-Salmonberry floodplains (CWHws2/07); Cottonwood-Willow Floodplains (CWHws2/09); thimbleberry-cow parsnip moist meadows; willow swamps and willow-sedge wetlands (where willow is the dominant woody vegetation and exceeds 20% cover); Skunk cabbage sites (CWHws2/11; ICHmc2/07; ICHmc1/06).

Objectives	Measures / Indicators	Targets
	<p>the result of an administrative need only and will provide the same legal authority under <i>FRPA</i> as would Wildlife Habitat Areas.</p> <ul style="list-style-type: none"> • Specified Areas (SA) have not yet been mapped for the Cranberry SRMP area. When mapped, they will capture bedding and forage areas as well as provide thermal and security cover. • The target of Measures 1.1 and 1.2 is based on the need for operational flexibility, where necessary. If harvesting is to occur within SAs, it should be located along the edges of the mapped polygons. • Where practicable, from a harvest block layout and forest operation perspective, major grizzly bear trails leading to or connecting grizzly bear SAs, as noted by bite and marked trees, shall have their integrity maintained in terms of existing natural stand structure. • High use grizzly trails should be mapped and managed to maintain their integrity for travel and communication. • Following the establishment of SAs, where harvesting operations may occur within and adjacent to the mapped GBHC, considerations include the following Best Management Practices: <ul style="list-style-type: none"> ▪ Selection and small patch cut systems that create canopy gaps and openings <10 ha, and generally <5 ha. ▪ Cutting unit opening sizes that reflect the adjacent habitat values and are smaller than 2 ha immediately adjacent to the highest value habitat, and larger in lower valued habitat. ▪ Variable levels of retention (e.g. 10 to 30+ %) that minimize line of sight distance and maximize patch heterogeneity. ▪ Concentrated development followed by prompt silviculture and deactivation to minimize the length of operation within a GBHC. ▪ Timing of operations within or adjacent to the GBHC preferably during winter or during times of low or no use by bears. 	
<p>2.0 <i>Maintain the quality and effectiveness of grizzly bear foraging habitat.</i></p>	<p>2.1 Proportion of foraging habitat listed in Table 8: High Value Grizzly Bear Habitat, occupying greater than 1 ha within a cutblock, that maintains herbaceous and woody forage supply for grizzly bears through to stand rotation, as assessed at the achievement of free-growing status for regenerated stands.</p>	<p>100%</p>
	<p>Management Considerations</p> <ul style="list-style-type: none"> • Vegetation management practices, within high value grizzly bear forage habitat to maximize retention of valuable forage species. Practices may include: <ul style="list-style-type: none"> • reduced stocking standards in wetter or richer sites, targeting up to 600 stems/ha at free-to-grow or • pruning, spacing or thinning. 	

Objectives	Measures / Indicators	Targets
	<p>2.2 Proportion of non-forested forage areas greater than 2 ha in size, identified in Table 8: High Value Grizzly Bear Habitat, with directly adjacent functional thermal and security cover.</p>	100%
	<p>Management Considerations</p> <ul style="list-style-type: none"> • Adjacent areas should be approximately 100 metres in width and fully surround the forage area where possible. • Thermal cover includes habitat conditions that afford for a dry place when it is cool and wet, and a cool place when it is hot and dry; these conditions are generally provided in old-growth settings utilizing full canopy mature and veteran trees. • Security cover provides visual screening, especially from roads, and exists when vegetation obscures a person’s view of a grizzly bear. • High-use grizzly bear trails should be mapped and managed to maintain their integrity for travel and communication. 	
<p>3.0 <i>Minimize human-bear conflicts.</i></p>	<p>3.1 Proportion of grizzly bears killed or relocated as a result of human-bear conflicts.</p>	Reduction
	<p>Management Considerations</p> <ul style="list-style-type: none"> • For expert resources on minimizing bear-human conflict, see Appendix D: Minimizing Human-Bear Conflicts. • Until replaced by alternative programs, use BMP’s as described by the provincial Conservation Officer Service and the B.C. Conservation Foundation Bear Aware program: http://www.bearaware.bc.ca/. • Proponents of industrial development should account for impacts to grizzly bear habitat and the potential interactions between humans and grizzly bear. • The Parties support continuation of the provincial Bear Aware program, or similar efforts to increase public awareness of bear-human interactions and reduce bear mortalities. • It is recognized that grizzly bear mortality cannot be eliminated entirely in areas heavily developed for settlement or agriculture, and that grizzly bears attracted by habitat or human-provided food are likely to be killed as a result of conflicts with humans. 	
<p>4.0 <i>Minimize long-term displacement of grizzly bears from industrial access development</i></p>	<p>4.1 Minimum distance of permanent roads from high value grizzly bear habitat identified in Table 8. Cranberry, Kispiox and Kalum Planning Units.</p>	150 m (where practicable)
	<p>4.2 Minimum distance of permanent roads from high value grizzly bear habitat identified in Schedule A, Maps 1-10.</p>	150 m (where practicable)

Objectives	Measures / Indicators	Targets
	<p align="center">Nass South Planning Unit</p>	
	<p>Management Considerations</p> <ul style="list-style-type: none"> • Access restrictions could be used to minimize roaded motorized access within selected portions of grizzly bear habitat for periods of time (e.g., high value habitat listed in Table 8, High Value Grizzly Bear Habitat). This can be achieved through the identification and use of control points, where access restrictions such as bridge removal or gating can be employed. • Industrial development within or adjacent to valuable grizzly bear habitat should be planned for short periods of time, followed by long periods (10 to 25 years) of no development. 	

Table 8. High Value Grizzly Bear Habitat

BEC variant	Site Series #	Site Series Name
CWH ws2	05	HwBa - Queen's cup
CWH ws2	06	BaCw - Devil's club
CWH ws2	07	Ss - Salmonberry
CWH ws2	08	Act - Red-osier dogwood
CWH ws2	09	Act - Willow
CWH ws2	10	Pl - Sphagnum
CWH ws2	11	CwSs - Skunk cabbage
ESSF wv	06	Bl - Devil's club - Lady fern
ESSF wv	07	Bl - Valerian - Sickle moss
ESSF wv	08	Bl - Horsetail - Glow moss
ESSF wv	09	Bl - Lady fern - Horsetail
ICH mc1	04	HwBl - Devil's club
ICH mc1	05	ActSx - Dogwood
ICH mc1	06	Hw- Azalea - skunk cabbage
ICH vc Nass South	03	Sx – Devil’s club
ICH vc Nass South	04	Sx – Devil’s club – Dogwood
ICH vc Nass South	05	ActSx – Dogwood
ICH vc Nass South	06	Sx - Horsetail
MH mm1 Nass South	02	HmBa – Mountain-heather
MH mm1 Nass South	05	BaHm – Twistedstalk
MH mm1 Nass South	08	HmYc – Sphagnum
MH mm1 Nass South	09	YcHm – Skunk cabbage
ICH mc2 Cranberry	03	HwCw-Oak fern/EP-Red-osier dogwood fans
ICH mc2 Cranberry	05	Sx – Devil’s club- Lady fern/Sx – Black twinberry floodplain
ICH mc2 Cranberry	51	At – Beaked hazelnut
ICH mc2 Cranberry	07	CwSx – Horsetail – skunk cabbage
	Non-forested	Sitka alder – Spiny wood fern (seepage sites)*
	Non-forested	South aspect At-Douglas maple (≥5%) sites*
	Non-forested	Sitka alder – Cow parsnip avalanche chutes*
	Non-forested	Thimbleberry – Cow parsnip moist meadows*
	Non-forested	Willow swamps and willow-sedge wetlands (willow dominant, ≥20% cover)*
MH mm2 Nass South	05	BaHm - Twistedstalk
MH mm2	08	HmYe – Sphagnum
MH mm2	09	YeHm – Skunk cabbage

* - Site complex is found across a range of BEC variants.

