considered in surrogate classification rely on landform characteristics…, Forest Type and riparian inventories." Are these factors that BCTS considered, or a partial list of factors that some surrogates might consider? The Biodiversity Guidebook and the VILUP describe a site series surrogate for use when site series data are unavailable: "*a combination of forest cover and site productivity or site index information"*—was this considered? The list provided seems ad-hoc with no specifics or references to methodology provided, demonstrating lack of familiarity with surrogate types, their costs and benefits.

BCTS (para 4. P.3) states that "*a surrogate ecosystem classification approach was used to attain forested ecosystem representativeness*". However, the response provides no evidence that BCTS assessed representation using a surrogate. An assessment of representation requires a description of the surrogate classes used and rationale. Neither are presented. The following statement notes that "*this approach was used because accurate site series information was not available across the Nahmint SMZ*". This statement seems false. Site series based on TEM is the best possible current information (although of course, improvement may be possible). Such information was available for 99% of the SMZ. The emphasis seems to be on accuracy, with the following sentence confirming that TEM inventories "*were available*", but noting that "*field verification identified misclassifications, making the TEM inventory unsuitable for planning purposes*". TEM is based on field verification. Misclassifications are possible because surveyors may use slightly different cut-off points for site series; however, these misclassifications are often only a single site series (by moisture or richness) apart. Cursory inspection of the TEM site series maps suggests that classification was completed by two different surveyors: meshing is imperfect at the border. Minor inconsistency is not an excuse to ignore the best available data. In our experience, Vegetation Resource Inventory databases includes considerable errors; but BCTS mentions no issue with using them. Another excellent option is to group similar site series until further field assessment can confirm or refine existing definitions. Using existing site series inventory to assess representation seems a minimum requirement. Such assessment is possible, as shown in Appendix 1 of the BCTS response.

The following paragraph 5 (BCTS para 5, p. 3) includes a very unclear sentence: "*OGMA's were selected for structural old growth attributes inherent to varied old forested ecosystems across the range of surrogate ecosystems (landform characteristics, forest cover composition and existing riparian network) present in Nahmint SMZ 13.*" Nowhere are the selection criteria listed: how were structural attributes assessed? what does "*inherent to varied old forested ecosystems*" mean? why is riparian network included (it is a management unit, not an ecological unit)? how do "forest cover composition" and "forest type" differ? where is the assessment showing how OGMAs were spread across landforms? The lack of evidence suggests that these criteria were used on an ad-hoc basis at best. The following sentence also claims "*surrogate representativeness along an elevational gradient*", but where is the assessment by defined surrogate groups? Inspection of the rationale for each OGMA suggests that most were constrained to maintain wildlife and riparian values—no attempt to represent ecosystems is apparent anywhere. The final sentence (p. 4) restates that the "*use of surrogates was a practical approach across a landscape 20,000ha in size where acquiring accurate spatial ecosystem data sets is challenging and with limited detailed site series field information*." Again, TEM site series exists and represents the best available data.

BCTS (para 2, p. 4) notes the lack of legal targets by site series/surrogates. This is incorrect: the Old Growth Order sets targets by variant; the HLPO requires representation by site series or surrogate; and the Biodiversity Guidebook clarifies representation. The Biodiversity Guidebook provides

adequate guidance that most site series should be retained in proportion to their occurrence, with rare site series retained more.

Addressing wildlife objectives does not cover biodiversity objectives. Representation targets are not an alternative to "other values and attributes": they are additive. Good conservation design builds on mapped high-value and constrained ecosystems to include representation and connectivity. The VILUP clearly notes that biodiversity, old growth and wildlife values are primary in this watershed. Forest professionals have been provided with a clear statement of intent for old forest representation and a well-described methodology to design retention to meet this intent.

BCTS (para 3, p. 4) describes protocols for site-level management of attributes and rare ecosystems through wildlife tree retention areas (the LUP Guidebook notes that areas > 2ha can count towards landscape targets). In practice, in-stand retention is ineffective unless retention is much higher than the legal requirements and retained for longer than the required single rotation. Current scientific understanding, based on hundreds of studies, is that low levels of retention (up to 15 - 20%) are unlikely to maintain values for organisms that depend on old forest habitat.[24] Stand-level retention augments rather than replaces landscape-scale retention.

BCTS summarises their argument (para 4, p. 4) by claiming that a surrogate was used to address 1) lack of site series data and 2) lack of clear targets. However, site series data are not lacking, and clear targets are easily determined from VILUP intent and the Biodiversity Guidebook. No surrogate will perform as well as TEM site series data at identifying the full range of ecosystems to represent. In addition, there is no evidence that thoughtfully-designed surrogates were used.

BCTS notes (para 5, p. 4) that planning was consistent with the policy of LUP Guidebook and legal objectives of the Old Growth Order. However, the HLPO supersedes both.

Overall, the BCTS response suggests either ad-hoc methodology or post-hoc rationalization without any evidence to support the claims.

Effectiveness of OGMAs at Achieving Representation

The BCTS response includes the first analysis of site series representation presented in any Nahmint planning document, demonstrating that such an analysis is possible with the current data. The response claims that site series, including rare ecosystems, are well represented. We analysed representation by site series and by a variety of surrogates to assess this claim and present our findings in this section.

Methods

We summarised the amount of old forest (defined as age class 8 and 9; i.e., > 140 years) within OGMAs, stratified by BEC Variant, site series and site series surrogates for the Nahmint landscape unit, excluding Maa-Nulth Treaty lands. The forested area—which determines the target area for OGMAs given percent representation targets—was defined by the Forest Management Land Base (FMLB, from VRI), however where ecological units did not cover the extent of the FMLB, the subset of the FMLB with coverage was used for calculations. Representation was calculated for the following units:

- BEC Variant (TEM data)
- BEC Variant and Site Series (TEM data)
- BEC Variant and Site Series Group (TEM data)

- Landform (AdaptWest data): valley, steep-slope, headwaters, ridge/peak and hill
- Site Position (VRI data): flat, toe slope, lower-slope, mid-slope, upper-slope, crest
- Leading Species and Site Index Class (VRI data): Leading species groups were based on the first two species used to identify a forested polygon in VRI; sometimes just one species dominated (Table 4). Leading species can change after harvest (and records of pre-harvest species are not retained); hence leading species are not ideal surrogates. Site index classes discriminated poor and very poor (0 to 20) from moderate (20 to 26) and from high (26 to 30) productivity. Site index was calculated as the average of site indices for Amabilis fir, Western Redcedar and Western Hemlock, where site indices are based on BEC (i.e., SIBEC).

Table 4. Species groups based on the first two species described in the stand composition label in VRI. Groups comprising less than 50 ha were not included.

Species groups
Amabilis-Cedar, Amabilis-Hemlock
Cedar-Amabilis, Cedar-Douglas-fir, Cedar-Hemlock
Douglas-fir-Only
Hemlock-Amabilis, Hemlock-Cedar, Hemlock-Douglas-fir
Hemlock-Yellow-Cedar, Yellow-Cedar-Hemlock
Mountain-Hemlock-Amabilis, Mountain-Hemlock-Yellow-Cedar

Data came primarily from the Province of BC (Table 1, above). We compiled vector shapefiles and raster grids in QGIS and then converted all data to one-hectare (approx.) raster resolution for analysis in SELES. We extracted several variables from the Vegetation Resource Inventory.

We assess the area within OGMAs as a proportion of the FMLB in the Nahmint Landscape Unit excluding Treaty Lands. Ideally, retention should be assessed over the entire watershed. Because the Treaty Lands have already been harvested, there is reduced opportunity for First Nations to maintain sufficient old forest within the area; maintaining biodiversity and old growth values across the landscape means retaining sufficient no matter what jurisdiction.

Definition of Old Growth

Lower productivity old growth is often misclassified as age class 8 (140 – 250 years) rather than 9 (>250 years). Examining the age-class distribution listed in the Vegetation Resources Inventory in the Nahmint suggests such misclassification has occurred because more of MHmm1 is classed as age class 8, followed by CWHvm2 and then CWHvm1 (i.e., the lower productivity variants, with longer disturbance return intervals, have more area likely misclassified (Figure 2).

