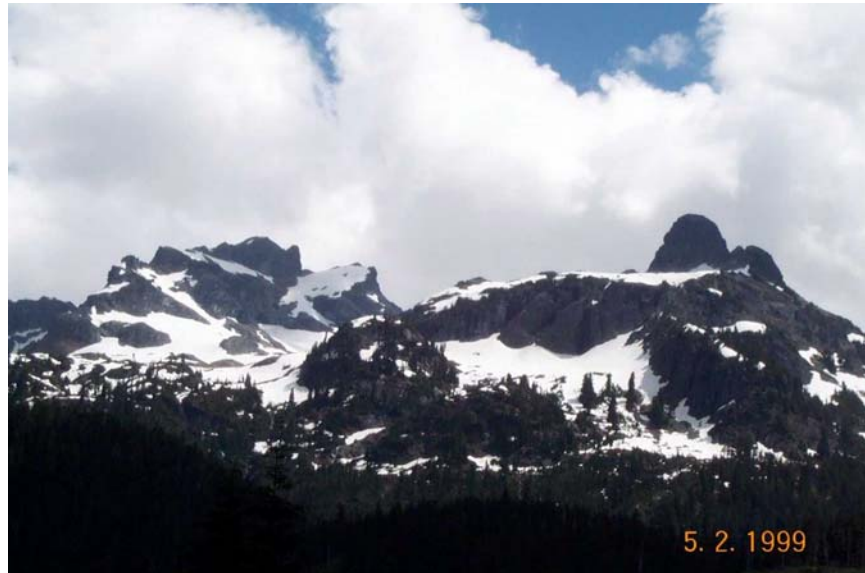


# Squamish Forest District Landscape Unit Planning

## East Howe Landscape Unit Plan



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## 1.0 Introduction

This report provides background information used during the preparation of the East Howe Landscape Unit plan and legal objectives. A description of the landscape unit, discussion on significant resource values, and an OGMA summary and rationale are provided. A summary of public comments received during the 60 day review and comment period is included in Appendix 2.

Landscape Unit (LU) Planning is being undertaken in high priority areas of the province, and is an important component of the *Forest Practices Code (FPC)* which allows legal establishment of objectives to address landscape level biodiversity values. Biological diversity or biodiversity is defined as: *'the diversity of plants, animals and other living organisms in all their forms and levels of organisation, and includes the diversity of genes, species and ecosystems as well as the evolutionary and functional processes that link them'*<sup>1</sup>. British Columbia is the most biologically diverse province in Canada. Over 150 taxa of known mammals, birds, reptiles, and amphibians and over 600 vascular plants are listed for legal designation as threatened or endangered in British Columbia. The continuing loss of biological diversity will have a major impact on the health and functions of ecosystems and the quality of life in the province (Resources Inventory Committee, 1998).

Implementation of LU Planning is intended to help maintain biodiversity values. Retention of biodiversity is important for wildlife and can also provide important benefits to ecosystem management, protection of water quality and preservation of other natural resources.

The Squamish Forest District has completed draft LU boundaries and established draft Biodiversity Emphasis Options (BEO) in accordance with the direction provided by government. There are 20 LUs within this district. Approval of this plan will allow legal establishment of the East Howe LU boundaries, BEO and legal objectives.

Through a ranking process (see Appendix I) the East Howe LU was rated as a Low BEO. Current government direction requires that priority biodiversity provisions, including the delineation of Old Growth Management Areas and wildlife tree retention (WTR), be undertaken immediately. This work was completed by the Ministry of Sustainable Resource Management (MSRM), in co-operation with Terminal Forest Products Limited, Ministry of Forests (MOF) and Ministry of Water, Land and Air Protection (MWLAP) staff. Input was also solicited from other forest licensees and First Nations.

Refer to the attached map dated June 5, 2003, for the location of OGMAs and complementary old growth representation outside of the Provincial forest (i.e. within protected areas). This includes some areas of forests less than age class 9 (i.e. <250 years of age) that can be considered recruitment areas for old seral representation. Throughout this report, the term OGMA is used to refer to all areas of old seral representation or recruitment, whether within the Provincial forest or protected areas; however the map differentiates between these two land bases. Refer to Appendix IV for a summary of OGMA attributes by forest type and biogeoclimatic ecosystem classification variant.

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<sup>1</sup> Definition of biodiversity is from page 2 of the Forest Practices Code *Biodiversity Guidebook* (September, 1995).

## 2.0 Landscape Unit Objectives

Landscape Unit objectives will be legally established within the framework of the FPC and as such are Higher Level Plan objectives. Other operational plans must be consistent with these objectives.

The East Howe LU received a Low BEO through the biodiversity value ranking and BEO assignment processes completed earlier (see Appendix I). Table 1 lists the percentages of the LUs productive forest area by natural disturbance type (NDT) required for old seral representation. The target figures listed in Table 1 are derived from Appendix 2 of the *Landscape Unit Planning Guide* (LUPG). The percentages of cutblock area required for WTR for each BEC subzone are shown in Table A of the *Legal Objectives*.

**Note:** Objectives apply only to Provincial forest lands. Protected areas and other Crown forest lands outside of Provincial forest contribute old seral representation but the LU Objectives do not apply to these areas.

**Table 1. Required Levels for Old Seral Representation**

BEC Variant <sup>1</sup>	NDT <sup>2</sup>	LUPG Old Seral Representation Target <sup>3</sup>	
		%	ha
<b>CWHdm</b>	<b>NDT 2</b>	>9	>346
<b>CWHvm1</b>	<b>NDT 1</b>	>13	>184
<b>CWHvm2</b>	<b>NDT 1</b>	>13	>581
<b>MHmm1</b>	<b>NDT 1</b>	>19	>949

- 1 CWHdm: Coastal Western Hemlock biogeoclimatic zone, dry maritime variant.  
CWHvm1: Coastal Western Hemlock biogeoclimatic zone, very wet maritime (submontane) variant  
CWHvm2: Coastal Western Hemlock biogeoclimatic zone, very wet maritime (montane) variant.  
MHmm1: Mountain Hemlock biogeoclimatic zone, moist maritime (windward) variant.
- 2 NDT = Natural Disturbance Type. Refer to LUPG, Appendix 2.
- 3 % of total productive forest area within BEC variant, as per LUPG.

Old seral representation targets listed above have been met through the delineation of OGMAs throughout the East Howe LU and complementary old growth representation within protected areas. Refer to the attached East Howe LU map for the location of OGMAs, to Appendix IV for OGMA statistics and attributes, and to Table 2 for a breakdown of non-contributing (NC), constrained Timber Harvesting Land base (THLB) and unconstrained THLB components.

**Table 2. Non-contributing, Constrained THLB and Unconstrained THLB Components of East Howe LU OGMAs**

BEC Variant	Total Old Seral Representation <sup>1</sup>	Non-Contributing <sup>2</sup> Area in OGMA				Constrained THLB <sup>3</sup> in OGMA		Unconstrained THLB in OGMA <sup>4</sup>	
	ha	park (ha)	other (ha)	Total (ha)	%	ha	%	ha	%
CWHdm	350.2	44.7	138.6	183.3	52.3	84.6	24.2	82.3	23.5
CWHvm1	191.6	0.0	137.4	137.4	71.7	26.1	13.6	28.0	14.6
CWHvm2	581.3	22.2	510.0	532.2	91.5	5.0	0.9	44.1	7.6
MHmm1	954.3	121.4	741.7	863.1	90.4	13.9	1.5	77.3	8.1
<b>TOTALS</b>	<b>2077.4</b>	188.3	1527.7	1716.0	<b>82.6</b>	129.6	<b>6.2</b>	231.7	<b>11.1</b>

Note: differences in totals are due to rounding

1 This represents the actual amount established based on targets from Table 1.

2 **Non-Contributing Area in OGMA** = productive forest land that does not contribute to the AAC.

3 **Constrained THLB in OGMA** = Timber Harvesting Land Base that cannot fully contribute to the AAC due to site sensitivity or the need to manage for other resource values.

4 **Unconstrained THLB in OGMA** = THLB area (productive forest land) that is available for harvesting

The establishment of OGMAs will not have an impact on the status of existing aggregate, mineral and gas permits or tenures. Exploration and development activities are permitted in OGMAs. The preference is to proceed with exploration and development in a way that is sensitive to the old growth forest attributes of the OGMA; however, if exploration and development proceeds to the point of significantly impacting old growth values, then the OGMA will be moved.

### 3.0 Landscape Unit Description

#### 3.1 Biophysical Description

The East Howe LU covers a total area of 31892 ha, encompassing watersheds flowing into the eastern side of Howe Sound from the Village of Lions Bay north to the Town of Squamish. Major watersheds within this LU include Stawamus River, Shannon Creek, Britannia Creek and Furry Creek. Smaller watersheds include Olesen Creek, Gonzales Creek, Thistle Creek, Daisy Creek, Kallahne Creek, Bertram Creek, Deeks Creek, Loggers Creek, M Creek, Magnesia Creek, Alberta Creek, Harvey Creek, Lone Tree Creek, Newman Creek, Turpin Creek, Charles Creek, Montizambert Creek and Disbrow Creek. Of this total LU area, 15141 ha (47%) is within the Crown forest land base, and 7107 ha of Crown forest is within the THLB. The remaining 16751 ha (54%) are non-forested or non-Crown (rock, alpine tundra, water, private land) and have been excluded from any OGMA contributions and calculations.

A small portion of the productive forest not included within THLB is located within 5 protected areas that overlap with the East Howe LU, including the following Provincial Parks: Stawamus Chief; Shannon Falls; Murrin; Porteau Cove; and Cypress.

The East Howe LU lies within the Pacific Ranges Ecoregion, Southern Pacific Ranges ecosection. The LU is comprised of the following 5 BEC subzones/variants: Coastal Western Hemlock dry maritime (CWHdm); Coastal Western Hemlock submontane very wet maritime (CWHvm1); Coastal Western Hemlock montane very wet maritime (CWHvm2); Mountain Hemlock windward moist maritime (MHmm1); and Alpine Tundra (ATp).

These 5 BEC subzones/variants represent 3 different Natural Disturbance Types, with CWHvm1, CWHvm2 and MHmm1 in NDT 1 (rare stand initiating events), CWHdm in NDT 2 (infrequent stand-initiating events) and ATp in NDT 5 (alpine tundra and subalpine parkland).