Note: CWHws2 04 is excluded from Table 8. In situations where competing vegetation (silviculturally) that is considered to be grizzly bear forage makes achievement of a target stocking standard difficult, then reduced stocking standards should be acceptable to prevent aggressive control of such competing vegetation. CWHws2 04 is a blue listed ecosystem.

Management Direction for Fur-bearers

Plan Goal for Fur-bearers

- Maintain high value habitat for identified fur-bearer species to help ensure a healthy population of fur-bearers.

Objective	Measures / Indicators	Targets
<p><i>1.0 Minimize impact to known high value fisher and wolverine habitat.</i></p>	<p>1.1 Percentage of known fisher and wolverine denning sites impacted by industrial development.</p>	<p>0%</p>
	<p>Management Considerations</p> <ul style="list-style-type: none"> • Habitat capability/suitability mapping should be completed concurrently for fisher and wolverine. • Fisher denning habitats are currently identified as large veteran cottonwood trees which tend to grow on floodplains, but not exclusively. • Develop BMP's for managing fisher and wolverine habitat. • Achievement of biodiversity objectives listed in the section "Management Direction for Biodiversity", will contribute to the maintenance of fur-bearer habitat throughout the plan area. • Minimizing the duration of active roads and their conduciveness for human use, in proximity to mountains in the ESSF and MH BGC zones, will reduce risk to wolverine den site disturbance. 	

Management Direction for Northern Goshawk

Plan Goal for Northern Goshawk

- Maintain a viable population of northern goshawk within the plan area.

Objective	Measures / Indicators	Targets
1.0 <i>Maintain nesting and post-fledging habitat at known goshawk nest areas, to support continued use and reproduction in those areas.</i>	1.1 Number of known goshawk nest and post-fledging areas retained.	All
	1.2 Amount of mechanized activity ¹¹ within 500 m of active goshawk nest(s) between February 15 and August 15.	No activity
	1.3 Amount of human activity ¹² within 200 m of active goshawk nest(s) between February 15 and August 15.	No activity (unless no practicable alternative exists)
	Management Considerations <ul style="list-style-type: none"> • The nest and post-fledging area is approximately 24 ha. This area is generally large enough to include the buffer, the distribution of alternative nests, roosts, plucking perches and juvenile post-fledging area movement. • The shape and boundaries of nest and post-fledging areas should be ecologically based to maximize the value of the area, to maintain nest area occupancy and breeding success. Where multiple nests occur, the nest- and post-fledging area should maximize the amount of high-quality nest-area habitat included within it (e.g. generally Hw leading, age class ≥ 8, canopy closure class ≥ 5, open understory). • A qualified professional should be notified immediately upon discovery of a goshawk or active nest. It will be the responsibility of the qualified professional to determine the size and configuration of the nest- and post-fledging area and adjacent habitat connectivity, in consultation with the respective forest licensee. • If mechanized activity must occur within 500 m of an active goshawk nest between February 15 and August 15, forest licensees are requested to notify the Ministry of Forests, Lands and Natural Resource Operations so that goshawk activity can be monitored. • Habitat capability/suitability mapping should be completed for goshawk, 	

¹¹ Mechanized activity is road construction and timber harvesting/mechanized silviculture activities.

¹² Human activity includes log hauling, and those activities not identified as mechanized activity.

Objective	Measures / Indicators	Targets
	using provincially approved standards. <ul style="list-style-type: none"> A concerted effort should be undertaken to identify active nest-post fledging areas to assist in the spatial identification of territories and implementation of plan direction. 	
2.0 <i>Maintain foraging habitat¹³ around known goshawk nest and post-fledging areas.</i>	2.1 Proportion of perimeter of nest and post-fledging area that is directly connected by mature or old forest to comparable forest in the foraging area.	Minimum of 30%
	Management Considerations <ul style="list-style-type: none"> Upon locating a goshawk nest-post fledging area, a sensitivity analysis should be conducted of the forage area, as best as it can be defined. The analysis should be in the form of a risk assessment with respect to: <ul style="list-style-type: none"> percentage of mature and old forests; degree of forest fragmentation; and other considerations that may be impacting utilization of available habitat supply. Where practicable, forest licensees should plan operations to minimize loss of habitat supply within active forage areas, utilizing current science. 	
	2.2 Mature and old forest structure and function retained within determined foraging area around known goshawk nest and post-fledging areas.	≥ 60%

Management Direction for General Wildlife

Plan Goal for General Wildlife

- Protect special habitats for general wildlife

Objectives	Measures/Indicators	Targets
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¹³ Goshawk forage habitat is defined as the hunting territory typically used by a pair of goshawks.

Objectives	Measures/Indicators	Targets
1.0 <i>Maintain effectiveness¹⁴ of riparian habitats adjacent to wetlands in polygons identified on Schedule A, Maps 1-10 as Special Habitats for General Wildlife.</i>	1.1 Proportion of the forested area of the hydroriparian zone ¹⁵ retained for each identified feature, except where no practicable alternative exists to: <ul style="list-style-type: none"> • build roads or trails. • access or harvest timber that is outside the hydroriparian zone. • mitigate a safety concern. • negate impacts on adjacent forest values from a compelling forest health issue. 	100%
2.0 <i>Maintain effectiveness of alder brush and aspen patch habitats in polygons identified on Schedule A, Maps 1-10 as Special Habitats for General Wildlife. Cranberry and Kalum Planning Units</i>	2.1 Width of the retained forested area surrounding each identified feature, except where no practicable alternative exists to: <ul style="list-style-type: none"> • build roads or trails. • access or harvest timber that is outside the retained forest area. • mitigate a safety concern. • negate impacts on adjacent forest values from a compelling forest health issue. 	≥50 metres

Management Direction for Fisheries

Plan Goal for Fisheries Resources

- Protect fish populations by preserving, maintaining, and restoring fish habitat.

Objectives	Measures/Indicators	Targets
1.0 <i>Maintain habitat for indigenous fish populations.</i>	1.1 Number of fish bearing streams, rivers and lakes adversely impacted by industrial development except where permitted under applicable legislation.	Zero

¹⁴ “Effectiveness” means the continued use of a habitat by the species that historically utilized it.

¹⁵ Hydroriparian zone as defined in item 4 of Table 6. Rationale for Amending the Ecosystem Network.