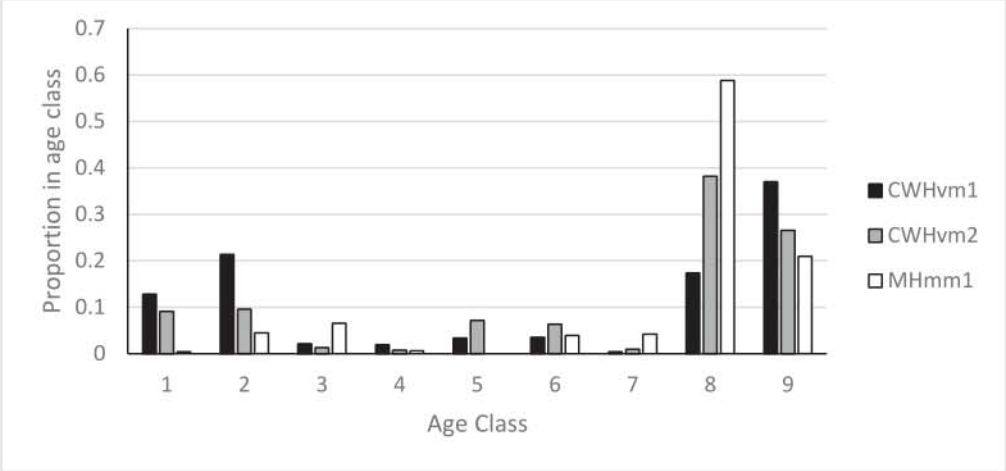

Figure 2. Age class distribution for the three main BEC variants in the Nahmint watershed.

Because of this likely misclassification, we combined age classes 8 and 9 in considering the amount of old forest included in OGMAs. Implementation policy for the Old Growth Order stipulates that including forest younger than age class 9 requires demonstration of equivalent or better value for biodiversity. In the Nahmint, including age class 8 in OGMAs seems eminently reasonable given the classification issues, but including younger age classes is not justifiable on similar grounds, hence requiring demonstration by other means.

When age class 8 and 9 are combined, the distribution demonstrates a disturbance return interval that is longer than that included in the Biodiversity Guidebook for all variants. There are uncertainties in this assessment—the Nahmint is a small unit to examine disturbance return; fire control may have contributed to the lack of disturbance—but particularly with "regrowing" the harvested area, the data are consistent with the more recent estimates for longer disturbance intervals in these variants.[25]

Variant

The amount of old forest (age class 8 and 9) within OGMAs is lower in each of the three main variants than the non-spatial target given in the Old Growth Order (Table 5). The amount of forest described as age class 9 in each variant is considerably lower (although much of the age class 8, particularly within the CWHvm2 and MHmm1 is likely misclassified).

Table 5. Representation within OGMAs of all forest and of old forest (age class 8 + 9 and 9 only) by BEC variant. Cells are coloured to show deficit: green are at or above the target (19% for CWH, 28% for MH); yellow are above 75% of target; orange are 51 – 75%; red are 50% or less.

BEC Variant	Crown Forest (Ha)	OGMA all age (%)	OGMA old forest (age 8 + 9; %)	OGMA old forest (age 9; %)
CWHvm1	7,645	19	17	13
CWHvm2	5,561	17	14	6
MHmm1	1,515	16	16	4

There is sufficient age class 9 within each variant, some in large patches, to boost the representation of known old forest (% classified as > 250 years: CWHvm1 = 37%; CWHvm2 = 27%; MHmm1 = 21%; Figure 3).

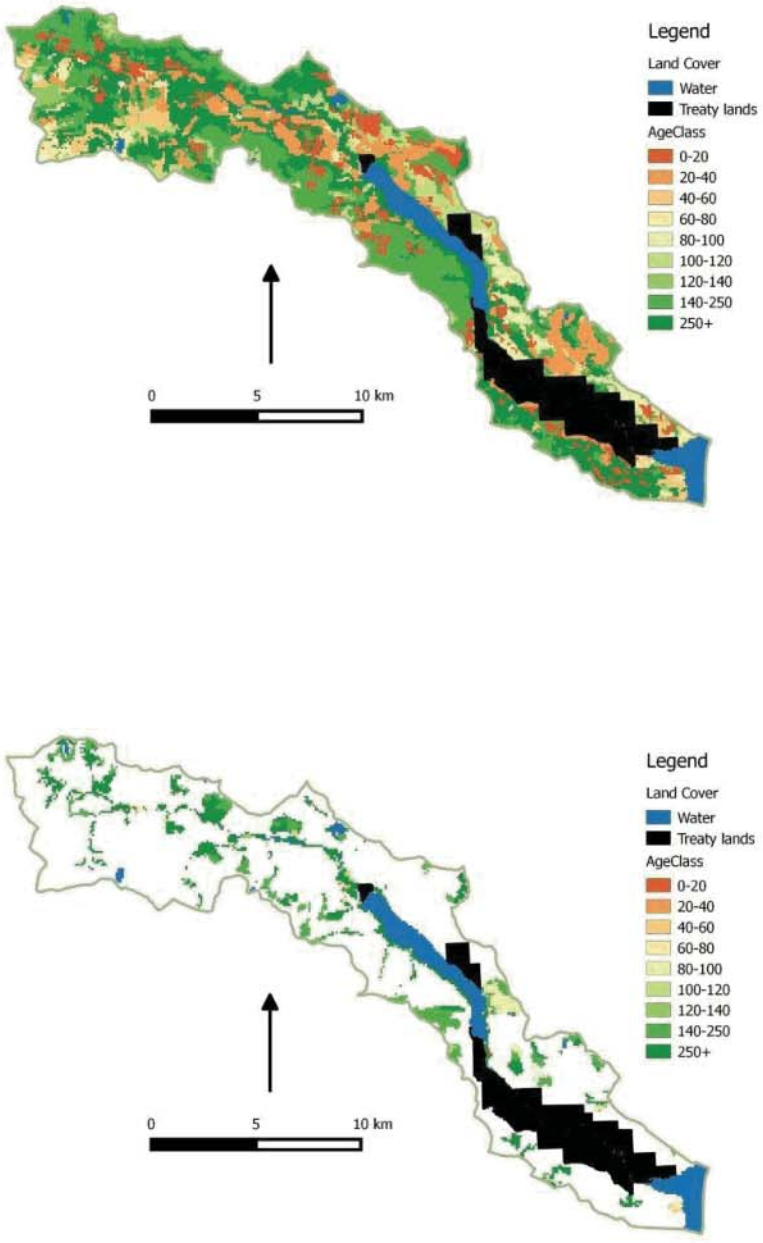

Figure 3. Age class over the Nahmint SMZ and within the draft OGMAs.

Site Series

The amount of old forest (age class 8 and 9) within OGMAs is lower than the non-spatial target in more than half of the site series, with eight less than half the target (Table 6). While some "rare" site series (covering < 2% of the area) are well represented, particularly the rich ecosystems of the CWHvm1 that

are captured by WHAs and UWRs, others are not, including dry ecosystems of the CWH and rich ecosystems within the MHmm1. The 04 site series within both the CWHvm1 and vm2 supports more Douglas-fir than other site series; it is poorly represented in both variants.

Table 6. Representation within OGMAs of all forest and of old forest (age class 8 and 9) by site series within BEC variant. Cells are coloured to show deficit: green are at or above the target (19% for CWH, 28% for MH); yellow are above 75% of target; orange are 51 – 75%; red are 50% or less.

BEC Variant	Site Series	Crown Forest (Ha)	OGMA all age classes (%)	OGMA old forest (age class 8 + 9; %)
CWHvm1	01	2,194*	0.13	0.12
CWHvm1	02	**27**	0.04	0.04
CWHvm1	03	1,062	0.21	0.16
CWHvm1	04	1,300	0.15	0.11
CWHvm1	05	1,687	0.23	0.20
CWHvm1	06	433	0.30	0.28
CWHvm1	07	456	0.22	0.18
CWHvm1	08	**122**	0.51	0.51
CWHvm1	09	**119**	0.37	0.32
CWHvm1	10	**56**	0.67	0.51
CWHvm1	14	**7**	-	-
CWHvm2	01	1,428	0.16	0.14
CWHvm2	02	**51**	0.22	0.02
CWHvm2	03	1,035	0.11	0.08
CWHvm2	04	999	0.13	0.07
CWHvm2	05	938	0.26	0.25
CWHvm2	06	419	0.20	0.18
CWHvm2	07	355	0.21	0.20
CWHvm2	08	**69**	0.22	0.22
CWHvm2	09	**46**	0.13	0.13
MHmm1	01	314	0.30	0.29
MHmm1	02	534	0.11	0.10
MHmm1	03	**244**	0.05	0.05
MHmm1	04	**74**	0.49	0.49
MHmm1	05	**58**	0.04	0.04
MHmm1	06	**70**	0.12	0.12

* Site series covering < 2% of the area in bold.