Forest ecosystems in NDT 1 were influenced historically by rare stand-initiating events and were generally uneven-aged or multi-storied uneven aged, with regeneration occurring in gaps created by the death of individual trees or small patches of trees. Approximately 74% of the productive forest area of the East Howe LU is within NDT 1. Historically, NDT 2 forest ecosystems were usually even-aged, but extended post-fire regeneration periods produced some stands with uneven-aged characteristics. Approximately 26% of the productive forest area in East Howe LU is within NDT 2. Ecosystems in NDT 5 are not considered productive forest since they occur above or immediately below the alpine treeline and are characterised by short and harsh growing seasons.

At lower elevations, within NDTs 1 and 2, the East Howe LU has sustained significant levels of disturbance. Forested stands on lower elevation productive sites (typically on slopes with low to moderate gradients within the CWH) have been disturbed by past timber harvesting, mining, urbanization and other factors. The relatively low levels of old seral forest remaining within the lower elevation BEC variants in the East Howe LU reflects this disturbance history. Despite these factors, the East Howe LU can meet the old growth representation targets within productive forests predominantly from the non-contributing (NC) land base.

### 3.2 Significant Resource Values

The LU supports a wide range of natural resource values and features, and a diversity of social and cultural values and influences. A variety of ownership and tenure types are present, including: areas of private land; Indian reserve; Crown forest (Terminal Forest Products Limited, Richmond Plywood Corporation Limited and BC Timber Sales chart) and protected areas. This LU is located between large urban settlements (e.g. Squamish, West Vancouver, North Vancouver and Vancouver) and a major highway corridor is located along the western boundary. These factors all increase the complexity of resource management within the East Howe LU.

**Fish, Wildlife and Biodiversity:** Twenty wildlife species of specific management concern are known or suspected to be present with the East Howe LU. These include RED-listed, BLUE-listed or Yellow-listed and regionally important species; or other species at risk called Identified Wildlife under the Forest Practice Code. Table 3 provides a summary of these wildlife species.

**Table 3. Wildlife Species of Specific Management Concern**

Species	Status <sup>1</sup>	Additional Comments	Likelihood of Presence <sup>2</sup>
Rubber Boa	Yellow-listed	Identified Wildlife	High
Tailed frog	BLUE-listed	Identified Wildlife	Confirmed present
American bittern	BLUE-listed	Identified Wildlife	Low to Moderate
Great blue heron	BLUE-listed	---	Confirmed present
Green heron	BLUE-listed	---	Confirmed present
Trumpeter swan	BLUE-listed	Regionally important	Confirmed present
Harlequin duck	Yellow-listed	Regionally important	High

Marbled murrelet	RED-listed	Identified Wildlife	Confirmed present <sup>3</sup>
Spotted owl	RED-listed	---	Low to Moderate
Bald eagle	Yellow-listed	Regionally important	Confirmed present
Peregrine falcon	RED- and BLUE-listed subspecies	---	Confirmed present
Northern goshawk	RED- and BLUE-listed subspecies	Identified Wildlife	Confirmed present
Keen's long-eared myotis	RED-listed	Identified Wildlife	High
Townsend's big-eared bat	RED-listed	Identified Wildlife	High
Pacific water shrew	RED-listed	Identified Wildlife	Low to Moderate
Trowbridge shrew	BLUE-listed	Identified Wildlife	High
Mountain goat	Yellow-listed	Regionally important	Confirmed present
Black-tailed deer <sup>4</sup>	Yellow-listed	Regionally important	Confirmed present
Grizzly bear	BLUE-listed	Identified Wildlife	Low to Moderate
Wolverine	Yellow-listed	Regionally important	Low to Moderate

- 1 Status from the British Columbia Conservation Data Centre (CDC). Yellow-listed species is any indigenous species or subspecies (taxa) which is not at risk in British Columbia. The CDC tracks some Yellow listed taxa which are vulnerable during times of seasonal concentration (e.g. breeding colonies). BLUE-listed species includes any indigenous species or subspecies considered to be Vulnerable in British Columbia. Vulnerable taxa are of special concern because of characteristics that make them particularly sensitive to human activities or natural events. Blue-listed taxa are at risk, but are not Extirpated, Endangered or Threatened. RED-listed species is any indigenous species or subspecies considered to be Extirpated, Endangered, or Threatened in British Columbia. Extirpated taxa no longer exist in the wild in British Columbia, but do occur elsewhere. Endangered taxa are facing imminent extirpation or extinction. Threatened taxa are likely to become endangered if limiting factors are not reversed. Red-listed taxa include those that have been, or are being, evaluated for these designations.
- 2 Professional judgement regarding likelihood of presence, based on species distribution and habitat requirements.
- 3 Marbled murrelet nesting historically noted within Downing Creek drainage in Furry Creek watershed. Entire LU is well within range of marine foraging locations and forests stands with suitable attributes represent potential nesting habitat.
- 4 Black-tailed deer are present within this LU year-round, but coastal climate typically results in non-critical snowpacks. As a result, winter range management is not considered to be required and deer winter range habitat has never been delineated.

Of these 20 wildlife species, 3 species were given specific consideration during the OGMA delineation process. This included mountain goats, marbled murrelets and bald eagles.

Mountain goat winter range habitat has been previously identified by the Ministry of Environment, Lands and Parks (MELP, now called MWLAP) throughout the East Howe LU, based upon inventory work conducted in the 1990s. Legal designation of these areas as Ungulate Winter Range (UWR) is currently being pursued under Section 69 of the FPC Operational Planning Regulation. Mountain goat winter range habitat polygons, spatially defined on 1:20000 reference maps, were considered during OGMA delineation, to pursue overlap of OGMA candidates with constrained areas. There were no cases, however, where suitable OGMA candidates overlapped with forested mountain goat habitat.

The maintenance of marbled murrelet (MAMU) nesting habitat is another management consideration for the East Howe LU. The marbled murrelet, a small coastal seabird, is RED-listed in British Columbia and designated as THREATENED in Canada by the Committee on the Status of Endangered Wildlife in Canada. The main threat to this species is considered to be loss of old growth nesting habitat. While there are no spatially identified marbled murrelet nesting habitat areas within the LU, marbled murrelets are known to utilise marine foraging habitats

within flight distance of most of the watersheds. In addition, nesting was historically confirmed in Downing Creek which is a tributary to Furry Creek. More specifically, during the summer of 1985 falling activities on a cutblock at approximately 1060 m elevation in a Western red cedar stand resulted in the displacement of a marbled murrelet fledgling from its nest tree. Continued MAMU nesting activity, likely at low densities, is expected to continue to occur within suitable old seral forest habitats in this LU. Suitable MAMU nesting habitat is expected to consist primarily of age class 8 and 9 forests (141 – 250+ years) with tree heights >20 meters and at elevations up to 1400 m. As outlined in the Identified Wildlife Management Strategy (IWMS), the marbled murrelet is to be managed through the placement of OGMA within suitable marbled murrelet nesting habitat. This approach was attempted in the East Howe LU, by situating OGMA within potential nesting habitat, and through establishing larger patches as OGMA. However, it must be noted that other LU Planning requirements (i.e. to place OGMA in the NC land base, and mitigate timber impacts) precluded successful implementation of effective management options for this species.

Overwintering concentrations of bald eagles are known to occur within the north-western portion of East Howe LU, in association with the lower reaches of the Squamish River. Inventory work conducted in 1995 to 1997 resulted in spatially defined daytime perching and feeding locations. In addition, night-time communal roosting habitats were mapped. These mapped habitats were also considered during OGMA delineation, but like mountain goats there weren't any locations where suitable OGMA candidates overlapped with bald eagle overwintering habitats.

In addition to these wildlife species, watercourses and lakes within the East Howe LU also support resident and migratory salmonid populations. Salmonid species associated with this LU include: rainbow trout (including the migratory form – steelhead); cutthroat trout; Dolly Varden char; bull trout (Identified Wildlife), pink salmon; coho salmon; chum salmon; and chinook salmon. The highest freshwater fisheries values are associated with Squamish River, Stawamus River and Furry Creek.

**Protected Areas:** There are 5 protected areas within the East Howe LU, including the following Provincial Parks: Stawamus Chief; Shannon Falls; Murrin; Porteau Cove; and Cypress. In general these are relatively small protected areas, especially the latter three. OGMA were placed in the NC to maximise biodiversity objectives, whether or not these NC areas overlapped with protected areas in order to select the most favourable stands for OGMA/old seral representation and biodiversity objectives.

**Timber Resources:** Commercially valuable tree species in the East Howe LU include Western red cedar, Douglas-fir and western hemlock at the lower to mid elevations and mountain hemlock and sub-alpine fir mostly in higher elevation areas.

Of the total 7107 ha of THLB approximately 67% is 80 years old or less. Forests ranging from 81 to 250 years old represent 25% of the THLB, and old forests in the THLB (>250 years old) occupy about 8% of the THLB area. Continued access to commercially valuable timber, including future second growth, is a notable concern.

The East Howe LU is within the Soo Timber Supply Area (TSA). Four forest licensees operate in the landscape unit. Terminal Forest Products Limited operates within the Furry Creek watershed and areas to the south. Richmond Plywood Corporation Limited has a chart area in Britannia Creek watershed and most of the hillslope area between Britannia Creek and Furry



Creek watersheds. The BC Timber Sales has tenure within the Shannon Creek watershed and most of the Stawamus River watershed. A small portion on the eastern side of the Stawamus River watershed overlaps with International Forest Products Limited operations.

**Community Water Systems:** A number of community watershed (CWS) systems are located within the East Howe LU. This includes drinking water sources for the District of Squamish (Stawamus Creek community watershed), Britannia Beach (Mineral Creek CWS and Britannia Creek surface supply), Furry Creek (Furry Creek groundwater well source) and Village of Lions Bay (Magnesia CWS, Harvey Creek CWS, Alberta Creek CWS and Rundle Creek CWS). The Stawamus and Mashiter Integrated Watershed Management Plan applies within the Stawamus River CWS, and sets standards for acceptable forest practices within the watershed. Consideration was made towards delineating OGMAs within CWS, when suitable old seral forests were present.

**First Nations:** The East Howe LU is located within areas covered by Statements of Intent for Treaty Negotiations by the Squamish Nation and Tsleil-Waututh Nation. A Squamish Nation Indian Reserve is situated alongside the lower reaches of the Stawamus River. There is evidence of traditional use in many areas within this LU, especially the lower slopes near the Squamish River, Stawamus River and the marine foreshore along Howe Sound. Culturally modified trees (CMTs) have also been previously identified in some areas.