Objectives	Measures/Indicators	Targets
	<p>Management Considerations</p> <ul style="list-style-type: none"> Maintenance of salmon habitat consistent with the Wild Salmon Policy is a high priority - http://www-comm.pac.dfo-mpo.gc.ca/pages/release/bckgrnd/2005/bg013_e.htm. Inventories to be conducted to identify all fish-bearing streams for the entire plan area, with emphasis on salmon, summer-run steelhead, bull trout, dolly varden, and eulachon. Areas most likely to be affected by industrial development or potentially having vulnerable fish stocks should receive first funding priority. 	
<p>2.0 <i>Restore habitat for indigenous fish populations.</i></p>	<p>2.1 Percentage of damaged fish-bearing streams, rivers and lakes where pre-damage functionality is restored by operationally and financially feasible activities that do not cause further damage or interfere with natural restoration processes.</p> <p>Management Considerations</p> <ul style="list-style-type: none"> Intent is to pursue funding to conduct habitat restoration work, but recognize that funding is not guaranteed. See Water section, Objective 5, Management Considerations, regarding a Watershed Restoration Plan. Restoration of salmon habitat consistent with the Wild Salmon Policy is a high priority. Restoration of the Kitwanga River-Gitanyow Lake sockeye salmon stocks to achieve the productive capacity of the system is a high priority. Inventories to be conducted to identify all fish-bearing streams for the entire plan area, with emphasis on salmon, summer-run steelhead, bull trout, dolly varden and eulachon. Areas most likely to be affected by industrial development or potentially having vulnerable fish stocks should receive first funding priority. 	<p>100%</p>

Management Direction for Cultural Heritage Resources

Plan Goal for Cultural Heritage Resources

- Recognize and respect Gitanyow traditional areas, values, and activities so that they may exercise their aboriginal rights on the landscape.

Objectives	Measures / Indicators	Targets
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Objectives	Measures / Indicators	Targets
<p><i>1.0 Preserve cultural sites.</i></p>	<p>1.1 Number of Gitanyow pre-1846 cultural sites with their integrity maintained, except where authorized by applicable legislation and consented to by Gitanyow.</p>	<p>All</p>
	<p>1.2 Number of Gitanyow post-1846 cultural sites with their integrity maintained except where consented to by Gitanyow.</p>	<p>All</p>
	<p>Management Considerations</p> <ul style="list-style-type: none"> • Preservation refers to mapped and unmapped cultural sites. • Management of cultural heritage sites should be consistent with <i>The Gitanyow Policy Manual for Management of Cultural Heritage Resources</i>, September 13, 2009.¹⁶ The cultural heritage policy addresses: <ol style="list-style-type: none"> 1) measures for preservation of different groupings of cultural sites; 2) consultation protocols, and 3) procedures designed to develop effective working relationships between Gitanyow and development proponents. • Best efforts should be undertaken by Gitanyow, the Province and forest licensees to locate, with GPS, the remaining sections of the Grease Trail within the plan area. 	
<p><i>2.0 Preserve cultural heritage resources.</i></p>	<p>2.1 Percentage of authorizations issued for timber harvesting or road construction where consultation occurs to facilitate continued traditional uses of cultural heritage resources.</p>	<p>100%</p>
	<p>2.2 Percent of identified cultural heritage resources that are reported to Gitanyow, forest licensees, and government for use in a database.</p>	<p>100%</p>
<p>Management Considerations</p> <ul style="list-style-type: none"> • Cultural heritage resources include but are not limited to culturally modified trees (CMTs), trails, cache pits, house pits, grave sites, fishing sites, pictograph sites, smoke houses, cabins, camping sites and archaeological sites. Cultural areas include hunting, fishing and berry-picking areas. • Continued mapping of cultural heritage resources is required. • Gitanyow are to update the database of Gitanyow cultural heritage resources 		

¹⁶ For a copy of the Gitanyow Cultural Heritage Policy, contact the Gitanyow Office of Hereditary Chiefs.

Objectives	Measures / Indicators	Targets
	<p>annually.</p> <ul style="list-style-type: none"> Archaeological sites are traditional use sites where archaeological investigation has occurred and where physical evidence of past human activity has been found. Examples include culturally modified trees, trails, cache pits, house pits, grave sites, pictograph sites, smoke houses, cabins, artifacts, and areas traditionally used for camping, hunting, fishing and berry-picking. 	
<p>3.0 Address Gitanyow interests in access to cultural sites.</p>	<p>3.1 Proportion of cultural sites where Gitanyow access interests are addressed.</p>	<p>100%</p>
	<p>Management Consideration</p> <ul style="list-style-type: none"> Following consultation, interests are addressed regarding access concerns occurring before, during and following industrial development. 	
<p>4.0 Identify and record locations of CMTs; minimize impact to these where appropriate.</p>	<p>4.1 Percentage of identified CMTs of any historical date, recorded in a Gitanyow database.</p>	<p>100%</p>
	<p>Management Consideration</p> <ul style="list-style-type: none"> When collecting CMT-related information, best efforts should be made by forest licensees to use the procedures manual, “Recording Culturally Modified Trees” located at: http://www.tca.gov.bc.ca/archaeology/policies/recording_culturally_modified_trees.htm The Gitanyow Cultural Heritage Policy includes comprehensive CMT Policies and BMP’s for CMT Management. 	
<p>5.0. Maintain a sustainable source of cedar for Gitanyow traditional, cultural and subsistence use.</p>	<p>5.1 Percentage of polygons identified in the <i>Plan for a Long-Term Sustainable Supply of Cedar from Gitanyow Traditional Territory for Gitanyow Cultural and Domestic Purposes</i>, March 12, 2008, that are fully reserved for Gitanyow management and harvest.</p>	<p>100%</p>
	<p>5.2 Percentage of proposed cutblocks having a component of cedar, where consultation with the Gitanyow around the use of cedar occurs.</p>	<p>100%</p>
	<p>Management Considerations</p> <ul style="list-style-type: none"> Gitanyow are required to identify to licensees their traditional, cultural and subsistence needs. Identify the amount of available supply of cedar for Gitanyow needs. Licensees are required to consult with the Gitanyow on proposed or planned 	

Objectives	Measures / Indicators	Targets
	cutblocks that have a cedar component.	
<p>6.0 Reserve land surrounding Gitanyow Lake for Gitanyow management of cultural heritage resources.</p>	<p>6.1 Percentage of the polygon identified in Schedule A, Maps 9 and 10 that is fully reserved for Gitanyow management.</p>	<p>100%</p>
	<p>Management Considerations</p> <ul style="list-style-type: none"> • The land surrounding Gitanyow (Kitwancool) Lake is the location of many known and yet-undiscovered traditional use sites and has a long history of occupation and use by Gitanyow. • Reserving the land will protect the area from further development, and will allow the orderly discovery and assessment of sites. • Reserving the land will provide opportunities for Gitanyow to develop a cultural-educational museum of Gitanyow history and will contribute to Gitanyow economies and self-sufficiency. 	

Management Direction for Timber Resources

Plan Goals for Timber Resources

- Promote full utilization of productive sites while providing stable or increased harvest levels.
- Develop a sustainable and economically viable forest industry that contributes to the local community over the short and long terms, while respecting Gitanyow interests.