Site Series Surrogate: Site Series Group

Combining site series into groups based on soil moisture and nutrients (using the edaphic grid in Land Management Handbook 28; Table 7) highlights patterns in representation.

Table 7. Variants and site series used to define site series groups

Site Series Group	CWHvm1	CWHvm2	MHmm1
Dry (poor and rich)	02, 03, 04	02, 03, 04	02
Mesic (fresh to moist)	01, 06	01, 06, 09	01, 04, 06
Rich	05, 07, 08	05, 07, 08	03
Wet	09, 10, 11, 13, 14	10, 11	08, 09

The rich and floodplain site series in the CWHvm1 and vm2 are well represented (Table 8), likely because these mostly valley-bottom ecosystems are already included in WHAs and UWRs as well as riparian reserve zones. Dry ecosystems within all variants are poorly represented (the dry group in the CWHvm1 and vm2 includes site series 04, which is rich as well as dry and includes Douglas-fir). While mesic ecosystems in the MHmm1 are well represented, other ecosystems in the MHmm1 are not.

Table 7. Representation within OGMAs of all forest and of old forest (age class 8 and 9) by site series groups within BEC variant. Cells are coloured to show deficit: green are at or above the target (19% for CWH, 28% for MH); yellow are above 75%; orange are 51 – 75%; red are 50% or less.

Variant	Site series group	Crown Forest (ha)	OGMA (all age; %)	OGMA (age class 8 + 9; %)
CWHvm1	Dry	2,388	0.17	0.13
CWHvm1	Mesic	2,627	0.16	0.15
CWHvm1	Rich	2,265	0.24	0.21
CWHvm1	Floodplain	182	0.45	0.37
CWHvm2	Dry	2,086	0.12	0.07
CWHvm2	Mesic	1,893	0.16	0.15
CWHvm2	Rich	1,361	0.24	0.24
MHmm1	Dry	534	0.11	0.10
MHmm1	Mesic	457	0.30	0.29
MHmm1	Rich	303	0.05	0.05

Site Series Surrogate: Forest Type and Site Index

The Biodiversity Guidebook and VILUP recommend a surrogate based on forest type and site index when site series are unavailable (Figure 4). A combination of forest type, based on leading tree species, and site index (data extracted from the Vegetation Resources Inventory) shows that representation varies across these surrogates (Table 9). Western redcedar stands are well represented in OGMAs, but Douglas-fir-leading forests, and western and mountain hemlock-leading stands are not. There is no consistent pattern with productivity.

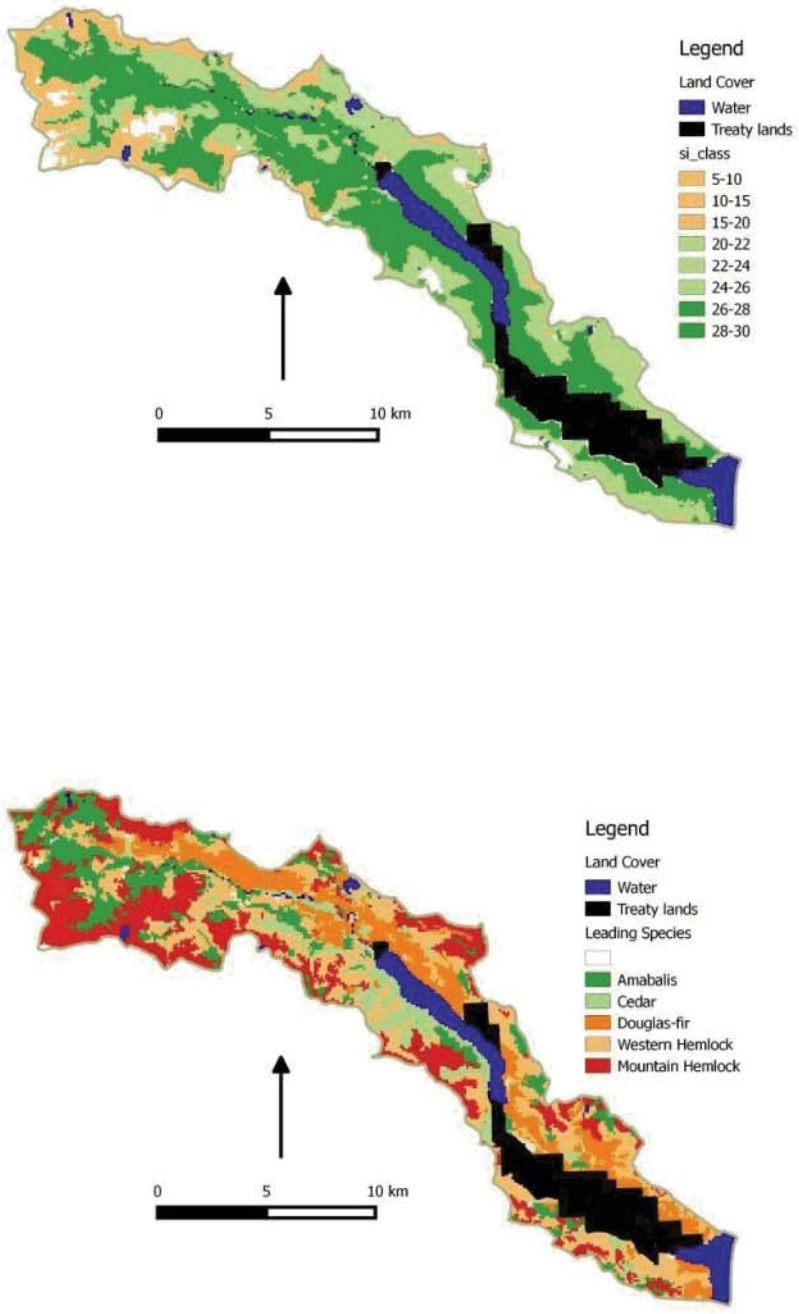

Figure 4. Site index groups and leading species over the Nahmint SMZ.

Table 8. Representation within OGMAs of old forest (age class 8 and 9) by forest type (leading species) and site index. Cells are coloured to show deficit: green are at or above the target (19% for all as no division by zone in this analysis); yellow are above 75%; orange are 51 – 75%; red are 50% or less.

Species	0-20	20-26	26-30
BC*	-	-	0.17
BH	0.21	0.14	0.28
CB	-	-	0.25
CF	-	-	0.31
CH	-	-	0.25
F	-	0.11	0.17
HB	0.07	0.07	0.08
HC	-	0.25	0.10
HF	-	0.12	0.13
HMB	0.07	-	-
HMY	0.03	0.14	-
HY	0.07	0.14	0.26
YH	-	0.09	-

* B = amabilis fir, C = western redcedar, F = Douglas-fir, H = western hemlock, HM = mountain hemlock, Y = yellow cedar

Site Series Surrogate: Landforms

Enduring landform features within BEC variant also show varying representation of age class 8 and 9 forest, with good representation on flat areas (floodplains) and lower slopes, and poor representation of mid and upper slope CWHvm1 and upper slope CWHvm2 and MHmm1 (Table 10). Toe slopes cover a very small area (13 ha), none of which is in OGMAs; crests also cover a very small area (9 ha), all of which is included in OGMAs.

Table 9. Representation within OGMAs of old forest (age class 8 and 9) by forest type (leading species) and site index. Cells are coloured to show deficit: green are at or above the target (19% for all as no division by zone in this analysis); yellow are above 75% of target; orange are 51 – 75%; red are 50% or less.