In 1997, an Archaeological Overview Assessment model was developed by Millennia Research on behalf of MOF to indicate where archaeological sites are most likely located. This was done to minimise potential impacts by forestry operations on culturally important areas. The model was useful in predicting the potential location of CMT and habitation sites.

The maps produced from the model were reviewed to determine if potential CMT or habitation sites could be captured in OGMAs, especially in valley bottom areas (riparian) and mid slope locations. It should be noted, however, that the restriction of OGMAs to the NC land base resulted in a limited ability to achieve this overlap.

**Private Land:** Large extents of private land occur within the East Howe LU, dispersed from the northern to southern end at lower elevations. Most private land is associated with the District of Squamish, the community of Britannia Creek, the Furry Creek golf course and residential development, B.C Rail lands in the vicinity of lower Deeks and Kallahne Creeks and the Village of Lions Bay. This private land is in an important consideration when establishing OGMAs. Some of the private land has been altered from its natural state and this change may influence the ecology of adjacent Crown forest lands. Where private and Crown land interfaced, these factors were considered during OGMA delineation.

**Mining and Mineral Exploration:** Subsurface resources (minerals, coal, oil, gas and geothermal) and aggregate resources are valuable to the province, but are difficult to characterise due to their hidden nature. Ministry of Energy and Mines (MEM) has rated the industrial mineral and metallic mineral potential of this LU as High to Very High, with the majority being Very High. These MEM rankings are based on a qualitative analysis which takes into account the values of known resources, past exploration and production as well as the number of known mineral occurrences and a subjective probability estimate of value by industry experts.

In this LU there are approximately 25 mineral tenures (mostly in lower Britannia Creek) and 10 mineral showings (i.e. occurrences hosting minor in-situ mineralization). OGMA delineation was unable to take into specific account mineral potential, showings or prospects, and only three OGMAs overlapped with mineral tenures. It is understood that exploration and development activities are permitted in OGMAs but the preference is to proceed with exploration and development in a way that is sensitive to the old growth values of the OGMA. If this is not possible, then a replacement OGMA will be required.

**Recreation:** The forest road network, proximity to large urban settlements (e.g. Squamish, West Vancouver, North Vancouver) and recreational resource values within this LU result in some specific areas of high recreational use, especially during the summer months.

Many of these recreational resource values are located within protected areas that overlap the East Howe LU. The Stawamus Chief Provincial Park provides camping sites near internationally significant rock climbing opportunities as well as a trail network for hiking. Shannon Falls Provincial Park is a tourist destination for picnicking and nature viewing, especially in association with the spectacular waterfalls on which this small protected area is focused. Rock climbing in summer and ice climbing in winter are also common activities. Murrin Provincial Park, another small protected area, is centered on Browning Lake. It is frequently used for fishing, picnicking and rock climbing. Porteau Cove Provincial Park is a popular destination for camping, picnicking and SCUBA diving. Cypress Provincial Park is the only protected area within this LU that isn't directly accessible from Highway 99. Regardless, it is heavily utilized by hikers making use of trails like the Howe Sound Crest Trail that provides access to destinations like Deeks Lake and Mount Harvey.

Outside of these protected areas, hiking is the most common recreational activity within this LU. Although some mountain biking also occurs, motorized use is more common. All terrain vehicle, motorcycle and four wheel drive use of roads for recreation occurs in locations where active road networks provide access. Berry and mushroom picking, wildlife viewing and sight-seeing also occur. Compared to most of the Squamish Forest District, hunting and fishing occur on a very limited basis. Winter recreational activity is fairly limited, consisting primarily of cross-country skiing along snow covered forest service roads and ice climbing as noted above. There are no Forest Service Recreation Sites in the East Howe LU, nor are there any future development plans.

Commercial recreation activities are not being actively promoted within this LU at the current time and, in comparison to many other areas within the Squamish Forest District, opportunities do not appear to be extensive.

## **4.0 Biodiversity Management Goals and Strategies**

### **4.1 General Biodiversity Management Goals**

Biodiversity management goals and strategies describe, in specific terms, the outcomes that legal LU Objectives are to achieve. They also describe the rationale for selection of OGMAs, some of the ecological features that OGMAs are to include, and some decisions made to balance management of all values present in the LU. While LU Objectives are legally binding, management goals and strategies are not. Goals and strategies must remain flexible to

incorporate future direction and new methods in order to ensure continued compliance with the corresponding LU Objectives.

The biodiversity ranking process identified important biodiversity values within the East Howe LU that must be managed for (see Appendix I). The delineation of OGMA cannot be undertaken without recognition of these significant values because OGMA establishment is the most effective provision of the FPC LU planning initiative for managing biodiversity. The previous section (Section 3) describes the resource values considered in the LU planning process.

The development of biodiversity management goals and strategies is important not only for conservation of biodiversity, but also to allow development of strategies to mitigate short and long-term LU planning impacts on timber supply. For example, OGMA delineation was not guided strictly by age class or Allowable Annual Cut contributions, as this approach could result in including stands of marginal biodiversity value and significant timber supply impact within OGMA. Further, old forests that were proposed or approved for harvesting were avoided as OGMA candidates. Individual forested polygons were assessed according to their specific attributes during the OGMA delineation process.

As per the LUPG, OGMA were established in areas within the NC land base, according to the last Timber Supply Review (TSR). The only notable exceptions, where contributing land base was included within OGMA, were forest stands alongside lower Stawamus River, within Britannia Creek headwaters and a few patches located near Highway 99 or alongside streams near the Village of Lions Bay. These areas were chosen after discussions with licensees where it was confirmed that all areas were constrained by non-timber values or other constraints (e.g. community watershed, riparian, recreation or terrain) generally resulting in long-term deferral of harvesting. As a result, these areas could be viewed as recent additions to the NC land base. Any potential impacts to the THLB are expected to be offset by areas of NC land base that were specifically avoided during OGMA delineation, to maintain potential for future harvesting opportunities and mitigate timber supply impacts.

To pursue representation of old growth stands in each BEC variant, efforts were made to delineate OGMA that included a diversity of stand types, by species composition and geographic/topographic locations. OGMA were aggregated when possible, both within and across BEC variants, to pursue connectivity and to create larger patch sizes with forest interior characteristics. Efforts were made to ensure OGMA were distributed throughout the LU and not concentrated in a particular drainage. This is consistent with the “coarse filter” approach of biodiversity management whereby representative old growth stands are protected to maintain ecosystem processes and specific wildlife habitat requirements that may be poorly understood. In addition, ensuring OGMA placement is distributed throughout the LU helps ensure that any operational impacts are shared by all licensees operating in the area.

Attempts were made to maximise OGMA overlap with high value wildlife habitats such as mountain goat winter range, larger riparian areas and other unique or biologically valuable areas (e.g. wetlands and slide-tracks). Riparian reserve zones (RRZs) established in accordance with the FPC, will help maintain some fish and wildlife habitat values associated with riparian areas and adjacent riparian forests. OGMA delineated within and adjacent to existing RRZs can be expected to build upon these fish and wildlife habitat values. Narrow or isolated riparian fringes were not included in OGMA, as such areas are more appropriate for stand level management and do not meet the “coarse filter” approach outlined in the Biodiversity Guidebook.

In all cases, detailed air photo review was performed to confirm forest cover attributes and suitability of a given stand for OGMA. In addition, all OGMAs were reviewed via helicopter survey work to verify the presence of desirable old forest characteristics.

## **4.2 Specific Biodiversity Management Goals and Strategies**

### **4.2.1 Biodiversity Management Goals**

1. Delineate old growth management areas in the non-contributing portion of the Provincial forest to maintain the full old seral representation targets for each BEC variant (CWHdm, CWHvm1, CWHvm2 and MHmm1), according to the following targets (from Table 1) and as per the attached map:
  - a) CWHdm target of >9%, or at least 346 ha;
  - b) CWHvm1 target of >13, or at least 184 ha;
  - c) CWHvm2 target of >13%, or at least 581 ha; and
  - d) MHmm1 target of >19%, or at least 949 ha.
2. Maintain areas that are representative of natural ecosystem patterns and ecosystem mosaics.
3. Maintain a wide range of ecosystem types and species composition.
4. Include rare, unique or under-represented stand types within OGMAs where possible and when compatible with other biodiversity goals.
5. Aggregate OGMAs when possible, both within and across BEC variants, to implement additional biodiversity management provisions like connectivity and forest interior habitat.
6. Place OGMAs where site location and topographic features provide the highest wildlife habitat and biodiversity value, such as UWRs, stream confluences, adjacent to slide-tracks, wetlands and other features when suitable old growth is present.
7. Pursue overlap of OGMAs with potential marbled murrelet nesting habitats.

### **4.2.2 Biodiversity Management Strategies**

- A. Delineate OGMAs that include existing stands of old growth (250+ years old) or particularly high biodiversity value older mature stands (generally 200 to 250 years old) that will provide old growth attributes in as short a time frame as possible (Goals 1 and 2).
- B. No harvesting activities, including salvage or single-tree harvesting, are to occur within OGMAs (Goal 1).
- C. Include unique stands and habitat types within OGMAs (Goals 1, 2, 3 and 4).

- D. Delineate OGMA that are as large and contiguous as possible, while ensuring that they contain a wide range of sites and habitat types. (Goals 2, 3, 4, 5, 6).
- E. Establish OGMA that are adjacent to biologically valuable non-forest habitats (e.g. lakes, wetlands and slide-tracks) (Goal 6).
- F. Delineate OGMA that include as much potentially suitable marbled murrelet nesting habitat as possible (Goal 7).
- G. Retain veterans within harvesting areas to levels typical of densities found following natural disturbances as a focus of stand level biodiversity management, in accordance with the wildlife tree retention objective. Retention of dominants as veteran recruits is recommended where veterans are not present in the stand (Goal 2).

### **4.3 OGMA Boundary Mapping**

OGMA boundaries were delineated to include complete forest stands (i.e. forest cover polygons) and follow natural features whenever possible to improve the ease of OGMA mapping and reduce operational uncertainty. OGMA were mapped using a 1:20000 scale TRIM base which forms the legal standard for measurement. Procedures for operating within OGMA are discussed in the OGMA Amendment policy.