Objectives	Measures / Indicators	Targets
1.0 <i>Dedicate and maintain a productive timber harvesting land base, that promotes an economically sustainable forest industry.</i>	1.1 Net area of timber available for harvest.	Identify and maintain
	Management Considerations <ul style="list-style-type: none"> • Management of the timber harvesting land base is to consider and respect non-timber resources and maintain Wilp Sustainability. 	
2.0 <i>Avoid timber harvesting within proposed treaty settlement lands shown on Schedule A, Maps 1-10. (from Gitanyow Treaty Settlement Lands Offer (2002)).</i>	2.1 Amount of timber harvesting occurring within proposed treaty settlement lands.	Zero
	Management Considerations <ul style="list-style-type: none"> • Preservation of proposed treaty settlement lands does not constitute acceptance by Gitanyow of this offer. 	
3.0 <i>Manage the forest harvest to represent the timber quality and terrain profile.</i>	3.1 Stands harvested with age greater than 250 years.	<i>Proportionate to occurrence within Licensee operating area</i>
	3.2 Stands harvested on slopes greater than 35%.	<i>Proportionate to occurrence within Licensee operating area</i>

Objectives	Measures / Indicators	Targets
	<p>Management Considerations</p> <ul style="list-style-type: none"> • Timber harvest will represent the timber quality and terrain profile of the planning area to the extent possible, as determined by timber type and quality, market prices and operational costs, and remain at the discretion of the licensee. The intent is to harvest the profile, while retaining opportunities for the economic viability of the licensee. • Monitor the terrain and timber profile harvested. Performance in harvesting the profile as averaged over a five-year period should be submitted to the Chief Forester together with a recommendation that the harvesting performance be considered in the AAC determination. 	
<p>4.0 <i>Maintain the long-term health and site productivity of the timber harvesting land base.</i></p>	<p>4.1 Long-run sustained yield.</p>	<p>Maintain or increase</p>
	<p>4.2 Mean annual increment.</p>	<p>Maintain or increase</p>
	<p>Management Considerations</p> <ul style="list-style-type: none"> • Implement silvicultural systems and treatments to realize overall productivity within the timber-harvesting land base. • Consider local forest pests and diseases (e.g. lodgepole pine vulnerability to Dothistroma needle blight) when re-stocking sites. • Consider the effects of climate change on forest health and site productivity. 	
<p>5.0 <i>Limit conversion of the available productive forest land base for non-timber purposes.</i></p>	<p>5.1 Area permanently removed from the productive forest, for purposes other than timber harvesting.</p>	<p>Minimize</p>
	<p>Management Considerations</p> <ul style="list-style-type: none"> • It is recognized that some conversion will occur; this will be addressed by the Joint Resources Council on a case-by-case basis. Examples of conversion include, but are not limited to, agriculture and the establishment of utility corridors. • Efforts should focus on minimizing duplication of access by other resource sectors (e.g. shared use of logging roads by the mining sector). 	
<p>6.0 <i>Develop long-term plans that recognize and respect Gitanyow interests in the forest resource.</i></p>	<p>6.1 Percentage of plans where Gitanyow interests are incorporated.</p>	<p>100%</p>
	<p>Management Consideration</p> <ul style="list-style-type: none"> • Gitanyow and licensees are to develop a standardized protocol for ensuring Gitanyow interests are recognized (e.g. number of meetings, meeting locations, and items to cover). 	

Management Direction for Water Management Units

Plan Goal for Water Management Units

- Manage surface water and groundwater to maintain water quality and peak and low flows within the range of natural variability, and protect the hydrologic integrity of the watersheds.

Objective	Measures / Indicators	Targets
1.0 <i>Ensure proper hydrological functioning of streams, lakes and wetlands within water management units identified in Schedule A, Maps 1-10.</i>	1.1 Number of new roads allowed within Water Management Units for commercial forestry operations. Cranberry, Kispiox and Kalum Planning Units	0
	1.2 Number of roads currently existing within a Water Management Unit that are permanently deactivated following completion of harvesting and silviculture obligations. Cranberry, Kispiox and Kalum Planning Units	All
	1.3 Proportion of wetlands, lakes and streams that have full retention of the forested area of their Hydroriparian Zone ¹⁷ , excluding harvesting for traditional uses, mining, compelling forest health issues, or variances as stated in measure 1.4 below.	100%
	1.4 Variance by which cutblocks overlapping the water management unit boundary may extend into the unit, while maintaining the riparian management practice applicable to the forest land base outside of it.	Up to 50% of the cutblock area, or up to 200 metres in distance, whichever is less
	Management Considerations	
	<ul style="list-style-type: none"> • Management intent is to provide operational flexibility for cutblock planning, and to account for inaccuracies due to the scale of mapping. 	
	1.5 “Functioning condition” as defined by the <i>Protocol for Evaluating the Condition of Streams and Riparian Management Areas</i> , for each local and downstream	Properly functioning ¹⁸

¹⁷ Hydroriparian zone as defined in item 4 of Table 6.

¹⁸ “Properly Functioning” for a stream, river, wetland or lake and its riparian area means:

- the ability to withstand normal peak flood events without experiencing accelerated soil loss, channel movement or bank movement;
- the ability to filter runoff;
- the ability to store and safely release water;
- ability of riparian habitat to maintain an adequate root network or large woody debris supply;
- ability of riparian habitat to provide shade and reduce bank microclimate change; and,
- fish habitat in streams and riparian areas are fully connected so that fish habitat is not lost or isolated as a result of some management activity.

Objective	Measures / Indicators	Targets
	stream receiving water from a cutblock within the Water Management Unit.	
	<p>Management Considerations</p> <ul style="list-style-type: none"> Assessment protocol is available online at: http://www.for.gov.bc.ca/hfp/frep/site_files/indicators/Indicators-Riparian-Protocol-May2007.pdf Monitoring to include streams within cutblocks and streams down slope from cutblocks to which cutblock streams are tributary. The intent is to assess the cumulative hydrological impacts of accelerated snowmelt and groundwater interception as small in-block streams merge down slope from the cutblocks. 	

Management Direction for the Upper Kispiox Special Management Zone

Plan Goals for the Upper Kispiox Special Management Zone

- Primary goal is to maintain key resource values such as wildlife habitat, water quality, fish habitat and cultural heritage resources.
- Secondary goal is to allow identified economic opportunities to prevail.

Objectives	Measures / Indicators	Targets
<i>1.0 Ensure proper hydrological functioning of all streams, lakes, and wetlands within the Upper Kispiox Special Management Zone, as</i>	1.1 Proportion of wetlands, lakes and streams that have full retention of the forested area of their hydroriparian zone ¹⁹ , excluding harvesting for road access, traditional uses, mining, or compelling forest health issues.	100%
	1.2 “Functioning condition” as defined by the <i>Protocol for Evaluating the Condition of Streams and Riparian Management Areas</i> , for each local and downstream stream receiving water from a cutblock within the Upper Kispiox SMZ.	Properly functioning ²⁰

¹⁹ Hydroriparian zone as defined in item 4 of Table 6.

²⁰ “Properly Functioning” for a stream, river, wetland or lake and its riparian area means:

- the ability to withstand normal peak flood events without experiencing accelerated soil loss, channel movement or bank movement;
- the ability to filter runoff;
- the ability to store and safely release water;
- ability of riparian habitat to maintain an adequate root network or large woody debris supply;
- ability of riparian habitat to provide shade and reduce bank microclimate change; and,
- fish habitat in streams and riparian areas are fully connected so that fish habitat is not lost or isolated as a result of some management activity.