BEC Variant	Landform	Crown Forest (Ha)	OGMA Old Forest (age class 8 + 9; %)
CWHvm1	Flat	159	0.42
CWHvm1	Lower slope	1,195	0.38
CWHvm1	Mid slope	5,644	0.13
CWHvm1	Upper slope	295	0.09
CWHvm2	Lower slope	272	0.23
CWHvm2	Mid slope	3,701	0.14
CWHvm2	Upper slope	1,401	0.12
MHmm1	Lower slope	36	0.20
MHmm1	Mid slope	714	0.17
MHmm1	Upper slope	760	0.10

Continual Improvement

The BCTS response ends with a commitment to using new information. Current science includes much relevant information to assist professionals managing to maintain biodiversity values:

1) Natural disturbance estimates for the CWHvm1 and vm2 have changed since the Biodiversity Guidebook meaning that the target amounts of old forest are severely underestimated.
2) Estimates for the amount of stand-level retention needed to maintain old forest values have increased.
3) Climate change research has highlighted the increased importance of connectivity to increase resilience.
4) Climate change research has demonstrated that old forests are more resilient and provide refugia when disturbance regimes shift.

Current State of Old Forest

There is currently sufficient forest classified as old (age class 9) on the landscape to add to the OGMA network and ensure representation of most site series (Table 11). Only the CWHvm1/02, CWHvm1/14, CWHvm2/02, CWHvm2/03, MHmm1/03, and MHmm1/05 have insufficient area of age class 9; for some of these at least, age class 8 is likely misclassified. Only the CWHvm2/02 has insufficient area in either age class 8 or 9 to meet representation.

Table 10. Representation within OGMAs, and current amount of old forest (age class 8 and 9) by site series. Cells are coloured to show deficit: green are at or above the target (19% CWH, 28% for MH); yellow are above 75% of target; orange are 51 – 75%; red are 50% or less.

Variant	Site Series	Crown Forest (Ha)	OGMA old forest (age class 8 + 9; %)	Existing old forest (age class 9; %)	Existing old forest (age class 8 + 9; %)
CWHvm1	01	2,194	0.12	0.26	0.47
CWHvm1	02	27	0.04	0.04	0.46
CWHvm1	03	1,062	0.16	0.29	0.53
CWHvm1	04	1,300	0.11	0.35	0.53
CWHvm1	05	1,687	0.20	0.49	0.60
CWHvm1	06	433	0.28	0.51	0.69
CWHvm1	07	456	0.18	0.46	0.60
CWHvm1	08	122	0.51	0.71	0.76
CWHvm1	09	119	0.32	0.42	0.42
CWHvm1	10	56	0.51	0.60	0.64
CWHvm1	14	7	-	-	-
CWHvm2	01	1,428	0.14	0.20	0.62
CWHvm2	02	51	0.02	-	0.06
CWHvm2	03	1,035	0.08	0.16	0.56
CWHvm2	04	999	0.07	0.30	0.55
CWHvm2	05	938	0.25	0.36	0.81
CWHvm2	06	419	0.18	0.39	0.90
CWHvm2	07	355	0.20	0.32	0.67

CWHvm2	08	69	0.22	0.54	0.66
CWHvm2	09	46	0.13	0.29	0.60
MHmm1	01	314	0.29	0.23	0.90
MHmm1	02	534	0.10	0.21	0.76
MHmm1	03	244	0.05	0.17	0.64
MHmm1	04	74	0.49	0.29	0.92
MHmm1	05	58	0.04	0.09	1.00
MHmm1	06	70	0.12	0.21	0.87

Summary

Based on review of available documents and data, planning in the Nahmint seems inconsistent with the intent of the VILUP and with the legal objectives in the HLPO.

1. There is no evidence that planning in the Nahmint SMZ considered ecosystem representation by site series/surrogate as required by the HLPO.
    a. Neither the draft LUP nor draft SRMP described surrogates nor mention assessment by site series or surrogate.
    b. The BCTS response states that representation was assessed using a surrogate, but does not provide a systematic surrogate classification or provide evidence that analysis was completed as part of planning. Information exists to create surrogates from tree species and productivity as well as from landform and site series.
2. Our effectiveness assessment concludes that the current draft OGMAs do not represent site series or surrogates—based on three different surrogate measures—equally.
    a. Douglas-fir ecosystems (CWHvm1/04, CWHvm2/04, F and HF moderate and high productivity) seem poorly represented, counter to the specific notation for retention in the VILUP.
    b. OGMAs improved the representation of mesic, but not dry or wet MHmm1 ecosystems.
3. The draft OGMAs do not include target amounts of old forest (age class 8 + 9) by variant.
4. The 2017 FSP does not include a result for a target level of mature seral forest (exclusive of old forest) as per the HLPO.
5. There is no demonstration of equivalency of younger forest included in draft OGMAs.
6. The 2017 FSP only includes the HLPO old forest objective under rare ecosystems.

Planning documents do not use best-available information.

1. TEM site series data, representing best-available information, exist for 99% of the Nahmint, but were not assessed until the BCTS response. No valid rationale has been provided for why these data are worse than VRI.
2. New estimates of disturbance return interval exist, but have not been incorporated.

The legal objectives are unlikely to achieve the intent of the VILUP.

- Meeting representation objectives means that the minimum levels of retention need to be met or exceeded in all ecosystems.

- The natural disturbance return interval estimate is too low, so that the amount of old forest expected naturally—the basis for assessing risk to biodiversity and old forest values—is severely underestimated.[26]
- Parks have been removed from the estimate of the amount of old forest needed, yet there are no parks in the Nahmint.
- Science is coming to consensus that maintaining low risk to biodiversity likely requires at least half of the total area retained.[27]
- Natural disturbance will continue within OGMAs, so that the amount of old forest will be lower than the area retained (other constrained areas provide a little more).
- Landscape and stand-level retention is sometimes double-counted (e.g., riparian reserve zones).

Planning for OGMAs seems to have been ad-hoc, based on existing constrained areas and aiming to achieve the bare minimum required legally rather than following good conservation design. Professional forester managers are responsible for filling the gap between legal objectives and intent. Our assessment suggests that the Nahmint demonstrates failure of professional reliance at maintaining publicly-agreed-upon values and priorities.

Literature Cited and Notes

[1] Forest Planning and Practices Regulation 9: "*The objective set by government for wildlife and biodiversity at the landscape level is, without unduly reducing the supply of timber from British Columbia's forests and to the extent practicable, to design areas on which timber harvesting is to be carried out that resemble, both spatially and temporally, the patterns of natural disturbance that occur within the landscape*." [en. B.C. Reg. 580/2004, s. 8.] http://www.bclaws.ca/Recon/document/ID/freeside/14_2004#section9

[2] "Current government policy has set a limit of 1% to the allowable impact to short-term harvest levels that may be incurred as a result of implementing measures for Identified Wildlife" p.3 IWMS Procedures

[3] Land Use Objectives Regulation 2(2)(b): "*the importance of the land use objective or amendment outweighs any adverse impact on opportunities for timber harvesting or forage use*" http://www.bclaws.ca/civix/document/id/lc/statreg/357_2005

[4] We didn't focus on the visual objective, so may have missed it or missed a notice that it was rescinded.

[5] The biodiversity guidebook as originally drafted by a team of BC's senior ecologists did not include emphasis options; these were added later to reduce the impact on timber supply (at that point, several of the authors removed themselves from the process considering that the science had been muddied). Different options cannot all represent "*the minimum requirements considered to have a good probability of maintain biodiversity within the landscape unit*". Authors of the original draft of the guidebook are unclear about whether they intended the high or intermediate options as the minimum requirements, although the wording in Appendix 4 (which seems unchanged by the politics) suggests the intermediate option was the original calculation (Jim Pojar leans towards the 50% option while Andy MacKinnon leans towards 75%; personal communication).

[6] Targets for low biodiversity emphasis options reduce the targets by 2/3 from the Biodiversity Guidebook targets.

[7] Daniels, L. D., and R. W. Gray. 2006. Disturbance regimes in coastal British Columbia. *Journal of Ecosystems and Management* 7.2 (2006).