### **4.4 Auditing Wildlife Tree Retention**

The percent required for wildlife tree retention described in Table A of the *Legal Objectives* for the East Howe Landscape Unit does not have to be fully implemented on a cutblock-by-cutblock basis. Instead, the retention target may apply over a larger area (e.g. FDP or equivalent), so long as the retention target is met each 2 year period. The intent is to provide limited flexibility for retention at the cutblock level provided that the legally required percentage is met across the subzone. Since wildlife tree retention is a stand level biodiversity provision, wildlife tree patches are also to be distributed across each subzone and the landscape unit.

## **5.0 Mitigation of Timber Supply Impacts**

The East Howe LU plan has been developed to maximise the effectiveness of the FPC biodiversity management provisions while minimising impacts on the Soo TSA timber supply.

As mentioned previously there are four forest licensees with operations in the East Howe LU. OGMA were delineated based upon the biodiversity management goals and strategies with no specific effort to pursue even distribution of OGMA between these licensees. Instead, LU planning in the Squamish Forest District is intended to minimise impacts to timber supply as a whole across the entire district. Of the total 2070 ha of OGMA to be established, 1729 ha (84%) come from the NC land base; the 130 ha in partially contributing and 220 ha in contributing were recommended by licensees because of constraints. Operability of these areas should be addressed during the next Timber Supply Review.

Specific measures adopted to minimise impacts of East Howe LU planning to timber supply include the following:

1. All OGMA's were delineated within the NC land base or THLB areas that are considered part of the NC by licensees. For the purposes of this LU planning exercise and the goal of achieving old seral representation targets throughout the NC, NC forests within and outside of protected areas were viewed to be equal. The main goal was to distribute the OGMA's across the LU and select the most favourable stands for OGMA's/old seral representation to meet biodiversity objectives and spatial representation needs. Potential timber supply impacts may have been reduced by selecting from NC within protected areas first.
2. Further to the comments provided under point #1, an attempt was still made to ensure that NC stands associated with protected areas, Environmentally Sensitive Areas, lower productivity sites, areas of difficult access and marginal economics were included within OGMA's where possible and when compatible with biodiversity objectives.
3. Suitable old growth stands within UWR habitats were included in OGMA's whenever feasible, to reduce overall timber supply impacts and maximise overlap between constrained areas.
4. Areas included in OGMA's were assessed according to potential marbled murrelet nesting habitat suitability, timber values and existence of road infrastructure for future harvest access. Stands at the periphery of habitat areas with a high degree of fragmentation were often not included in OGMA's due to their lowered habitat suitability and ease of industrial access.
5. During the LU planning process, consideration was made to ensure timber access was not precluded by OGMA delineation. Known access corridors were generally left out of OGMA's and OGMA boundaries were delineated to simplify adjacent management.
6. Approved year 2000 Forest Development Plans for the forest licensees within the East Howe LU were used during OGMA delineation to avoid proposed or approved developments. Direct consultation with forest licensees also occurred.
7. OGMA boundaries used natural features wherever possible to ensure they could be located on the ground. OGMA's were delineated to include complete stands of timber wherever possible to reduce operational uncertainty, increase the ease of OGMA mapping, and maximise the "coarse filter" effectiveness of OGMA's for long-term biodiversity protection.
8. Where possible, OGMA placement avoided areas within the NC land base identified by licensees as potential future harvest opportunities (e.g. helicopter access). Establishing OGMA's in the NC may still have implications to future timber supply by reducing flexibility for helicopter operations.

## **5.1 OGMA Amendment Procedures**

An MSRM Coast Region policy is being developed to give direction to proponents (forest tenure holders) when applying for amendments to OGMA legal objectives. Amendment procedures will cover such things as minor or major amendments for resource development (e.g. roads, bridges, boundary issues, rock quarries & gravel pits) or relocation of OGMA's. The policy also discusses acceptable management activities and review procedures.

## **Appendix I: Biodiversity Emphasis Option Ranking Criteria**

The East Howe LU received a Low BEO during the application of landscape unit ranking criteria completed earlier by the Squamish Forest District Landscape Unit Planning Team. The first set of criteria, to rank ecological values, was applied to determine an initial BEO ranking for the District's LUs. The LU with the highest ecological values score was ranked number one, the next highest, number two and so on. The timber values were scored next, with their resultant scores generally being used as tie-breakers for LUs with similar ecological scores. This approach was consistent with direction provided in the FPC *Higher Level Plans: Policy and Procedures* document.

Final determination regarding the BEO assignment, particularly when scores were close, was based upon discussions between MELP and MOF.

What follows is a series of Tables that summarize the ecological and timber scores with draft and final BEO assignments. Table Ia is a summary of general BEO ranking criteria, followed by the ecological scoring summary for the East Howe LU (Table Ib). Table Ic summarizes the ecological ranking score for the entire forest district, while Table Id shows the draft BEOs based on ecological scores. Table Ie illustrates the timber value rating criteria, while Table If shows the timber score for the East Howe LU, and Table Ig describes the timber score for all landscape units in the district. The final BEO assignment is shown in Table Ih.

### **1) Ecological Values Ranking Criteria**

The ecological values ranking criteria was used to initially assess which of the Squamish Forest District's LUs required higher levels of biodiversity provisions.

**Table Ia. Ecological Values Ranking Criteria for Squamish LUs**

<b>Ecological Values</b>	<b>Criteria</b>	<b>Criteria description</b>	<b>Value</b>	<b>Rank</b>	<b>Score</b>
<b>Ecosystem Representation</b>	Representation in parks	By % of BEC variants	0.0 to 0.4%	High	5 pts
			>0.4 to 0.8%		4 pts
			>0.8 to 1.2%		3 pts
			>1.2 to 1.6%	Low	2 pts
			>1.6 to 2.0%		1 pt
>2.0%	0 pts				
<b>Ecosystem Complexity</b>	Diversity of BEC variants	By # of different BEC variants	7 BEC variants	High	8 pts
			6 BEC variants		6 pts
			5 BEC variants	Low	4 pts
			4 BEC variants		2 pts
			3 BEC variants		0 pts
	Diversity of special habitat features	Professional judgement regarding diversity of special habitat features (estuaries, freshwater deltas floodplains; wetlands/lakes, slidetracks)	5/5	High	5 pts
			4/5		4 pts
			3/5		3 pts
			2/5	Low	2 pts
			1/5		1 pt
0/5	0 pts				



Table Ia contd

<b>Fish/Wildlife Values</b>	Fish/Wildlife values	Ranked based on points for species of special concern within the Squamish Forest District (anadromous salmonids, bull trout tailed frog, marbled murrelet, spotted owl, grizzly bear, moose and black-tailed deer)	score $\geq$ 10 score 7 to 9 score 4 to 6 score $\leq$ 3	High  Low	10 pts 6 pts 2 pts 1 pt
<b>Sensitivity to Development</b>	Based on sensitivity of BEC variants	Determine NDT type which is most prevalent (exclude NDT 5)	NDT 1 >60% NDT 1 30-60% NDT 1 <30% NDT2 predomin.	High  Low	2 pts 1 pts 0 pts 0 pts
	Inherent level of protection from signif. human disturbance (i.e. urbanisation, agricultural use, recreational use, etc...)	Professional judgement	Based on review and assessment by MELP staff	High  Low	3 pts 2 pt 1 pt 0 pts
<b>Connectivity</b>	Based on non-PAS connectivity	Determine what proportion of the gross land area is mature/old (preliminary score) and then use professional judgement to derive a final score	>50% >40 to 50% >30 to 40% $\leq$ 30%	High  Low	3 pts 2 pts 1 pt 0 pts
	Based on connectivity associated with PASs	Determine what proportion of the gross land area is protected	>20% >10 to 20% >1 to 10% <1%	High  Low	3 pts 2 pts 1 pt 0 pts
<b>Capability</b>	Based on how easily seral stage targets can be met (exclude AT)	Determine how much old forest is currently present	>60% >40 to 60% >20 to 40% 0 to 20%	High  Low	4 pts 3 pts 2 pts 1 pt
		Determine how many BEC variants currently achieve old seral targets for high BEO	>80% >70 to 80% >50 to 70% 0 to 50%	High  Low	3 pts 2 pts 1 pt 0 pts
		Determine how much AC 8 is present (for recruitment and long-term capability)	>40% >20 to 40% 0% to 20%	High Medium Low	2 pts 1 pt 0 pts
<b>Total Score</b>					<b>48 pts</b>

Table Ib. Ecological Values Scoring Summary for East Howe LU

Ecological Values	Criteria	Criteria description	Value	Score
<b>Ecosystem Representation</b>	Representation in parks	By % of BEC variants	0.60%	4 pts

Table Ib contd

<b>Ecosystem Complexity</b>	Diversity of BEC variants	By # of different BEC variants	4 variants	2 pts
	Diversity of special habitat features	Professional judgement regarding diversity of special habitat features (estuaries, freshwater deltas floodplains; wetlands/lakes, slidetracks)	1/5 special habitat features	1 pts
<b>Fish/Wildlife Values</b>	Fish/Wildlife Values	Ranked based on points for species of special concern within the Squamish Forest District (anadromous salmonids, bull trout tailed frog, marbled murrelet, spotted owl, grizzly bear, moose and black-tailed deer)	initial score of 4/21	2 pts
<b>Sensitivity to Development</b>	Based on sensitivity of BEC variants	Determine NDT type which is most prevalent (exclude NDT 5)	NDT 1 is 60.7% of gross land base	2 pts
	Inherent level of protection from signif. human disturbance (i.e. urbanisation, agricultural use, recreational use, etc...)	Professional judgement	high level of human habitation, no agricultural use and moderate to high level of recreational use	0 pt
<b>Connectivity</b>	Based on non-PAS connectivity	Determine what proportion of the gross land area is mature/old (preliminary score) and then use professional judgement to derive a final score	33.5%	0 pts
	Based on connectivity associated with <u>PASs</u>	Determine what proportion of the gross land area is protected	3.10% of gross area is protected but harvesting has previously occurred in parks	1 pt
<b>Capability</b>	Based on how easily seral stage targets can be met (exclude AT)	Determine how much old forest is currently present	31.2% of total productive forest is old growth	2 pts
		Determine how many BEC variants currently achieve old seral targets for high BEO	50% of the 4 variants can meet old seral targets	0 pts
		Determine how much AC 8 is present (for recruitment and long-term capability)	11.1% of age classes 1 thru 8 are age class 8	0 pts
<b>Total Score</b>				<b>14 pts</b>