Objectives	Measures / Indicators	Targets
<i>identified on Schedule A, Map 8</i>	<p>Management Consideration</p> <ul style="list-style-type: none"> Assessment protocol is available online at: http://www.for.gov.bc.ca/hfp/frep/site_files/indicators/Indicators-Riparian-Protocol-May2007.pdf Monitoring to include streams within cutblocks and streams down slope from cutblocks to which cutblock streams are tributary. The intent is to assess the cumulative hydrological impacts of accelerated snowmelt and groundwater interception as small in-block streams merge down slope from the cutblocks. 	
<i>2.0 Minimize long-term displacement of grizzly bears from industrial access development.</i>	2.1 Proportion of timber harvested when the ground is frozen or there is compressed snow pack of ≥ 1 metre.	100%
	2.2 Number of roads that are constructed to avoid line of sight > 300 metres and minimize right of way widths.	All
	2.3 Number of roads, excluding mainline roads, that are deactivated to a standard that will restrict motor vehicle access, immediately following completion of primary forest activities, or within one year if roads are currently inactive.	All
	2.4 Number of mainline roads where access is controlled following the completion of primary forest activities, to achieve a reduction in motorized accessibility to the SMZ.	All
	2.5 Distance between patches of security cover within or adjacent to cutblocks.	80% no greater than 200 metres
	2.6 Number of industrial camps (e.g. logging, road development, silviculture, mining, power development) permitted within the SMZ.	0
	2.7 Level of applied Biodiversity Emphasis Option.	High
	<p>Management Considerations</p> <ul style="list-style-type: none"> Industrial development within the SMZ should be planned for concentration over a short time period, followed by a long time period (e.g. 10 to 25+ years) of no development. Only temporary camps for road and cutblock engineering should be allowed in the SMZ. De-activate access roads within the SMZ to minimize the length of drivable road, immediately following completion of primary forestry activities (harvest and reforestation). The first priority for road location, design, construction, and use is to ensure the protection and maintenance of water quality and fish habitat and to minimize impacts on grizzly bear. Considerations for timber development are secondary to protection of the natural resources. Cut block design should consider use of selection and small patch cut (e.g. 1.0 ha to 5.0 ha) systems as well as larger clearcuts (e.g. >10 ha) with high levels of retention, to provide a mosaic of stand ages and structures and short 	

Objectives	Measures / Indicators	Targets
	<p>sight line distances for visual screening. Patch sizes should reflect the habitat value and should be smaller (e.g. <2 ha) in or adjacent to high value habitats. Patch sizes could be larger in lower value habitats (e.g. <5 ha for moderate and >5 ha for low habitat values). Retention within and adjacent to cutblocks should provide visual screening for security cover and should increase with the increasing size of the opening (e.g. openings of 1.0 to 5.0 ha with 10% to 20% retention; openings 5.0 to 10.0 ha with 20% to 30% retention; openings > 10.0 ha with 30+% retention).</p> <ul style="list-style-type: none"> • Grizzly bears are an “umbrella” species. Habitat and access management for grizzly bears also provides protection for water quality, fish habitat, and other wildlife species. • Security cover provides visual screening, especially from roads, and exists when vegetation prevents grizzly bears from being sighted. 	

Management Direction for the Area to be Protected

Plan Goal for the Area to be Protected

- Protect key resource values such as fisheries, wildlife, recreation and cultural heritage resources while allowing for continued traditional use activity and identified economic opportunities to prevail.

Objectives	Measures / Indicators	Targets
<p>1.0 <i>Maintain conservation, recreation, and cultural heritage values and features within the area to be protected²¹ identified as the Hanna-Tintina Area to be Protected in Schedule A, Map 1.</i></p>	<p>1.1 Completion of a management plan for the area to be protected.</p> <p>Management Considerations</p> <ul style="list-style-type: none"> • A comprehensive management plan shall define management objectives for the area as well as acceptable uses and levels of use, zoning and other strategies to minimize conflicts and help ensure the integrity of important protected-area values. • The Parties will jointly develop management plans for the Hanna Tintina. 	<p>As per the Reconciliation Agreement</p>
<p>2.0 <i>Recognize the</i></p>	<p>2.1 Percentage of existing tenures retained that are:</p>	<p>100%</p>

²¹ Commercial logging, mining, and energy exploration and development are not allowed in “areas to be protected.” Many other existing activities can continue, subject to the management plan.

Objectives	Measures / Indicators	Targets
<i>rights and interests of existing eligible tenures within the area to be protected.</i>	<ul style="list-style-type: none"> • eligible uses under the <i>Park Act</i>; or • compatible with the new Park or Protected Area 	
	<p>Management Considerations</p> <ul style="list-style-type: none"> • Exiting tenures that are eligible to continue under the <i>Park Act</i> will be grandfathered, where consistent with the management direction for each Protected Area. • Trapping, guiding and commercial recreation, including heli-skiing, will be considered acceptable uses. • Tenures are to be eligible for transfer • Management of the area to be protected should balance the need to maintain or deactivate existing access to manage for other resource values. 	
3.0 <i>Maintain ecosystem representation, abundance and integrity, and protect key resource values and natural features.</i>	3.1 Incidence of human recreation or management practices that impact negatively on the natural resource values of the Protected Area.	Zero
	<p>Management Considerations</p> <ul style="list-style-type: none"> • Management will emphasize maintenance of the ecosystems, resource values and natural features for which the area to be protected was established. • Management interventions will not significantly alter natural ecological, hydrological and geomorphic process, except expressed management purposes as defined in a protected area-management plan. • Consider forest health issues in the management of “areas to be protected.” • Any new approved facilities will be designed and managed to leave the lightest ecological “footprint” possible. • Manage natural processes/occurrences (e.g. fires, insects, forest disease) within park boundaries relative to their impact, both on the ecosystem values within the boundaries of the Protected Area and on the values of the broader ecosystem of which the Protected Area is a part. 	
	3.2 Number of identified red- and blue-listed plants, animals and communities that are lost or negatively affected by human disturbance.	Zero
	<p>Management Considerations</p> <ul style="list-style-type: none"> • Maintain functional habitat, cover and site-specific features for fish and wildlife. • Encourage human use patterns that minimize impacts on the environment (e.g. trails, boardwalks, facilities). 	
4.0 <i>Protect cultural heritage values.</i>	4.1 Incidence of damage to, or loss of, cultural heritage values.	Zero
	<p>Management Considerations</p> <ul style="list-style-type: none"> • Identify and protect archaeological sites, special sites, traditional use (past and present) and heritage trails. 	

Objectives	Measures / Indicators	Targets
<p><i>5.0 Recognize hunting and angling as an acceptable use within Protected Areas.</i></p>	<p>5.1 Percentage of sustainable hunting and angling opportunities maintained.</p>	<p>100%</p>
	<p>Management Considerations</p> <ul style="list-style-type: none"> • Continue to provide hunting and angling opportunities for local and resident hunters, anglers, and guide outfitters in the area to be protected; this subject to hunting and fishing regulations, Gitanyow law, provincial conservation priorities and public safety. 	