[8] Daniels and Gray 2006

[9] E.g., Hoctor, T.S., M.H. Carr, P.D. Zwick 2000. Identifying a linked reserve system using a regional landscape approach: the Florida Ecological Network. Conservation Biology 14:984-1000; Noss R.F., C. Carroll, K. Vance-Borland, G. Wuerthner. 2002. A multicriteria assessment of the irreplaceability and vulnerability of sites in the Greater Yellowstone Ecosystem. Conservation Biology 16:895-908. Noss R.F. 1992. The Wildlands Project: Landscape conservation strategy. Wild Earth Special Issue 10 – 25. http://www.environment.gov.au/biodiversity/publications/research-priorities/section-f.html.

[10] Noss, R. 1987. Protecting natural areas in fragmented landscapes. Natural Areas Journal 7:2-13.

[11] See the biogeoclimatic website at: http://www.for.gov.bc.ca/hre/becweb/index.html

[12] Lindenmayer, D.B. and Luck, G. 2005. Synthesis: threshold in conservation and management. Biological Conservation 124:351-354.

[13] Based on analyses for the North Coast

[14] Price K, A Roburn, and A MacKinnon. 2009. Ecosystem-based management in the Great Bear Rainforest. *Forest Ecology and Management* 258: 495-503.

[15] Price K. 2008. Using site series surrogates to calculate ecosystem representation. Report to the Coast Information Team.

[16] Huggard D. 2001. Grouping site series based on indicator species. Appendix 1 of Ecological representation in Weyerhaeuser's non-timber landbase. Report to Weyerhaeuser Coastal BC Adaptive Management Working Group.

[17] Price K. 2008. Using site series surrogates to calculate ecosystem representation. Report to the Coast Information Team.

[18] Huggard D. 2001. Grouping site series based on indicator species. Appendix 1 of Ecological representation in Weyerhaeuser's non-timber landbase. Report to Weyerhaeuser Coastal BC Adaptive Management Working Group.

[19] AdaptWest: https://adaptwest.databasin.org/pages/adaptwest-landfacets

[20] Daust D. Evaluation of enduring features for use in Timber Supply Analysis. Ongoing work.

[21] Based on analyses provided by BCTS in their response to CEB.

[22] The LUP and SRMP both state that they considered existing forest ecosystem networks. The SRMP notes that FENs were "*temporary measures to maintain connectivity*" prior to completion of landscape unit planning, implying that there was no need to consider FEN location as best available information. It was not possible to compare FENs to the OGMAs, however, FENs in most regions have been defined to capture important connected ecosystems—increasingly important with climate change—and potentially representing best available information.

[23] Price K. 2008. Using site series surrogates to calculate ecosystem representation. Report to the Coast Information Team.

[24] Several meta-analyses have been completed: Rosenvald, R, and A Lohmus. 2008. For what, when, and where is green-tree retention better than clear-cutting? A review of the biodiversity aspects. *Forest Ecology and Management* 255: 1-15. Vanderwel, M C., J R. Malcolm, and S C. Mills. 2007. A meta-analysis of bird responses to uniform partial harvesting across North America. *Conservation Biology* 21.5: 1230-1240. Beese, W.J. 2013. Variable retention harvesting in North Pacific temperature rainforests. In North Pacific temperate rainforests: ecology and conservation. Edited by G.H. Orians and J.W. Schoen. University of Washington Press.

[25] Daniels, L. D., and R. W. Gray. 2006. Disturbance regimes in coastal British Columbia. *Journal of Ecosystems and Management* 7(2)

[26] Daniels, L. D., and R. W. Gray. 2006. Disturbance regimes in coastal British Columbia. *Journal of Ecosystems and Management* 7(2)

[27] Noss, R. F., Dobson, A. P., Baldwin, R., Beier, P., Davis, C. R., Dellasala, D. A., ... & Reining, C. 2012. Bolder thinking for conservation. *Conservation Biology*, *26*(1), 1-4.

BEC Variant	Site Series	Crown Forest I	Target %
CWHvm1	00	142.5	19.0
met in	01	2246.7	19.0
OGMA and P	02	24.6	19.0
OGMA,P,NC	03	1064.6	19.0
THLB req	04	1309.9	19.0
	05	1637.0	19.0
	06	470.1	19.0
	07	424.9	19.0
	08	120.8	19.0
	09	115.5	19.0
	10	48.7	19.0
	11	0.0	19.0
	14	7.2	19.0
CWHvm1 Total		7612.6	
CWHvm2	00	164.5	19.0
	01	1517.2	19.0
	02	52.9	19.0
	03	1114.6	19.0
	04	1016.7	19.0
	05	939.2	19.0
	06	438.0	19.0
	07	351.0	19.0
	08	67.3	19.0
	09	52.0	19.0
CWHvm2 Total		5713.5	

CWHxm2	00	1.8	13.0
	01	13.9	13.0
	04	4.4	13.0
CWHxm2 Total		20.1	
MHmm1	00	226.9	28.0
	01	323.5	28.0
	02	529.8	28.0
	03	216.2	28.0
	04	75.4	28.0
	05	69.7	28.0
	06	68.4	28.0
	09	0.0	28.0
MHmm1 Total		1510.0	
No TEM Data	No Site Series	189.7	0.0
No TEM Data Total		189.7	0.0
Grand Totals		15033.4	

Site Series Representation < 2% of the Crown Productive For

Data Used
BCGW Layers(June 28, 2018):
WHSE_TERRESTRIAL_ECOLOGY.STE_TEM_20K_POLYS_SVW
WHSE_FOREST_VEGETATION.VEG_COMP_LYR_R1_POLY
WHSE_WILDLIFE_MANAGEMENT.WCP_UNGULATE_WINTER_R
WHSE_WILDLIFE_MANAGEMENT.WCP_WILDLIFE_HABITAT_A
WHSE_LAND_USE_PLANNING.RMP_PLAN_LEGAL_POLY_SVW
BCTS Layers:
Draft OGMA`s

Note: 4.8% of the Crown Forest Landbase has no TEM data (W

Target (ha)	Total OGMA (ha) =H+L+P	target minus OGMA
27.1	18.9	8.2
426.9	234.8	192.1
4.7	2.3	2.3
202.3	183.9	18.4
248.9	156.8	92.1
311.0	368.3	-57.3
89.3	98.2	-8.9
80.7	118.2	-37.5
23.0	60.1	-37.2
21.9	50.0	-28.1
9.3	36.9	-27.7
0.0	0.0	0.0
1.4	0.4	1.0
1446.4	1329.0	

31.3	3.5	27.8
288.3	239.2	49.1
10.0	12.3	-2.2
211.8	133.6	78.2
193.2	126.3	66.9
178.4	246.9	-68.5
83.2	80.1	3.1
66.7	74.7	-8.0
12.8	13.0	-0.2
9.9	10.4	-0.6
1085.6	939.8	

0.2	0.0	0.2
1.8	0.0	1.8
0.6	0.0	0.6
2.6	0.0	

63.5	3.4	60.2
90.6	84.4	6.2
148.3	57.0	91.4
60.5	14.1	46.4
21.1	35.9	-14.8
19.5	3.3	16.3
19.1	5.9	13.3
0.0	0.0	0.0
422.8	203.8	

0.0	11.4	
0.0	11.4	

2954.7	2484.0	

'est - Shown in Red

ANGE_SP
REA_POLY

Vhere Site Series = 00 or where there is No TEM data)

Target remaining outside OGMAs	Total Other Protected - WHA,UWR (ha) = I+M+Q	Old Growth - Age Class 9 in OGMA (ha)
8.2	3.3	14.6
192.1	23.6	160.8
2.3	0.0	1.5
18.4	16.7	79.1
92.1	4.3	64.6
0.0	45.3	282.1
0.0	7.6	81.1
0.0	4.1	84.7
0.0	1.3	59.2
0.0	41.9	40.8
0.0	7.4	27.2
0.0	0.0	0.0
1.0	0.1	0.4
	155.7	896.1

27.8	0.0	2.2
49.1	3.2	67.8
0.0	0.3	1.0
78.6	4.5	36.4
66.9	0.0	34.4
0.0	5.4	95.4
3.1	0.0	10.1
0.0	2.9	35.7
0.0	0.0	12.6
0.0	0.0	0.0
	16.3	295.5