**Table Ic. Ecological Values Ranking for Original 21 Squamish Forest District LUs**

LU	LU #	Total Score (x/48)	Ranking
Rogers	301	23	8 <sup>th</sup> (tied with East Howe and Upper Squamish)
Meager	302	24	7 <sup>th</sup> (tied with Lower Elaho and Tuwasus)
Upper Elaho	303	25	6 <sup>th</sup> (tied with Billygoat)
Lower Elaho	304	24	7 <sup>th</sup> (tied with Meager and Tuwasus)
Upper Squamish	305	23	8 <sup>th</sup> (tied with Rogers and East Howe)
Ryan	306	12	11 <sup>th</sup>
Lower Squamish	307	28	4 <sup>th</sup>
Billygoat	308	25	6 <sup>th</sup> (tied with Upper Elaho)
Mamquam	309	20	9 <sup>th</sup> (tied with Soo and Whistler)
Tuwasus	310	24	7 <sup>th</sup> (tied with Meager and Lower Elaho)
East Howe	311	14	10 <sup>th</sup>
Indian	312	23	8 <sup>th</sup> (tied with Rogers and Upper Squamish)
Soo	313	20	9 <sup>th</sup> (tied with Mamquam and Whistler)
Whistler	314	20	9 <sup>th</sup> (tied with Mamquam and Soo)
Callaghan	315	9	12 <sup>th</sup>
Sloquet	316	30	2 <sup>nd</sup> (tied with Gates)
Upper Lillooet	317	27	5 <sup>th</sup> (tied with Lizzie)
Railroad	318	29	3 <sup>rd</sup>
Birkenhead	319	31	1 <sup>st</sup>
Gates	320	30	2 <sup>nd</sup> (tied with Sloquet)
Lizzie	321	27	5 <sup>th</sup> (tied with Upper Lillooet)

**Table Id. Draft BEOs for Original 21 Squamish Forest District LUs Based on Ecological Values Ranking**

BEO	LU	LU #	Ranking	% of Total THLB
High	Gates	320	2 <sup>nd</sup> (tied with Sloquet)	4.1
High	Sloquet	316	2 <sup>nd</sup> (tied with Gates)	4.9
High	Birkenhead	319	1 <sup>st</sup>	1.0 (1.0/3.4)
				<b>Total = 10.0</b>
Intermediate	Birkenhead	319	1 <sup>st</sup>	2.4 (2.4/3.4)
Intermediate	Railroad	318	3 <sup>rd</sup>	3.9
Intermediate	Lower Squamish	307	4 <sup>th</sup>	2.3
Intermediate	Upper Lillooet	317	5 <sup>th</sup> (tied with Lizzie)	6.1
Intermediate	Lizzie	321	5 <sup>th</sup> (tied with Upper Lillooet)	3.8
Intermediate	Upper Elaho	303	6 <sup>th</sup> (tied with Billygoat)	5.6
Intermediate	Billygoat	308	6 <sup>th</sup> (tied with Upper Elaho)	3.8
Intermediate	Meager	302	7 <sup>th</sup> (tied with Lower Elaho and Tuwasus)	3.1
Intermediate	Lower Elaho	304	7 <sup>th</sup> (tied with Meager and Tuwasus)	5.0
Intermediate	Tuwasus	310	7 <sup>th</sup> (tied with Meager and Lower Elaho)	1.9
Intermediate	Rogers	301	8 <sup>th</sup> (tied with East Howe and Upper Squamish)	6.3
Intermediate	Indian	312	8 <sup>th</sup> (tied with Rogers and Upper Squamish)	3.9
				<b>Total = 48.1</b>
Low	Upper Squamish	305	8 <sup>th</sup> (tied with Rogers and East Howe)	12.7
Low	Whistler	314	9 <sup>th</sup> (tied with Mamquam and Soo)	2.4

Table Id contd

Low	Mamquam	309	9 <sup>th</sup> (tied with Soo and Whistler)	10.1
Low	Soo	313	9 <sup>th</sup> (tied with Mamquam and Whistler)	5.5
Low	East Howe	311	10 <sup>th</sup>	4.1
Low	Ryan	306	11 <sup>th</sup>	3.4
Low	Callaghan	315	12 <sup>th</sup>	3.6
				<b>Total = 41.8</b>

## 2) Timber Values Rating Criteria

Timber values rating criteria were used to assess the relative timber values of the District's LUs and consider short and long-term contributions of each LU to the TSA in terms of value and timber volume.

**Table Ie. Timber Values Rating Criteria for Squamish LUs**

Timber Values	Criteria	Criteria description	Value/Comments	Rating
Productivity	Site Index	Proportion of THLB in LU with SI of $\geq 25$ (higher proportion of better sites resulted in a higher rating)	>35% of THLB 25 to 35% of THLB <25% of THLB	High Moderate Low
Mature and harvestable Timber	Mature and harvestable timber	Proportion of mature and harvestable timber in LU (higher proportion of mature and harvestable timber resulted in a higher rating)	>50% $\geq 101$ years 25 to 50% $\geq 101$ years <25% $\geq 101$ years	High Moderate Low
Operability	Operability	Proportion of age class 8 (141 to 250 years of age) and age class 9 (>250 years) in the productive land base that is considered operable (conventional operability data and professional judgement regarding extent to which new helicopter operability data will change operable land base)	Review of proportion of age classes 8 and 9 that are considered operable, with professional judgement applied to reach a final rating	High Moderate Low
Averaged rating	Site Index, Mature and Harvestable Timber and Conventional Operability	Averaged rating of the 1 <sup>st</sup> 3 criteria	Averaged rating of the 1 <sup>st</sup> 3 criteria, based a review of these ratings and professional judgement	High Moderate Low
Constraints	Constraints on harvesting	Amount of constraints to harvesting (e.g. visual quality, community watersheds, proximity to communities, recreation, high fish and wildlife values)	Professional judgement of the extent of constraints to harvesting	High Moderate Low
Overall Rating				Low to High*

\* Note: Unlike the ecological values rating criteria, the rating of timber values did not follow a point scoring system. The 1<sup>st</sup> three values (productivity/mature and harvestable timber/operability) were utilised by MOF planning staff to develop an "averaged" rating of low, medium or high. When constraints were high, this averaged rating was reduced by 1 level (e.g. from high to medium).

**Table If. Timber Values Rating Summary for East Howe LU**

<b>Timber Values</b>	<b>Criteria</b>	<b>Criteria description</b>	<b>Value/Comments</b>	<b>Rating</b>
<b>Productivity</b>	Site Index	Proportion of THLB in LU with SI of $\geq 25$ (higher proportion of better sites resulted in a higher rating)	32.9% of THLB	Moderate
<b>Mature and harvestable Timber</b>	Mature and Harvestable Timber	Proportion of mature and harvestable timber in LU (higher proportion of mature and harvestable timber resulted in a higher rating)	33.5% of THLB	Moderate
<b>Operability</b>	Operability	Proportion of age class 8 (141 to 250 years of age) and age class 9 (>250 years) in the productive land base that is considered operable (conventional operability data and professional judgement regarding extent to which new helicopter operability data will change operable land base)	Review of proportion of age classes 8 and 9 that are considered operable, with professional judgement applied to reach a final rating	High
<b>Averaged rating</b>	Site Index, Mature and Harvestable Timber and Conventional Operability	Averaged rating of the 1 <sup>st</sup> 3 criteria	Averaged rating of the 1 <sup>st</sup> 3 criteria, based a review of these ratings and professional judgement	Moderate
<b>Constraints</b>	Constraints on harvesting	Amount of constraints to harvesting (e.g. visual quality, community watersheds, proximity to communities, recreation, high fish and wildlife values)	Professional judgement of the extent of constraints to harvesting (East Howe LU: recreation and fisheries)	High
<b>Overall Rating</b>				Low

**Table Ig. Timber Values Rating for Original 21 Squamish Forest District LUs**

<b>LU</b>	<b>LU #</b>	<b>Overall Timber Values Rating</b>
<b>Rogers</b>	<b>301</b>	<b>Moderate</b>
<b>Meager</b>	<b>302</b>	<b>Moderate</b>
<b>Upper Elaho</b>	<b>303</b>	<b>High</b>
<b>Lower Elaho</b>	<b>304</b>	<b>High</b>
<b>Upper Squamish</b>	<b>305</b>	<b>High</b>
<b>Ryan</b>	<b>306</b>	<b>Moderate</b>
<b>Lower Squamish</b>	<b>307</b>	<b>Moderate</b>
<b>Billygoat</b>	<b>308</b>	<b>Moderate</b>
<b>Mamquam</b>	<b>309</b>	<b>Moderate/High</b>
<b>Tuwasus</b>	<b>310</b>	<b>Low</b>
<b>East Howe</b>	<b>311</b>	<b>Low</b>
<b>Indian</b>	<b>312</b>	<b>Moderate</b>
<b>Soo</b>	<b>313</b>	<b>Moderate</b>
<b>Whistler</b>	<b>314</b>	<b>Low</b>
<b>Callaghan</b>	<b>315</b>	<b>Moderate</b>
<b>Sloquet</b>	<b>316</b>	<b>High</b>
<b>Upper Lillooet</b>	<b>317</b>	<b>Low</b>
<b>Railroad</b>	<b>318</b>	<b>Moderate</b>
<b>Birkenhead</b>	<b>319</b>	<b>Moderate</b>

Table 1g contd

<b>Gates</b>	<b>320</b>	<b>Low/Moderate</b>
<b>Lizzie</b>	<b>321</b>	<b>Low</b>

### 3) Final BEO Designation

Final BEO designations were based on initial consideration of the draft BEOs, which were derived from the original ecological ranking, and the timber values rating criteria. Ecological values rankings within 2 points of each other were assumed to have the same relative score and the timber values ranking was used to break any ties. Final BEO designation was based on discussions between MELP and MOF planning staff. In regards to the allocation of High, Intermediate and Low BEOs, an attempt was made to achieve a 10-45-45 percent distribution for High, Intermediate and Low BEOs respectively. The final distribution was 10% High, 46% Intermediate and 44% Low. It should be noted that THLB Area reported in Table Ih is derived from the RLUPS data base which used PAMAP, the THLB numbers used in the new data set used ArcInfo and are considered more accurate.