Appendix A: General Wildlife Tree Management Guidelines

1. Where practicable, disperse wildlife trees across harvested areas as a combination of patches and individual trees. It is recognized that dispersed retention can work on most ground-based logging systems, but is not operationally always feasible for cable systems.
2. The practicability of retaining wildlife trees, in small retention areas and through dispersed individual trees, is to be determined on a block-by-block basis.
3. Make best efforts to retain greater than the minimum percentage of within-block wildlife trees.
4. Wildlife tree features:
 - Deciduous and coniferous trees
 - Large, well-branched, wind-firm
 - Decadent, i.e. low commercial value
 - Pine mushroom host trees
 - Trees and snags that show current use by wildlife (e.g. denning or nesting trees, feeding stations)
 - Trees or snags that provide special wildlife values (e.g. large, well-branched trees, large snags, veteran trees)
 - Safe to leave standing (i.e. comply with Workers Compensation Board standards and regulations)
 - Located with more or less even spacing across the harvested area to provide nutrients, and water absorption and release, across the harvested block
5. Wildlife tree retention area features:
 - Mineral licks, wetlands, springs, brush patches, small streams
 - Medicinal plants for Gitanyow and Nisga'a traditional use
 - Pine mushroom habitat
6. Designate and retain wildlife trees within all silvicultural systems, including selection and clearcutting systems.
7. Wildlife trees to be retained at least until other suitable trees can offer equivalent replacement values. This will take at least one rotation (at least 100 years).
8. Retain high densities (30 percent or greater) of wildlife trees:
 - within the large cutblocks (retention densities to increase as size of cutblocks increase),
 - throughout the harvestable portion of ecosystem networks, and
 - throughout all harvested blocks within high value grizzly bear habitat and moose wintering habitat.
9. Wildlife tree retention areas are allowed to be located on the edge of cutblocks. Best efforts are to be made to limit the location of wildlife tree retention areas on edges. It is recognized that even though a wildlife tree retention area is on the edge, upon harvesting the cutblock, it will not be on the second or third pass. A wildlife tree retention area is a recognized exclusion from the cutblock and must be maintained.
10. Allow natural processes to occur within retention areas unless infestations, infection or fire threaten resources outside the area.
11. Where intervention in wildlife tree retention areas is required, best efforts will be made to retain a diversity of structural attributes, or a replacement retention area will be located.
12. Document the contribution to wildlife tree retention targets in an appropriate information system.

Appendix B: Moose Habitat Attributes for Life Requisites

Compiled by Len Vanderstar, R.P. Bio, R.P.F., Ministry of Forests, Lands and Natural Operations, Skeena Region, from surveys and published species accounts.

Life Requisite	Habitat Attribute and Description
Forage Habitat	<p>Structural Stage</p> <ul style="list-style-type: none"> • Early seral stages (3 and 4: herb-shrub and pole-sapling) usually provide ideal foraging conditions, supporting abundant deciduous browse year-round within secondary winter range. • Valley bottom fluvial complexes that define primary winter range are noted for providing abundant forage, by virtue of containing many pocketed or larger seasonally wet open areas, regardless of structural stage. • Aquatic habitats provide moose with aquatic forage during spring and summer. Buckbean (<i>Menyanthes trifoliata</i>), pondweed (<i>Potamogeton spp.</i>), and sedges are the predominant aquatic forage species noted in the Nass watershed. <p>Shrub Cover</p> <ul style="list-style-type: none"> • Shrub-dominated habitats that occupy 15 to 30% of a defined area (e.g. moose winter range) generally provide sufficient forage in both growing and winter seasons, provided that height requirements (below) are met. <p>Shrub Height</p> <ul style="list-style-type: none"> • 1 to 5 m for growing season (also assists in providing visual screening); >2.5 m for winter forage. <p>Shrub Species Composition</p> <ul style="list-style-type: none"> • Important woody browse includes willow, red-osier dogwood, high-bush cranberry and young subalpine fir; black twinberry, elderberry, mountain ash, aspen and cottonwood are also utilized depending on availability. <p>Aspect</p> <ul style="list-style-type: none"> • Site aspect is generally not important. However, south- and west-facing slopes have reduced snow depths and are first to be snow-free in spring. This provides moose access to shrub cover, early spring herbaceous emergents and green-up forage. <p>Landscape Position</p> <ul style="list-style-type: none"> • Valley bottom floodplains and other fertile drainages/areas have high forage productivity and diversity, particularly for early spring green-up forage.
Thermal Cover	<p>Basal Area</p> <ul style="list-style-type: none"> • 10% measured by pre-harvest mature and old forest cover. <p>Species Composition</p> <ul style="list-style-type: none"> • Thermal cover species should be composed of large canopy, somewhat open grown conifer species, notably very mature and old-growth spruce and subalpine fir.

Life Requisite	Habitat Attribute and Description
Snow Interception	<p>Canopy Cover</p> <ul style="list-style-type: none"> In areas of high snowfall, moose movement is facilitated by forests with crown closure of exceeding 50%. <p>Area Coverage</p> <ul style="list-style-type: none"> No literature is available; however, given snow depths associated with the Nass South SRMP area, MFLNRO recommends more than 30% of winter range to have favourable snow interception canopy cover.
Security Cover	<p>Visual Screening</p> <ul style="list-style-type: none"> Stem density that obscures 90% of the moose at 60 m provides optimum visual screening, thus enhancing the animals' sense of security. A diverse understory that obscures a moose at close range also provides effective security cover. Gullied terrain may offer security opportunities, and could be considered good security habitat. <p>Structural Stage</p> <ul style="list-style-type: none"> Suitable security cover could occur in structural stages 3, 4, 5, 6 and 7; however, the best security cover will likely occur in structural stages 3, 4 and 5 (5 being young forests).
Calving	<p>Landscape Position</p> <ul style="list-style-type: none"> Forested patches with good security cover, surrounded by extensive wetland complexes, forested peninsulas (water or wetland), and islands, are primary calving sites. <p>Adjacency</p> <ul style="list-style-type: none"> Isolation or seclusion of calving sites is critical.
Rutting Areas	<p>Landscape Position</p> <ul style="list-style-type: none"> Optimum rutting areas include subalpine meadow complexes, wetland complexes, extensive floodplains, early to mid-seral natural wildfire burned areas, and deciduous stands adjacent to high forage areas. <p>Adjacency</p> <ul style="list-style-type: none"> Isolation or seclusion of rutting areas ensures minimal disturbance to moose activity, and thus more successful mating behaviour.