0.2	0.0	0.0
1.8	0.0	0.0
0.6	0.0	0.0
	0.0	0.0

60.2	0.0	0.0
6.2	0.0	14.2
91.4	1.2	18.7
46.4	0.0	3.0
0.0	0.0	1.2
16.3	0.0	3.2
13.3	0.0	1.1
0.0	0.0	0.0
	1.2	41.4

	0.0	5.2
	0.0	5.2

	173.2	1238.1

Old Growth - Age Class 9 in Other Protected - WHA,UWR (ha)	Target Remaining minus old in OGMA and Other Protected
3.1	9.4
16.2	249.9
0.0	3.2
9.2	114.0
0.1	184.2
32.5	0.0
3.8	4.5
3.0	Target met
1.3	Target met
3.6	Target met
3.1	Target met
0.0	Target met
0.1	0.9
76.0	

0.0	29.1
1.2	219.4
0.0	9.0
0.0	175.4
0.0	158.8
1.6	81.5
0.0	73.1
0.7	30.3
0.0	0.2
0.0	9.9
3.4	

0.0	0.2
0.0	1.8
0.0	0.6
0.0	

0.0	63.5
0.0	76.4
0.0	129.7
0.0	57.5
0.0	19.9
0.0	16.4
0.0	18.0
0.0	0.0
0.0	

0.0	
0.0	

79.4	

Protected Forest Breakdown By E

Remaining Old Growth - Age Class 9 in THLB (ha)	Remaining Old Growth - Age Class 9 in Non Contributing (ha)	Remaining Target minus NC old
4.4	23.7	Target met
301.8	87.5	162.4
0.2	0.0	3.2
161.4	48.6	65.3
315.2	47.8	136.4
286.4	222.0	Target met
76.6	56.3	Target met
45.2	56.4	n/a
8.5	12.2	n/a
1.8	0.0	n/a
0.4	0.6	n/a
0.0	0.0	n/a
0.1	0.0	0.9
1201.9	555.0	

7.6	28.8	0.3
106.2	129.4	89.9
0.8	0.0	9.0
61.7	83.2	92.2
129.7	137.0	21.8
140.0	107.6	Target met
47.5	107.6	Target met
12.3	47.8	Target met
8.7	10.5	Target met
0.9	10.6	Target met
515.4	662.4	

0.0	0.0	0.2
0.0	0.0	1.8
0.0	0.0	0.6
0.0	0.0	

1.3	25.6	38.0
17.0	43.0	33.3
27.3	72.3	57.4
2.0	28.4	29.1
7.9	7.4	12.5
0.2	11.6	4.8
0.0	12.5	5.5
0.0	0.0	0.0
55.6	200.8	

23.3	61.8	
23.3	61.8	

1796.2	1480.0	

Biogeoclimatic Variant And Site Series Fo

Target remaining minus old in THLB	OLD THLB used for Target	Mature - Age Class 5 to 8 in OGMA (ha)
n/a	n/a	2.2
Target met	162.4	69.3
3.0	0.2	0.8
Target met	65.3	103.5
Target met	136.4	90.1
n/a	n/a	56.8
n/a	n/a	9.2
n/a	n/a	15.3
n/a	n/a	0.1
n/a	n/a	0.4
n/a	n/a	8.3
n/a	n/a	0.0
0.8	0.1	0.0
		355.8

Target met	0.3	0.8
Target met	89.9	167.1
8.2	0.8	11.1
30.5	61.7	95.7
Target met	21.8	91.0
n/a	n/a	148.7
n/a	n/a	70.0
n/a	n/a	36.4
n/a	n/a	0.2
n/a	n/a	10.4
		631.3

0.2	0.0	0.0
1.8	0.0	0.0
0.6	0.0	0.0
		0.0

36.7	1.3	3.4
16.3	17.0	70.1
30.2	27.3	38.2
27.1	2.0	10.7
4.6	7.9	34.6
4.6	16.4	0.1
5.5	18.0	4.8
0.0	0.0	0.0
		162.0

		6.1
		6.1

		1155.2

r The Nahmint SMZ13

Target remaining minus mature in OGMA	Mature - Age Class 5 to 8 in Other Protected (ha)	Target Remaining minus Mature in other protected
n/a	0.0	n/a
n/a	2.6	n/a
2.2	0.0	2.2
n/a	6.3	n/a
n/a	0.3	n/a
n/a	4.4	n/a
n/a	0.0	n/a
n/a	0.2	n/a
n/a	0.0	n/a
n/a	0.3	n/a
n/a	1.6	n/a
n/a	0.0	n/a
0.8	0.0	0.8
	15.8	

n/a	0.0	n/a
n/a	1.1	n/a
Target Met	0.3	n/a
Target Met	4.5	n/a
n/a	0.0	n/a
n/a	2.1	n/a
n/a	0.0	n/a
n/a	2.2	n/a
n/a	0.0	n/a
n/a	0.0	n/a
	10.3	

0.2	0.0	0.2
1.8	0.0	1.8
0.6	0.0	0.6
	0.0	

33.3	0.0	38.0
Target Met	0.0	33.3
Target Met	1.2	56.3
16.4	0.0	29.1
Target Met	0.0	12.5
4.5	0.0	4.8
0.7	0.0	5.5
	0.0	
	1.2	

	0.0	
	0.0	

	27.2	

Remaining Mature - Age Class 5 to 8 in THLB (ha)	Remaining Mature - Age Class 5 to 8 in Non Contributing (ha)	Target Remaining minus Mature in NC
5.7	25.4	n/a
339.3	178.2	n/a
2.4	11.5	Target Met
168.1	151.8	n/a
166.9	134.5	n/a
109.0	67.7	n/a
49.9	36.5	n/a
22.3	36.1	n/a
0.0	9.1	n/a
0.0	0.0	n/a
0.0	0.1	n/a
0.0	0.0	n/a
0.0	0.0	n/a
863.7	650.9	

9.1	40.1	n/a
367.6	204.9	n/a
5.5	29.1	n/a
185.7	408.0	n/a
216.2	250.4	n/a
102.9	216.0	n/a
87.5	91.6	n/a
12.9	105.2	n/a
2.3	10.6	n/a
1.3	7.9	n/a
990.9	1363.8	

0.0	0.0	0.2
1.8	0.0	1.8
2.4	1.7	Target Met
4.2	1.7	

3.3	96.1	Target met
23.8	138.6	Target Met
19.5	287.1	Target Met
6.1	103.0	Target Met
3.3	12.3	0.2
0.6	54.1	Target Met
0.0	38.4	Target Met
0.0	0.0	
56.7	729.5	

33.1	47.2	
33.1	47.2	

1944.4	2791.4	

Target remaining minus mature in THLB	Mature THLB to meet Target	Immature - Age Class 1 to 4 in OGMA (ha)
		2.2
		4.7
		0.0
		1.2
		2.2
		29.4
		7.9
		18.3
		0.8
		8.8
		1.4
		0.0
		0.0
		77.1

		0.5
		4.3
		0.1
		1.4
		0.9
		2.9
		0.0
		2.6
		0.2
		0.0
		13.0

0.2	0.0	0.0
Target Met	1.8	0.0
Target Met	0.6	0.0
		0.0

		0.0
		0.0
		0.1
		0.3
Target met	0.2	0.0
		0.0
		0.0
		0.0
		0.5

		0.1
		0.1

		90.7

Immature - Age Class 1 to 4 in Other Protected (ha)	Remaining Immature - Age Class 1 to 4 in THLB (ha)
0.3	17.9
4.8	1048.4
0.0	8.3
1.3	299.4
3.8	463.3
8.4	529.0
3.8	135.6
0.9	78.4
0.0	12.3
38.0	21.8
2.6	1.8
0.0	0.0
0.0	6.6
64.0	2622.8

0.0	24.8
0.8	429.3
0.0	4.5
0.0	232.6
0.0	152.3
1.7	98.0
0.0	13.7
0.1	64.9
0.0	5.3
0.0	0.9
2.6	1026.2

0.0	1.8
0.0	9.8
0.0	0.3
0.0	11.9

0.0	17.8
0.0	4.4
0.0	3.9
0.0	7.2
0.0	8.7
0.0	0.0
0.0	2.6
0.0	0.0
0.0	44.6

0.0	10.4
0.0	10.4

66.6	3704.0

THLB in Immature to meet target	Remaining Immature - Age Class 1 to 4 in Non Contributing (ha)
	43.1
	33.1
	0.0
	34.5
	21.1
	9.3
	9.4
	64.2
	17.2
	0.0
	1.5
	0.0
	0.0
	233.6

142.5

	50.7
	37.5
	0.4
	5.4
	4.8
	22.4
	10.0
	30.3
	17.0
	19.9
	198.5

Target Met 0.2	0.0
	0.0
	0.0
	0.0

	79.5
	12.3
	61.7
	55.5
	0.0
	0.0
	9.0
	0.0
	217.9

	2.5
	2.5

	652.4

File: 255-30/ #DCR-37250

Don Hudson
B.C Timber Sales Manager
Campbell River District Office
270 S Dogwood Street
Campbell River, BC, V9W 6Y7

VIA e-mail
don.hudson@gov.bc.ca

November 5, 2018

This letter is to follow-up on the Advisory Letter you received on Oct 22, 2018, regarding Nahmint SMZ 13.