**Table Ih. Final BEO for 20\* Squamish Forest District LUs Based on Ecological and Timber Values**

Final BEO	LU	LU #	Original Ecological Ranking	Draft BEO	Timber Values Rating	THLB Area (ha)	% of Total THLB**
<b>High</b>	<b>Birkenhead</b>	<b>319</b>	1 <sup>st</sup>	High/Int.	Moderate	6,768.0	<b>4.19</b>
<b>High</b>	<b>Railroad</b>	<b>318</b>	3 <sup>rd</sup>	Intermediate	Moderate	5,816.8	<b>3.60</b>
<b>High</b>	<b>Sloquet (portion)</b>	<b>316</b>	2 <sup>nd</sup>	High	High	3,574.8	<b>2.21 (2.21/6.39)</b>
							<b>Total = 10.00</b>
<b>Intermediate</b>	<b>Gates</b>	<b>320</b>	2 <sup>nd</sup>	High	Low/Mod.	7,330.7	<b>4.54</b>
<b>Intermediate</b>	<b>Sloquet (portion)</b>	<b>316</b>	2 <sup>nd</sup>	High	High	6743.1	<b>4.18 (4.18/6.39)</b>
<b>Intermediate</b>	<b>Lower Squamish</b>	<b>307</b>	4 <sup>th</sup>	Intermediate	Moderate	3,875.4	<b>2.40</b>
<b>Intermediate</b>	<b>Upper Lillooet</b>	<b>317</b>	5 <sup>th</sup>	Intermediate	Low	2,305.5	<b>1.43</b>
<b>Intermediate</b>	<b>Lizzie</b>	<b>321</b>	5 <sup>th</sup>	Intermediate	Low	7,004.1	<b>4.34</b>
<b>Intermediate</b>	<b>Billygoat</b>	<b>308</b>	6 <sup>th</sup>	Intermediate	Moderate	8,386.7	<b>5.20</b>
<b>Intermediate</b>	<b>Elaho</b>	<b>303</b>	6 <sup>th</sup> /7 <sup>th</sup>	Intermediate	High	16,691.9	<b>10.34</b>
<b>Intermediate</b>	<b>Meager</b>	<b>302</b>	7 <sup>th</sup>	Intermediate	Moderate	4,847.7	<b>3.00</b>
<b>Intermediate</b>	<b>Tuwasus</b>	<b>310</b>	7 <sup>th</sup>	Intermediate	Low	4,793.6	<b>2.97</b>
<b>Intermediate</b>	<b>Rogers</b>	<b>301</b>	8 <sup>th</sup>	Intermediate	Moderate	12,230.7	<b>7.58</b>
							<b>Total = 45.98</b>
<b>Low</b>	<b>Indian</b>	<b>312</b>	8 <sup>th</sup>	Intermediate	Moderate	5,802.3	<b>3.59</b>
<b>Low</b>	<b>Upper Squamish</b>	<b>305</b>	8 <sup>th</sup>	Low	High	19,922.2	<b>12.34</b>
<b>Low</b>	<b>Whistler</b>	<b>314</b>	9 <sup>th</sup>	Low	Low	4,255.1	<b>2.64</b>
<b>Low</b>	<b>Mamquam</b>	<b>309</b>	9 <sup>th</sup>	Low	Mod./High	14,420.3	<b>8.95</b>
<b>Low</b>	<b>Soo</b>	<b>313</b>	9 <sup>th</sup>	Low	Moderate	8,454.7	<b>5.24</b>
<b>Low</b>	<b>East Howe</b>	<b>311</b>	10 <sup>th</sup>	Low	Low	5,953.3	<b>3.69</b>
<b>Low</b>	<b>Ryan</b>	<b>306</b>	11 <sup>th</sup>	Low	Moderate	5,462.7	<b>3.38</b>
<b>Low</b>	<b>Callaghan</b>	<b>315</b>	12 <sup>th</sup>	Low	Moderate	6,761.7	<b>4.19</b>
							<b>Total = 44.02</b>

- \* Note: In conjunction with final BEO determinations and in response to concerns regarding timber impacts, the Upper Elaho and Lower Elaho LUs were merged into 1 landscape unit (Elaho LU). This reduced the total number of LUs within the District from 21 to 20.
- \*\* Note: The THLB areas were based on updated data available in 1999. THLB areas differed from the original information utilised for the initial BEO, which resulted in changes to the overall THLB and the proportion within each LU.

## **Appendix II: Public Consultation Summary**

The East Howe LU was advertised for public review and comment for 60 days from August 10, 2002 to October 10, 2002. A summary of comments received and a response or how they were addressed follows:

1. **Does not support draft plan. General disagreement with the way the plan was advertised and specific disagreement with a few OGMA.** A meeting was held with the licensee and their general concerns were addressed. In addition, about 30 ha of OGMA was changed to accommodate specific forest harvesting interest.
2. **Recommendation that OGMA selection from the non-contributing land base focus on most productive area to improve representation.** During OGMA selection MSRMR made sure that candidate stands were representative of the variant. Evaluation of stand attributes such as: vets, wildlife trees, multi-layered canopy, larger trees, full stocking etc. helped to ensure stands were representative/valuable. Addressing licensee concerns for harvest opportunities in the non-contributing was necessary as part of the mitigation strategy to reduce timber supply impacts.
3. **Biological sufficiency reporting for the East Howe indicates inadequate representation of site index, and over representation of steep and cool aspects. This could be addressed by choosing better stands within the non-contributing (as per above).** Biological sufficiency reports are only one tool used to determine OGMA selection versus average indicators of the LU. Following the timber supply mitigation strategy may have skewed representation.
4. **General support for using protected areas proportionally for old forest representation, and that protected areas should not be over represented in OGMA.** The result is that parks are over represented in MHmm1. The other variants do not represent a substantial amount of old forest contribution in park. OGMA are still sufficiently distributed across the landscape unit to meet the coarse filter goal.
5. **Disagreement that small, isolated patches with no connectivity should be used for OGMA.** MSRMR established OGMA in a range of different patch sizes from small to large, forest interior habitat will be provided in larger patches. In some cases, natural forest composition consisted of forest interspersed with rock polygons that prevent forest interior habitat conditions. Connectivity was considered during delineation of OGMA but was difficult to achieve due to the long disturbance history in the TSA.
6. **Lower elevation and valley bottom old growth stands appear to be under represented in the LU.** Low elevation valley bottom stands that are suitable candidates for OGMA (larger contiguous patch) are rare in this planning area due to an extensive disturbance history. MSRMR tried to capture these stands wherever possible.

7. **It was noted that some of the OGMA's in non-contributing that are stated to provide potential Marbled Murrelet nesting habitat are adjacent to additional non-contributing lands that were not selected. Several of the adjacent areas appear to have greater nesting habitat suitability than selected OGMA's and if added would improve patch size and value for Marbled Murrelet (e.g. south western side of Phyllis Creek). These areas should be revisited and OGMA's increased in size to reduce the need for establishing WHAs in the future.** Strict adherence to the LU planning guide policy does not allow achievement of the goals for Marbled Murrelet habitat. In addition, the example area was identified for harvest opportunity by one licensee. MSRMA acknowledges that there may be need for WHAs on the landscape to manage for species not adequately protected by the coarse filter approach.



### **Appendix III: Acronyms**

AAC	Allowable Annual Cut
BCTS	British Columbia Timber Sales
BEC	Biogeoclimatic Ecosystem Classification
BEO	Biodiversity Emphasis Option
C	Contributing
CMT	Culturally Modified Tree
CWS	Community Watershed
DDM	Delegated Decision Maker
FPC	Forest Practices Code of British Columbia Act
GBPU	Grizzly Bear Population Unit
IWMS	Identified Wildlife Management Strategy
IWMP	Integrated Watershed Management Plan
LU	Landscape Unit
LUPG	Landscape Unit Planning Guide
MELP	Ministry of Environment, Lands and Parks, now called MWLAP
MEM	Ministry of Energy and Mines
MOF	Ministry of Forests
MSRM	Ministry of Sustainable Resource Management
MWLAP	Ministry of Water, Land and Air Protection
NC	Non-contributing
NDT	Natural Disturbance Type, see Biodiversity Guidebook
OGMA	Old Growth Management Area
PC	Partially Contributing
RRZ	Riparian Reserve Zone
THLB	Timber Harvesting Land Base
UWR	Ungulate Winter Range
WHA	Wildlife Habitat Area
WTP	Wildlife Tree Patch
WTR	Wildlife Tree Retention