Appendix C: Best Management Practices for Moose Winter Range

Within moose winter range designated Ungulate Winter Range:

- The forest management focus of the slope adjacent to the floodplain is to provide for security cover.
- Forests within moose winter range will have a forage management emphasis when the site series (subhygric to hydric) that produce deciduous browse species such as willow (*Salix* spp.) dogwood (*Cornus stolonifera*), and cottonwood (*Populus trichocarpa*) become the predominant (more than 50%) site series from a stand-level perspective (e.g. cutblock or overview mapping perspective at 1:20 000 scale). Stand spacing, pruning, reduced conifer-stocking standards and varied conifer spacing will assist in promoting the duration of early seral stage conditions.
- Incorporate moose winter ranges in the design and application of forest connectivity.
- Retain willow and dogwood browse, particularly along island and floodplain channels.
- Retain security and thermal cover in proximity to useable forage areas appropriate to the size of the habitat unit.
- Retain a proportion of mature and old-growth conifer stands with canopy structures which will trap snow and provide bedding sites, particularly adjacent to foraging areas.
- Retain a percentage of large spruce and fir trees within deciduous leading stands, for thermal cover and bedding microsites.
- In regenerating areas and plantations where security and thermal cover are lacking, identify conifer stands or large patches suitable for future cover. Manage these for cover attributes that mimic natural forests in terms of visual screening and large, well-formed branchy veteran trees capable of snow interception and provision for thermoregulation.
- Encourage rotational forest stand development (i.e. harvest at early stand maturity) on sites conducive to both early seral forage and conifer production, while considering visual screening and snow interception.
- Provide adequate security cover within 100 metres line-of-sight in any given direction. Mature and old stands, stand retention or wildlife tree retention areas should be in the range of 200 metres apart, to provide the combination of thermal and security cover.
- Preference will be given to ground-based vegetation management.
- Maintain the natural deciduous/conifer mix of tree species and shrubs as expected for early seral conditions in prime forage potential sites.
- Allow for natural establishment of willows along decommissioned road right-of-ways.
- Limit road development and recreational use within moose winter ranges. Where road avoidance is not practicable, use measures to maintain security, such as maintaining dense coniferous visual screens, deactivating/closing roads before November, building temporary roads and/or rehabilitation road right-of-ways.
- Where practicable, minimize moose disturbance in winter by using measures such as: geographically focusing roads and operations within a given winter range, restricted access and timing of activities.
- Where practicable, retain, enhance or plant visual screens to obscure the winter ranges from high-use transportation corridors.
- Leave a proportion of large old-growth trees for moose predator-response behaviour.

Appendix D: Minimizing Human-Bear Conflicts

The following information has been excerpted with permission from a March 25, 2007 letter from Debbie Wellwood, R.P.Bio., Raven Ecological Services, Smithers, B.C. to Len Vanderstar, R.P. Bio and R.P.F, Ministry of Environment, Skeena Region, Smithers, B.C.

Outline for strategies, targets and measures or indicators for the Nass South SRMP objectives to minimize negative bear-human interactions

General principles

- Risk of bear-human interactions is influenced by natural features such as habitat suitability, travel concerns (e.g., topographic features or trails that may funnel bears through an area), visibility concerns and other sensory concerns (e.g., loud creeks, winds). Availability of non-natural foods or other attractants will increase this risk. Focus should be on minimizing human activities in higher risk areas when and where possible.
- Human behaviour and types of activity also influence risk of bear-human interactions. Allowing bears to become food-conditioned greatly increases their risk of mortality and risk to the public, most commonly property damage and, rarely, serious human injury or death. Bear-proofing of non-natural foods and other attractants must be a high priority. A common problem is that many people are misinformed or do not understand the motivation, strength and abilities of bears. Frequently, people think they have a solution for storing non-natural foods and other attractants that is bear-proof and it is not. Living with Wildlife Foundation has a bear-resistant product testing program at <http://www.lwwf.org>. Expert input should be solicited where required to prevent bear access to non-natural foods and other attractants.
- Risk of bear mortality associated with bear-human conflicts will be strongly influenced by whether or not the activity is conducted with guns available for use.
- Risk of bear mortality associated with bear-human conflicts will also strongly be influenced by the level of appreciation for bears and knowledge and understanding about bears, including ways to prevent conflicts with bears.
- The level and intensity of bear-human conflicts can be reduced through bear-human conflict management programs where the following components may be applicable to reducing risk associated with a specific land use or activity:
 - Bear-human interactions risk assessment to identify bear-human conflict issues and provide recommendations for prevention of conflicts or risk reduction
 - Bear awareness and safety education program
 - Bear-proof waste and attractant management
 - Green-space management (e.g., in some situations it may be appropriate maintain green spaces to allow bears to move around an area and in others it may be appropriate to remove brush to increase visibility and remove bear foods)
 - Specific rules or regulations to ensure compliance may be required
 - Land use planning to minimize bear-human conflict will be most effective when land use and human activities are considered in the context of land uses and human activities in the surrounding landscape
 - Bear-human conflict management plan
 - Monitoring for bear-human conflict
 - Adaptive management as required

Table D-1: Strategies, targets and measures or indicators to prevent bear mortality resulting from bear-human interactions

Objective	Indicators	Targets	Strategies
<p>1. Minimize negative bear-human interactions (e.g., incidents or conflicts with bears, displacement of bears, mortality of bears).</p>	<p>Number of reports of negative bear-human interactions¹</p> <p>Indicators may be further defined as follows:</p> <ul style="list-style-type: none"> • Number and severity of bear-human conflicts or incidents • Number of conflicts or incidents where bears access non-natural foods or other attractants • Number and severity of defensive encounters with bears • Number and severity of non-defensive encounters with bears • Number and severity of problem wildlife occurrence reports received by the Conservation Officer Service for bears • Number of reported kills (e.g., COS, Fish and Wildlife) • Number of defence of life or property kills • Number of bears poached • Estimated unreported mortality 	<p>Reduction in number of interactions over time¹</p> <p>Targets may be further defined as follows:</p> <ul style="list-style-type: none"> • Ideal: No reported or unreported grizzly bear mortality as a result of negative bear-human interactions • Realistically: Low number reported or unreported grizzly bear human-caused mortality for entire SRMP area as a result of bear-human conflicts or incidents (i.e., no mortality associated with most land uses and human use activities) 	<p>Where possible, initiate programs to educate members of the public and visitors re low impact garbage and food handling methods¹</p> <p>Educate public regarding alternatives to shooting to reduce bear-human conflicts e.g., waste management strategies, trail closures etc.¹</p> <p>Strategies may be further defined as</p> <ul style="list-style-type: none"> • Educate people about bear awareness and safety. Include proactive (user group and activity specific) measures that can be taken to minimize negative bear-human interactions². • Implement bear-human conflict prevention programs designed to minimize negative bear-human interactions (e.g., preliminary risk assessment, bear awareness and safety, bear-proof management of non-natural foods and other attractants, best practices or requirements, green space management and planning to prevent bear-human conflicts). If appropriate, develop and deliver program on site, area or activity specific basis. • Conduct regular monitoring of bear-

			<p>human conflict prevention programs to detect successes or failures and revise as required to achieve objective.</p> <ul style="list-style-type: none"> • Enforce non-compliance with rules or regulations to ensure that non-natural foods and attractants are stored or secured using a bear-proof method (e.g., Park Regulation, COS Dangerous Wildlife Protection Order)
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¹ Taken from North Coast Land and Resource Management Plan (2005).

² Bear-human interactions will be avoided in most management situations to minimize bear-human conflicts. For some specialized management situations, some types of bear-human interactions may be considered appropriate (e.g., bear viewing). Recommend requiring bear-human conflict management plan for management scenarios that allow or promote bear-human interactions.