The Advisory Letter has no legal status and only serves to convey the findings of the inspection and the subsequent data analysis that was undertaken by the officer. The Compliance and Enforcement Branch has subsequently also reviewed the information and has further considered the content of the Letter.

The provisions of land use plans and land use orders are not directly enforceable, but rather are implemented by results and strategies in plans such as forest stewardship plans having to be consistent with land use order objectives that have formally been made legally enforceable under legislation. Whether or not a forest stewardship plans meets required content requirements, and whether plans can and should be approved, are decisions that are within the purview of the district manager, and are not issues that are within the mandate of Compliance and Enforcement Branch. Statutory decisions such as plan approvals are not actions that are subject to compliance and enforcement action.

There may be a role for Compliance and Enforcement Branch should a plan holder fail to achieve results and strategies in their plan, or should the holder of a licence be in non-compliance with provisions of a forest stewardship plan.

As a result, we have determined that there is nothing substantive that falls under our purview or that concerns us at this time, but we will contact you further should there be any issues that arise that are within the mandate of the Compliance and Enforcement Branch. Please note that this file will remain open and active, if you have any questions or require clarification, please don't hesitate to contact me.

Thanks,

Ministry of Forests, Lands, Natural Resource Operations and Rural Development
Integrated Resource Operations Division
Compliance and Enforcement, West Coast
Mailing Address: 2217 Mine Road, Port McNeil, BC, V0N 2R0
Tel: 250 956-5083
Website: www.gov.bc.ca/for

Paul Bastarache
Regional Manager – West Coast

Pc: Rhonda Morris – District Manager
Kevin Kriese – Forest Practices Board - Chair

Ministry of Forests, Lands, Natural Resource Operations and Rural Development
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Mailing Address: 2217 Mine Road, Port McNeil, BC, V0N 2R0
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Website: www.gov.bc.ca/for

From: Cotton, Ron FLNR:EX
To: Casavant, Bryce FLNR:EX
Subject: Table for Nahmint
Date: Thursday, October 4, 2018 11:03:50 AM
Attachments: Target assessment Nahmint SMZ13 RC calc.xlsx

Ron Cotton, Lands and Resource Specialist, West Coast Region, FLNRORD
Phone 250-751-7258

-----Original Message-----
From: Casavant, Bryce FLNR:EX
Sent: Thursday, October 4, 2018 9:06 AM
To: Cotton, Ron FLNR:EX
Subject: Re: Building.

I'm here now.

Sent from my iPhone

> On Oct 4, 2018, at 9:03 AM, Cotton, Ron FLNR:EX <Ron.Cotton@gov.bc.ca> wrote:
>
> Yes
>
>
> Ron Cotton, Lands and Resource Specialist, West Coast Region, FLNRORD
> Phone 250-751-7258
>
> -----Original Message-----
> From: Casavant, Bryce FLNR:EX
> Sent: Thursday, October 4, 2018 9:02 AM
> To: Cotton, Ron FLNR:EX
> Subject: Building.
>
> You in moe building?
>
> Sent from my iPhone

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	02	52.9	19.0
	03	1114.6	19.0
	04	1016.7	19.0
	05	939.2	19.0
	06	438.0	19.0
	07	351.0	19.0
	08	67.3	19.0
	09	52.0	19.0
CWHvm2 Total		5713.5	

CWHxm2	00	1.8	13.0
	01	13.9	13.0
	04	4.4	13.0
CWHxm2 Total		20.1	
MHmm1	00	226.9	28.0
	01	323.5	28.0
	02	529.8	28.0
	03	216.2	28.0
	04	75.4	28.0
	05	69.7	28.0
	06	68.4	28.0
	09	0.0	28.0
MHmm1 Total		1510.0	
No TEM Data	No Site Series	189.7	0.0
No TEM Data Total		189.7	0.0
Grand Totals		15033.4	

Site Series Representation < 2% of the Crown Productive For

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WHSE_WILDLIFE_MANAGEMENT.WCP_UNGULATE_WINTER_R
WHSE_WILDLIFE_MANAGEMENT.WCP_WILDLIFE_HABITAT_A
WHSE_LAND_USE_PLANNING.RMP_PLAN_LEGAL_POLY_SVW
BCTS Layers:
Draft OGMA`s

Note: 4.8% of the Crown Forest Landbase has no TEM data (W

Target (ha)	Total OGMA (ha) =H+L+P	target minus OGMA
27.1	18.9	8.2
426.9	234.8	192.1
4.7	2.3	2.3
202.3	183.9	18.4
248.9	156.8	92.1
311.0	368.3	-57.3
89.3	98.2	-8.9
80.7	118.2	-37.5
23.0	60.1	-37.2
21.9	50.0	-28.1
9.3	36.9	-27.7
0.0	0.0	0.0
1.4	0.4	1.0
1446.4	1329.0	

31.3	3.5	27.8
288.3	239.2	49.1
10.0	12.3	-2.2
211.8	133.6	78.2
193.2	126.3	66.9
178.4	246.9	-68.5
83.2	80.1	3.1
66.7	74.7	-8.0
12.8	13.0	-0.2
9.9	10.4	-0.6
1085.6	939.8	

0.2	0.0	0.2
1.8	0.0	1.8
0.6	0.0	0.6
2.6	0.0	

63.5	3.4	60.2
90.6	84.4	6.2
148.3	57.0	91.4
60.5	14.1	46.4
21.1	35.9	-14.8
19.5	3.3	16.3
19.1	5.9	13.3
0.0	0.0	0.0
422.8	203.8	

0.0	11.4	
0.0	11.4	

2954.7	2484.0	

'est - Shown in Red

ANGE_SP
REA_POLY

Vhere Site Series = 00 or where there is No TEM data)

Target remaining outside OGMAs	Total Other Protected - WHA,UWR (ha) = I+M+Q	Old Growth - Age Class 9 in OGMA (ha)
8.2	3.3	14.6
192.1	23.6	160.8
2.3	0.0	1.5
18.4	16.7	79.1
92.1	4.3	64.6
0.0	45.3	282.1
0.0	7.6	81.1
0.0	4.1	84.7
0.0	1.3	59.2
0.0	41.9	40.8
0.0	7.4	27.2
0.0	0.0	0.0
1.0	0.1	0.4
	155.7	896.1

27.8	0.0	2.2
49.1	3.2	67.8
0.0	0.3	1.0
78.6	4.5	36.4
66.9	0.0	34.4
0.0	5.4	95.4
3.1	0.0	10.1
0.0	2.9	35.7
0.0	0.0	12.6
0.0	0.0	0.0
	16.3	295.5

0.2	0.0	0.0
1.8	0.0	0.0
0.6	0.0	0.0
	0.0	0.0

60.2	0.0	0.0
6.2	0.0	14.2
91.4	1.2	18.7
46.4	0.0	3.0
0.0	0.0	1.2
16.3	0.0	3.2
13.3	0.0	1.1
0.0	0.0	0.0
	1.2	41.4

	0.0	5.2
	0.0	5.2

	173.2	1238.1

Old Growth - Age Class 9 in Other Protected - WHA,UWR (ha)	Target Remaining minus old in OGMA and Other Protected
3.1	9.4
16.2	249.9
0.0	3.2
9.2	114.0
0.1	184.2
32.5	0.0
3.8	4.5
3.0	Target met
1.3	Target met
3.6	Target met
3.1	Target met
0.0	Target met
0.1	0.9
76.0	