**Appendix IV: OGMA Summary and Rationale Description**

## Appendix IV: OGMA Summary and Rationale Description for East Howe LU

OGMA #	BEC Variant	Poly. #	Area in OGMA	Age Class	Proj. Age	Proj. Height	Site Index	Species Composition	ESA 1	ESA 2	Cont. Class	Inclus. Factor	Protected Area	Additional Comments
1	CWH dm	303	0.60	8	229	38.3	21.5	FD90CW10	S		N	0.0		
1	CWH dm	342	5.32	8	229	28.0	15.8	FD60HW40	S		N	0.0		
1	CWH vm 2	342	0.08	8	229	28.0	15.8	FD60HW40	S		N	0.0		
			<b>5.99</b>											
2	CWH dm	314	3.15	9	329	27.8	10.2	HW50YC30BA20	S		N	0.0		
2	CWH vm 2	314	9.62	9	329	27.8	10.2	HW50YC30BA20	S		N	0.0		-5.0ha for reduction factor due to low stocking
2	CWH vm 2	316	0.58	9	329	30.9	11.5	HW60CW40			N	0.0		
2	CWH vm 2	317	1.61	9	329	41.1	16.0	HW50YC30BA20	S		N	0.0		
2	CWH vm 2	341	8.17	4	79	29.9	23.2	HW60FD40	S		N	0.0		
2	MH mm 1	314	8.67	9	329	27.8	10.2	HW50YC30BA20	S		N	0.0	Cypress	-4.5 ha for reduction factor due to low stocking
2	MH mm 1	316	3.22	9	329	30.9	11.5	HW60CW40			N	0.0		-1.5 ha for reduction factor due to low stocking
2	MH mm 1	317	20.23	9	329	41.1	16.0	HW50YC30BA20	S		N	0.0	Cypress	-5.0 ha for reduction factor due to low stocking
2	MH mm 1	341	0.74	4	79	29.9	23.2	HW60FD40	S		N	0.0		
			<b>55.98</b>											
3	CWH dm	304	1.34	9	339	28.1	10.2	HW50YC30BA20	S		N	0.0		
			<b>1.34</b>											
4	CWH dm	303	5.99	8	229	38.3	21.5	FD90CW10	S		N	0.0		stream riparian
4	CWH dm	303	0.31	8	229	38.3	21.5	FD90CW10	S		P	0.1		stream riparian
			<b>6.30</b>											
5	CWH dm	287	3.42	9	329	30.9	11.5	HW60YC30BA10	S	H	N	0.0		
5	CWH dm	306	1.47	9	329	44.1	17.4	HW60CW40	S	H	N	0.0		creek riparian gullies
5	CWH vm 2	287	6.21	9	329	30.9	11.5	HW60YC30BA10	S	H	N	0.0		
5	CWH vm 2	306	9.10	9	329	44.1	17.4	HW60CW40	S	H	N	0.0		creek riparian gullies
5	CWH vm 2	309	3.47	9	329	41.1	16.0	HW60FD40	S	H	N	0.0		creek riparian gullies
5	MH mm 1	287	4.22	9	329	30.9	11.5	HW60YC30BA10	S	H	N	0.0		
5	MH mm 1	306	0.07	9	329	44.1	17.4	HW60CW40	S	H	N	0.0		creek riparian gullies
5	MH mm 1	309	16.42	9	329	41.1	16.0	HW60FD40	S	H	N	0.0	Cypress	creek riparian gullies
			<b>44.39</b>											
6	CWH dm	257	8.82	9	329	43.8	22.7	FD60CW40	S		P	0.1		adjacent Highway 99
			<b>8.82</b>											
7	CWH dm	253	1.12	9	329	40.7	21.1	FD60CW40		R	C	1.0		adjacent Highway 99
7	CWH dm	297	5.62	9	329	43.8	22.7	FD60CW40		S	P	0.4		adjacent Highway 99
			<b>6.74</b>											
8	CWH dm	278	0.17	9	329	30.9	11.5	HW60BA30YC10		H	N	0.0		potential MAMU habitat
8	CWH vm 2	260	0.03	3	54	16.6	18.0	FD70HW30			C	1.0		potential MAMU habitat
8	CWH vm 2	278	18.92	9	329	30.9	11.5	HW60BA30YC10		H	N	0.0		potential MAMU habitat
8	CWH vm 2	280	7.42	8	229	28.5	12.1	HW80BA10YC10			N	0.0		potential MAMU habitat
8	CWH vm 2	281	2.84	9	329	30.9	11.5	HW60BA30YC10			N	0.0		potential MAMU habitat
8	CWH vm 2	282	6.95	9	329	35.0	13.2	HW50CW40BA10			N	0.0		potential MAMU habitat
8	CWH vm 2	282	0.03	9	329	35.0	13.2	HW50CW40BA10			C	1.0		potential MAMU habitat
8	CWH vm 2	283	0.46	9	329	47.2	19.0	HW50CW40BA10	S		N	0.0		potential MAMU habitat
8	CWH vm 2	289	9.16	8	229	28.5	12.1	HW60CW40			N	0.0		potential MAMU habitat
8	CWH vm 2	297	2.33	9	329	43.8	22.7	FD60CW40		S	P	0.4		potential MAMU habitat
8	MH mm 1	278	10.30	9	329	30.9	11.5	HW60BA30YC10		H	N	0.0		potential MAMU habitat
8	MH mm 1	279	13.10	9	329	35.0	13.2	HW60BA40			N	0.0		potential MAMU habitat

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OGMA #	BEC Variant	Poly. #	Area in OGMA	Age Class	Proj. Age	Proj. Height	Site Index	Species Composition	ESA 1	ESA 2	Cont. Class	Inclus. Factor	Protected Area	Additional Comments
8	MH mm 1	280	13.93	8	229	28.5	12.1	HW80BA10YC10			N	0.0		potential MAMU habitat
8	MH mm 1	281	1.85	9	329	30.9	11.5	HW60BA30YC10			N	0.0		potential MAMU habitat
8	MH mm 1	282	6.02	9	329	35.0	13.2	HW50CW40BA10			N	0.0		potential MAMU habitat
8	MH mm 1	282	0.03	9	329	35.0	13.2	HW50CW40BA10			C	1.0		potential MAMU habitat
8	MH mm 1	283	5.95	9	329	47.2	19.0	HW50CW40BA10	S		N	0.0		potential MAMU habitat
8	MH mm 1	289	1.56	8	229	28.5	12.1	HW60CW40			N	0.0		potential MAMU habitat
			<b>101.09</b>											
9	CWH dm	265	12.88	9	329	40.7	21.1	FD100		H	C	1.0		stream riparian/Harvey Creek CWS
9	CWH vm 2	265	1.05	9	329	40.7	21.1	FD100		H	C	1.0		stream riparian/Harvey Creek CWS
			<b>13.93</b>											
10	CWH vm 2	207	5.86	9	329	30.9	11.5	HW60BA40		H	N	0.0		Harvey Creek CWS
10	MH mm 1	207	8.51	9	329	30.9	11.5	HW60BA40		H	N	0.0		Harvey Creek CWS
			<b>14.38</b>											
11	AT p	199	2.38	9	329	24.7	9.1	HW50BA30YC20	S	H	N	0.0		Alberta Creek CWS, productive forest, is MHmm1
11	CWH dm	210	0.05	9	329	40.7	21.1	FD60HW40	S	H	P	0.1		Alberta Creek CWS
11	CWH vm 2	210	7.75	9	329	40.7	21.1	FD60HW40	S	H	N	0.0		Alberta Creek CWS
11	CWH vm 2	210	0.33	9	329	40.7	21.1	FD60HW40	S	H	P	0.1		Alberta Creek CWS
11	MH mm 1	199	3.13	9	329	24.7	9.1	HW50BA30YC20	S	H	N	0.0		Alberta Creek CWS
11	MH mm 1	203	10.66	9	329	35.0	13.2	HW50BA40YC10		H	N	0.0		Alberta Creek CWS
11	MH mm 1	203	0.79	9	329	35.0	13.2	HW50BA40YC10		H	C	1.0		Alberta Creek CWS
11	MH mm 1	210	5.38	9	329	40.7	21.1	FD60HW40	S	H	N	0.0		Alberta Creek CWS
			<b>30.49</b>											
12	CWH dm	164	9.41	9	329	24.4	12.8	FD50HW50		SH	N	0.0		M Creek riparian
12	CWH dm	174	0.31	2	24	7.2	18.0	FD50CW20HW20			N	0.0		M Creek riparian
12	CWH dm	235	11.64	8	229	38.3	21.5	FD90CW10	S	R	P	0.1		M Creek riparian
12	CWH vm 2	164	1.84	9	329	24.4	12.8	FD50HW50		SH	N	0.0		M Creek riparian
			<b>23.19</b>											
13	CWH vm 2	177	0.17	9	329	35.0	13.2	HW70FD30	S	H	P	0.1		M Creek riparian
13	CWH vm 2	177	6.22	9	329	35.0	13.2	HW70FD30	S	H	N	0.0		M Creek riparian
13	MH mm 1	177	9.92	9	329	35.0	13.2	HW70FD30	S	H	N	0.0		M Creek riparian/GWR
13	MH mm 1	177	0.49	9	329	35.0	13.2	HW70FD30	S	H	P	0.1		M Creek riparian/GWR
			<b>16.80</b>											
14	MH mm 1	182	19.61	9	289	36.4	14.5	HW50BA40CW10			N	0.0	Cypress	lake and stream riparian
14	MH mm 1	183	10.28	9	329	35.0	13.2	HW60BA30YC10	S		N	0.0	Cypress	lake and stream riparian
14	MH mm 1	825	0.02	9	324	24.5	9.0	H60B30YC10	S		N	0.0	Cypress	lake and stream riparian
14	MH mm 1	831	23.04	9	289	36.4	14.5	HW50BA40CW10			N	0.0	Cypress	lake and stream riparian
14	MH mm 1	832	1.12	9	289	36.4	14.5	HW50BA40CW10			N	0.0	Cypress	lake and stream riparian
			<b>54.07</b>											
15	MH mm 1	858	7.24	9	324	42.4	16.7	H60B30CW10		R	N	0.0	Cypress	lake and stream riparian
			<b>7.24</b>											
16	CWH dm	159	3.70	8	229	28.0	15.8	FD90CW10	S	R	N	0.0		adjacent Highway 99
16	CWH dm	810	14.20	8	224	31.2	27.5	DR60FD30CW10		R	N	0.0		adjacent Highway 99
16	CWH dm	812	1.31	8	229	28.0	15.8	FD90CW10	S	R	N	0.0		adjacent Highway 99
			<b>19.20</b>											