Table D-2. Strategies or BMPs recommended for consideration for various land uses and types of human activities

Objective	Land Use/Activity	Example Target Groups	Strategies/Best Management Practices
1. Minimize negative bear-human interactions (e.g., incidents or conflicts with bears, displacement or mortality of bears).	Major Travel Routes	<ul style="list-style-type: none"> Ministry of Transportation and Infrastructure Highways maintenance contractors 	<ul style="list-style-type: none"> Install, monitor and maintain bear proof dumpsters Scheduled garbage pick-up
	Landfill/Dumps	<ul style="list-style-type: none"> Regional District Industrial camps Commercial recreation camps 	<ul style="list-style-type: none"> Install, monitor and maintain electric fence to exclude bears.
	Industrial Camps – permanent and semi-permanent	<ul style="list-style-type: none"> Exploration, mining and forestry companies Government agencies (e.g., FLNRO, MOE, MEM) Natural resources research and management consultants 	<ul style="list-style-type: none"> Implement bear-human conflict prevention program such as preliminary risk assessment to avoid higher risk (i.e. selection of low and moderately low risk locations), camp locations, bear awareness and safety program, bear-proof management of non-natural foods and other attractants, best practices or requirements, green space management and planning to prevent bear-human conflicts). Recommend input from expert in bear-human conflict prevention.
	Commercial recreation camps – permanent and semi-permanent	<ul style="list-style-type: none"> Guide Outfitters Angling operations Non-consumptive recreation (e.g., hiking, wildlife viewing etc.) 	<ul style="list-style-type: none"> Same as per Industrial Camps.
	Industrial – camping, hiking	<ul style="list-style-type: none"> Exploration, mining and 	<ul style="list-style-type: none"> Provide bear awareness and safety training to minimize bear-human

Objective	Land Use/Activity	Example Target Groups	Strategies/Best Management Practices
	and working in bear country	forestry companies <ul style="list-style-type: none"> Government agencies (e.g., FLNRO, MOE, MEM) Natural resources research and management consultants. 	interactions while working, recreating and camping in bear country. Contractors and personnel should clearly understand how to prevent interactions with bears. <ul style="list-style-type: none"> Ensure bears do not have access to non-natural foods and other attractants.
	Commercial Recreation - camping, hiking and working in bear country	<ul style="list-style-type: none"> Guide Outfitters Angling operations Non-consumptive recreation (e.g., hiking, wildlife viewing etc.) 	<ul style="list-style-type: none"> Same as per Industrial
	Bear Viewing Activities	<ul style="list-style-type: none"> Commercial operations Provincial government (e.g., wildlife viewing promotion etc.) 	<ul style="list-style-type: none"> Conduct a bear-human conflict risk assessment to evaluate appropriateness and feasibility on an operations specific basis and in the context of the surrounding landscape. Evaluate cumulative effects of land use activities (e.g., other bear viewing activities, types of bear viewing activities, hunting and refugia for bears) If the bear viewing operation is considered an appropriate activity, prepare a bear-human conflict risk management plan that identifies bear-human conflict issues and strategies to prevent bear-human conflicts. Note water-based viewing is generally considered to pose lower risk to bears and people. Viewing from non-motorized boats will generally have lower risk of

Objective	Land Use/Activity	Example Target Groups	Strategies/Best Management Practices
			<p>impacts to bears than from motorized boats.</p> <ul style="list-style-type: none"> • DO NOT promote wildlife areas for non-guided bear viewing
	Other commercial or recreational activities	<ul style="list-style-type: none"> • Mushroom pickers • Various recreation (e.g., hikers, backpackers, horse packing, All Terrain Vehicle users) 	<ul style="list-style-type: none"> • Promote bear awareness and safety training to minimize bear-human interactions while working, recreating and camping in bear country. Audience should clearly understand how to prevent interactions with bears
	Fisheries Operational Activities	<ul style="list-style-type: none"> • Fisheries and Oceans Canada (e.g., fish counting i.e. Meziadin Fishway; spawning facilities) 	<ul style="list-style-type: none"> • Prepare, implement and monitor a facility specific Bear-human Conflict Management Plan. Adaptive management approach required.
	Fish Harvest and Preparation Activities	<ul style="list-style-type: none"> • First Nations (e.g., food fishery, individual sales, commercial fishery) 	<ul style="list-style-type: none"> • Promote bear awareness and safety training to minimize bear-human interactions while harvesting and preparing fish in bear country. Audience should clearly understand how to prevent interactions with bears • For site-specific commercial fish harvest or fish preparation (e.g., smokehouses) operations prepare, implement and monitor a site specific Bear-human Conflict Management Plan. Adaptive management approach required.
	Park Lands (e.g., Provincial Parks)	<ul style="list-style-type: none"> • BC Parks 	<ul style="list-style-type: none"> • Prepare, implement and monitor a Park specific or SRMP area specific Bear-human Conflict Management Plan. Adaptive management approach required.

Objective	Land Use/Activity	Example Target Groups	Strategies/Best Management Practices
	Other recreation lands (e.g., recreation sites, trails, recreation reserves) ¹	<ul style="list-style-type: none"> • FLNRO - Recreation Sites and Trails BC 	<ul style="list-style-type: none"> • Prepare, implement and monitor a Recreation Site specific or SRMP area specific Bear-human Conflict Management Plan. Adaptive management approach required. Note: some Recreation Sites will not be suitable for use as a user maintained site based on risks of bear-human interactions.

¹ Sites may be managed in partnership agreements with recreation groups, community organizations, First Nations, private citizens, local governments and forest companies.

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Videos

- Staying Safe in Bear Country: a behavioral-based approach to reducing risk.* 2001. Safety in Bear Country Society. Produced by Wild Eye Productions, Atlin, B.C. in association with AV Action Yukon Ltd.
- Working in Bear Country: for industrial managers, supervisors and workers.* 2001. Safety in Bear Country Society. Produced by Wild Eye Productions, Atlin, B.C. in association with AV Action Yukon Ltd.
- Living in Bear Country.* 2005. Safety in Bear Country Society. Produced by Wild Eye Productions, Atlin, B.C. in association with AV Action Yukon Ltd.

DVDs or videos can be purchased from Distribution Access Ltd.

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Email: sales@distributionaccess.com

Phone: 1-888-440-4640

Websites

B.C. Ministry of Forests, Lands and Natural Resource Operations

<http://www.env.gov.bc.ca/wld/bearsmart>

- Bear Smart brochure
- Bear Smart Community Program background report
- Who's who: know your bears brochure
- Safety guide to bears at your home brochure
- Safety guide to bears in the wild brochure
- Don't feed garbage to bears brochure

B.C. Conservation Foundation Bear Aware program - <http://www.bearaware.bc.ca/>

United States Department of Agriculture Forest Service

<http://www.fs.fed.us/r1/wildlife/igbc>

- IGBC bear resistant certification report: includes information on distributors of bear resistant containers for hiking, insulated cooler, grain and food storage containers, panniers, boxes for storage of food in the front country and equipment for hanging food
- Bear safety information
- Pepper spray information

International Association for Bear Research and Management (IBA)

<http://www.bearbiology.com>

- Descriptions of bear species of the world
- URSUS – scientific journal of the IBA
- International Bear News – IBA newsletter

Haul-All

<http://www.haulall.com>

(click on Containers and then click Bear Proof Containers)

Bear resistant garbage and food storage containers

Margo Supplies

<http://www.margosupplies.com>

- bear proof electric fencing materials
- bear deterrents

Living with Wildlife Foundation

http://www.lwwf.org/Living%20with%20Predators_resource_guides.htm

Living with Predators Resource Guides.

Garcia Machine

<http://www.wildernessdining.com/shopbybrand-garciamachine.html>

Bear resistant canister that can be used for backpacking