0.0	29.1
1.2	219.4
0.0	9.0
0.0	175.4
0.0	158.8
1.6	81.5
0.0	73.1
0.7	30.3
0.0	0.2
0.0	9.9
3.4	

0.0	0.2
0.0	1.8
0.0	0.6
0.0	

0.0	63.5
0.0	76.4
0.0	129.7
0.0	57.5
0.0	19.9
0.0	16.4
0.0	18.0
0.0	0.0
0.0	

0.0	
0.0	

79.4	

Protected Forest Breakdown By E

Remaining Old Growth - Age Class 9 in THLB (ha)	Remaining Old Growth - Age Class 9 in Non Contributing (ha)	Remaining Target minus NC old
4.4	23.7	Target met
301.8	87.5	162.4
0.2	0.0	3.2
161.4	48.6	65.3
315.2	47.8	136.4
286.4	222.0	Target met
76.6	56.3	Target met
45.2	56.4	n/a
8.5	12.2	n/a
1.8	0.0	n/a
0.4	0.6	n/a
0.0	0.0	n/a
0.1	0.0	0.9
1201.9	555.0	

7.6	28.8	0.3
106.2	129.4	89.9
0.8	0.0	9.0
61.7	83.2	92.2
129.7	137.0	21.8
140.0	107.6	Target met
47.5	107.6	Target met
12.3	47.8	Target met
8.7	10.5	Target met
0.9	10.6	Target met
515.4	662.4	

0.0	0.0	0.2
0.0	0.0	1.8
0.0	0.0	0.6
0.0	0.0	

1.3	25.6	38.0
17.0	43.0	33.3
27.3	72.3	57.4
2.0	28.4	29.1
7.9	7.4	12.5
0.2	11.6	4.8
0.0	12.5	5.5
0.0	0.0	0.0
55.6	200.8	

23.3	61.8	
23.3	61.8	

1796.2	1480.0	

Biogeoclimatic Variant And Site Series Fo

Target remaining minus old in THLB	OLD THLB used for Target	Mature - Age Class 5 to 8 in OGMA (ha)
n/a	n/a	2.2
Target met	162.4	69.3
3.0	0.2	0.8
Target met	65.3	103.5
Target met	136.4	90.1
n/a	n/a	56.8
n/a	n/a	9.2
n/a	n/a	15.3
n/a	n/a	0.1
n/a	n/a	0.4
n/a	n/a	8.3
n/a	n/a	0.0
0.8	0.1	0.0
		355.8

Target met	0.3	0.8
Target met	89.9	167.1
8.2	0.8	11.1
30.5	61.7	95.7
Target met	21.8	91.0
n/a	n/a	148.7
n/a	n/a	70.0
n/a	n/a	36.4
n/a	n/a	0.2
n/a	n/a	10.4
		631.3

0.2	0.0	0.0
1.8	0.0	0.0
0.6	0.0	0.0
		0.0

36.7	1.3	3.4
16.3	17.0	70.1
30.2	27.3	38.2
27.1	2.0	10.7
4.6	7.9	34.6
4.6	16.4	0.1
5.5	18.0	4.8
0.0	0.0	0.0
		162.0

		6.1
		6.1

		1155.2

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Target remaining minus mature in OGMA	Mature - Age Class 5 to 8 in Other Protected (ha)	Target Remaining minus Mature in other protected
n/a	0.0	n/a
n/a	2.6	n/a
2.2	0.0	2.2
n/a	6.3	n/a
n/a	0.3	n/a
n/a	4.4	n/a
n/a	0.0	n/a
n/a	0.2	n/a
n/a	0.0	n/a
n/a	0.3	n/a
n/a	1.6	n/a
n/a	0.0	n/a
0.8	0.0	0.8
	15.8	

n/a	0.0	n/a
n/a	1.1	n/a
Target Met	0.3	n/a
Target Met	4.5	n/a
n/a	0.0	n/a
n/a	2.1	n/a
n/a	0.0	n/a
n/a	2.2	n/a
n/a	0.0	n/a
n/a	0.0	n/a
	10.3	

0.2	0.0	0.2
1.8	0.0	1.8
0.6	0.0	0.6
	0.0	

33.3	0.0	38.0
Target Met	0.0	33.3
Target Met	1.2	56.3
16.4	0.0	29.1
Target Met	0.0	12.5
4.5	0.0	4.8
0.7	0.0	5.5
	0.0	
	1.2	

	0.0	
	0.0	

	27.2	

Remaining Mature - Age Class 5 to 8 in THLB (ha)	Remaining Mature - Age Class 5 to 8 in Non Contributing (ha)	Target Remaining minus Mature in NC
5.7	25.4	n/a
339.3	178.2	n/a
2.4	11.5	Target Met
168.1	151.8	n/a
166.9	134.5	n/a
109.0	67.7	n/a
49.9	36.5	n/a
22.3	36.1	n/a
0.0	9.1	n/a
0.0	0.0	n/a
0.0	0.1	n/a
0.0	0.0	n/a
0.0	0.0	n/a
863.7	650.9	

9.1	40.1	n/a
367.6	204.9	n/a
5.5	29.1	n/a
185.7	408.0	n/a
216.2	250.4	n/a
102.9	216.0	n/a
87.5	91.6	n/a
12.9	105.2	n/a
2.3	10.6	n/a
1.3	7.9	n/a
990.9	1363.8	

0.0	0.0	0.2
1.8	0.0	1.8
2.4	1.7	Target Met
4.2	1.7	

3.3	96.1	Target met
23.8	138.6	Target Met
19.5	287.1	Target Met
6.1	103.0	Target Met
3.3	12.3	0.2
0.6	54.1	Target Met
0.0	38.4	Target Met
0.0	0.0	
56.7	729.5	

33.1	47.2	
33.1	47.2	

1944.4	2791.4	

Target remaining minus mature in THLB	Mature THLB to meet Target	Immature - Age Class 1 to 4 in OGMA (ha)
		2.2
		4.7
		0.0
		1.2
		2.2
		29.4
		7.9
		18.3
		0.8
		8.8
		1.4
		0.0
		0.0
		77.1

		0.5
		4.3
		0.1
		1.4
		0.9
		2.9
		0.0
		2.6
		0.2
		0.0
		13.0

0.2	0.0	0.0
Target Met	1.8	0.0
Target Met	0.6	0.0
		0.0

		0.0
		0.0
		0.1
		0.3
Target met	0.2	0.0
		0.0
		0.0
		0.0
		0.5

		0.1
		0.1

		90.7

Immature - Age Class 1 to 4 in Other Protected (ha)	Remaining Immature - Age Class 1 to 4 in THLB (ha)
0.3	17.9
4.8	1048.4
0.0	8.3
1.3	299.4
3.8	463.3
8.4	529.0
3.8	135.6
0.9	78.4
0.0	12.3
38.0	21.8
2.6	1.8
0.0	0.0
0.0	6.6
64.0	2622.8

0.0	24.8
0.8	429.3
0.0	4.5
0.0	232.6
0.0	152.3
1.7	98.0
0.0	13.7
0.1	64.9
0.0	5.3
0.0	0.9
2.6	1026.2

0.0	1.8
0.0	9.8
0.0	0.3
0.0	11.9

0.0	17.8
0.0	4.4
0.0	3.9
0.0	7.2
0.0	8.7
0.0	0.0
0.0	2.6
0.0	0.0
0.0	44.6

0.0	10.4
0.0	10.4

66.6	3704.0

THLB in Immature to meet target	Remaining Immature - Age Class 1 to 4 in Non Contributing (ha)
	43.1
	33.1
	0.0
	34.5
	21.1
	9.3
	9.4
	64.2
	17.2
	0.0
	1.5
	0.0
	0.0
	233.6

142.5

	50.7
	37.5
	0.4
	5.4
	4.8
	22.4
	10.0
	30.3
	17.0
	19.9
	198.5

Target Met 0.2	0.0
	0.0
	0.0
	0.0

	79.5
	12.3
	61.7
	55.5
	0.0
	0.0
	9.0
	0.0
	217.9

	2.5
	2.5

	652.4