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17	CWH dm	808	4.80	9	324	31.0	16.2	FD60CW40	S		N	0.0		
			<b>4.80</b>											
18	CWH dm	797	5.39	6	114	37.4	26.1	FD60H40		R	C	1.0		stream riparian
18	CWH dm	800	0.66	6	114	31.5	19.3	H60FD40			C	1.0		stream riparian
18	CWH dm	801	16.74	9	324	42.1	21.9	FD50H30CW20	S		N	0.0		stream riparian
18	CWH dm	801	6.26	9	324	42.1	21.9	FD50H30CW20	S		P	0.1		stream riparian
18	CWH dm	804	4.68	6	114	26.7	18.8	FD80CW10PL10			C	1.0		stream riparian
18	CWH dm	867	1.84	6	114	26.7	18.8	FD80CW10PL10	S		P	0.1		stream riparian
18	CWH dm	869	1.77	7	134	26.7	14.7	H50FD30DR10			N	0.0		stream riparian
18	CWH dm	870	1.53	9	324	42.1	21.9	FD50H30CW20	S		N	0.0		stream riparian
			<b>38.87</b>											
19	CWH vm 2	766	0.03	2	30	11.7	22.0	HW40BA30CW20			N	0.0	Cypress	lake and stream riparian
19	CWH vm 2	767	21.19	9	324	42.4	16.7	H50CW30B10	R		N	0.0	Cypress	lake and stream riparian
19	CWH vm 2	782	0.93	9	324	42.4	16.7	H60B30YC10	SR		N	0.0	Cypress	lake and stream riparian
19	MH mm 1	767	15.57	9	324	42.4	16.7	H50CW30B10	R		N	0.0	Cypress	lake and stream riparian
19	MH mm 1	781	5.99	9	324	42.4	16.7	H60B30YC10	SR		N	0.0	Cypress	lake and stream riparian
19	MH mm 1	782	8.84	9	324	42.4	16.7	H60B30YC10	SR		N	0.0	Cypress	lake and stream riparian
			<b>52.55</b>											
20	MH mm 1	774	13.85	9	324	42.4	16.7	H60B30YC10	SR		N	0.0	Cypress	lake and stream riparian
20	MH mm 1	775	1.10	9	324	42.4	16.7	H60CW30B10	R		P	0.1		lake and stream riparian
20	MH mm 1	775	10.67	9	324	42.4	16.7	H60CW30B10	R		N	0.0	Cypress	lake and stream riparian
			<b>25.62</b>											
21	CWH vm 1	294	3.17	9	309	26.3	9.8	HW60BA30CW10	SP		N	0.0		lake and stream riparian/adj. small slidetrack
21	CWH vm 1	303	2.68	9	289	37.4	14.9	HW70CW30	S		P	0.1		lake and stream riparian/adj. small slidetrack
21	CWH vm 1	303	0.46	9	289	37.4	14.9	HW70CW30	S		N	0.0		lake and stream riparian/adj. small slidetrack
21	CWH vm 2	303	0.21	9	289	37.4	14.9	HW70CW30	S		N	0.0		lake and stream riparian/adj. small slidetrack
			<b>6.52</b>											
22	CWH vm 1	279	0.07	9	358	35.2	13.0				N	0.0		lake and stream riparian/cross-elevational link
22	CWH vm 1	292	0.24	9	359	28.2	10.1	HW65BA25CW10	S		N	0.0		lake and stream riparian/cross-elevational link
22	CWH vm 1	294	5.96	9	309	26.3	9.8	HW60BA30CW10	SP		N	0.0		lake and stream riparian/cross-elevational link
22	CWH vm 1	295	0.37	9	359	36.3	15.2	CW60HW40	S		P	0.1		lake and stream riparian/cross-elevational link
22	CWH vm 1	295	5.95	9	359	36.3	15.2	CW60HW40	S		N	0.0		lake and stream riparian/cross-elevational link
22	CWH vm 1	298	3.81	9	359	34.2	12.5	HW70CW20BA10			N	0.0		lake and stream riparian/cross-elevational link
22	CWH vm 1	310	1.33	9	359	36.3	15.2	CW60HW40	S		P	0.1		lake and stream riparian/cross-elevational link
22	CWH vm 1	310	1.32	9	359	36.3	15.2	CW60HW40	S		N	0.0		lake and stream riparian/cross-elevational link
22	CWH vm 2	292	5.60	9	359	28.2	10.1	HW65BA25CW10	S		N	0.0		lake and stream riparian/cross-elevational link
22	CWH vm 2	293	2.96	9	358	35.2	13.0	HW60CW30BA10			N	0.0		lake and stream riparian/cross-elevational link
22	CWH vm 2	294	17.70	9	309	26.3	9.8	HW60BA30CW10	SP		N	0.0		lake and stream riparian/cross-elevational link
22	CWH vm 2	295	0.86	9	359	36.3	15.2	CW60HW40	S		N	0.0		lake and stream riparian/cross-elevational link
22	CWH vm 2	298	1.11	9	359	34.2	12.5	HW70CW20BA10			N	0.0		lake and stream riparian/cross-elevational link
22	MH mm 1	291	2.59	9	359	35.3	13.0	HW80CW20	SP		N	0.0		lake and stream riparian/cross-elevational link
22	MH mm 1	292	15.33	9	359	28.2	10.1	HW65BA25CW10	S		N	0.0		lake and stream riparian/cross-elevational link
22	MH mm 1	293	2.47	9	358	35.2	13.0	HW60CW30BA10			N	0.0		lake and stream riparian/cross-elevational link
22	MH mm 1	294	9.23	9	309	26.3	9.8	HW60BA30CW10	SP		N	0.0		lake and stream riparian/cross-elevational link
			<b>76.89</b>											
23	CWH vm 1	171	15.99	9	309	27.3	10.2	HW60BA30CW10	S		N	0.0		potential MAMU habitat/cross-elevational link
23	CWH vm 1	173	7.90	9	309	30.3	11.5	HW50BA40CW10	SP		N	0.0		potential MAMU habitat/cross-elevational link

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23	CWH vm 2	171	25.52	9	309	27.3	10.2	HW60BA30CW10	S		N	0.0		potential MAMU habitat/cross-elevational link
23	CWH vm 2	274	5.48	9	289	29.3	11.3	HW60CW30BA10			N	0.0		potential MAMU habitat/cross-elevational link
23	CWH vm 2	275	3.03	9	289	31.3	12.2	HW60CW40			N	0.0		potential MAMU habitat/cross-elevational link
23	CWH vm 2	890	2.61	9	289	31.3	12.2	HW60CW40			N	0.0		potential MAMU habitat/cross-elevational link
23	CWH vm 2	891	3.77	9	289	29.3	11.3	HW60CW30BA10			N	0.0		potential MAMU habitat/cross-elevational link
23	MH mm 1	275	1.63	9	289	31.3	12.2	HW60CW40			N	0.0		potential MAMU habitat/cross-elevational link
23	MH mm 1	890	6.15	9	289	31.3	12.2	HW60CW40			N	0.0		potential MAMU habitat/cross-elevational link
			<b>72.08</b>											
24	CWH dm	671	8.41	8	224	31.4	17.8	FD60H30CW10	S		N	0.0		
24	CWH dm	883	0.79	9	309	34.3	13.2	HW40FD30YC20			N	0.0		
24	CWH vm 1	168	4.15	9	309	34.3	13.2	HW40FD30YC20			N	0.0		
24	CWH vm 1	671	3.11	8	224	31.4	17.8	FD60H30CW10	S		N	0.0		
24	CWH vm 1	883	4.23	9	309	34.3	13.2	HW40FD30YC20			N	0.0		
			<b>20.69</b>											
25	CWH vm 1	180	6.84	9	309	30.3	13.3	CW60HW30FD10	SP		N	0.0		potential MAMU habitat/cross-elevational link
25	CWH vm 1	181	4.59	9	309	32.3	14.2	CW80HW20			N	0.0		potential MAMU habitat/cross-elevational link
25	CWH vm 1	182	6.53	9	309	30.3	11.5	HW60CW40	S		N	0.0		potential MAMU habitat/cross-elevational link
25	CWH vm 2	148	4.88	9	358	39.2	14.7	HW45CW35BA15			N	0.0		potential MAMU habitat/cross-elevational link
25	CWH vm 2	149	0.02	2	30	11.3	23.0	BA32HW24DR24			C	1.0		potential MAMU habitat/cross-elevational link
25	CWH vm 2	181	1.15	9	309	32.3	14.2	CW80HW20			N	0.0		potential MAMU habitat/cross-elevational link
25	CWH vm 2	182	24.89	9	309	30.3	11.5	HW60CW40	S		N	0.0		potential MAMU habitat/cross-elevational link
25	CWH vm 2	184	12.15	9	308	34.3	13.2	HW70CW25YC5	S		N	0.0		potential MAMU habitat/cross-elevational link
25	MH mm 1	148	1.09	9	358	39.2	14.7	HW45CW35BA15			N	0.0		potential MAMU habitat/cross-elevational link
25	MH mm 1	184	10.87	9	308	34.3	13.2	HW70CW25YC5	S		N	0.0		potential MAMU habitat/cross-elevational link
25	MH mm 1	187	18.90	9	309	33.3	12.8	HW70CW30			N	0.0		potential MAMU habitat/cross-elevational link
25	MH mm 1	195	8.29	9	268	34.4	13.9	HW60BA20YC20			N	0.0		potential MAMU habitat/cross-elevational link
25	MH mm 1	197	11.46	9	309	34.3	13.2	HW50BA30CW20			N	0.0		potential MAMU habitat/cross-elevational link
			<b>111.68</b>											
27	CWH vm 1	141	0.55	9	269	32.4	13.0	HW40CW30BA20	S		N	0.0		cross-elevational link
27	CWH vm 1	143	3.28	9	309	33.3	12.8	HW50CW35YC15	S		N	0.0		cross-elevational link
27	CWH vm 2	141	7.59	9	269	32.4	13.0	HW40CW30BA20	S		N	0.0		cross-elevational link
27	CWH vm 2	142	7.77	9	269	26.3	10.4	HW50BA50	P		N	0.0		cross-elevational link
27	CWH vm 2	143	7.36	9	309	33.3	12.8	HW50CW35YC15	S		N	0.0		cross-elevational link
27	MH mm 1	141	5.69	9	269	32.4	13.0	HW40CW30BA20	S		N	0.0		cross-elevational link
27	MH mm 1	142	0.19	9	269	26.3	10.4	HW50BA50	P		N	0.0		cross-elevational link
27	MH mm 1	204	17.17	9	309	32.4	11.4	BA60HW20CW20	P		N	0.0		cross-elevational link
			<b>49.60</b>											
28	CWH vm 2	254	7.05	9	359	34.2	12.5	HW70YC20BA10			N	0.0		stream riparian
28	CWH vm 2	255	4.08	9	359	32.2	11.7	HW50BA40CW10			N	0.0		stream riparian
28	CWH vm 2	256	12.01	9	308	29.2	11.1	HW60YC25BA15	P		N	0.0		stream riparian
28	CWH vm 2	261	8.67	9	359	32.2	11.7	HW50BA40CW10			N	0.0		stream riparian
28	CWH vm 2	262	1.71	9	359	32.2	11.7	HW50BA40CW10			N	0.0		stream riparian
28	MH mm 1	254	11.54	9	359	34.2	12.5	HW70YC20BA10			N	0.0		stream riparian
28	MH mm 1	255	2.40	9	359	32.2	11.7	HW50BA40CW10			N	0.0		stream riparian
28	MH mm 1	256	6.93	9	308	29.2	11.1	HW60YC25BA15	P		N	0.0		stream riparian
28	MH mm 1	262	2.78	9	359	32.2	11.7	HW50BA40CW10			N	0.0		stream riparian
			<b>57.17</b>											
29	CWH vm 2	106	0.58	9	259	37.5	15.0	BA60HW40	S		N	0.0		

## Appendix IV: OGMA Summary and Rationale Description for East Howe LU

OGMA #	BEC Variant	Poly. #	Area in OGMA	Age Class	Proj. Age	Proj. Height	Site Index	Species Composition	ESA 1	ESA 2	Cont. Class	Inclus. Factor	Protected Area	Additional Comments
29	MH mm 1	106	4.24	9	259	37.5	15.0	BA60HW40	S		N	0.0		
			<b>4.82</b>											
30	CWH vm 2	107	3.21	9	309	45.4	17.8	BA50HW50			C	1.0		
			<b>3.21</b>											
31	CWH vm 2	66	0.05	9	408	37.2	13.3	HW60BA30YC6	S		P	0.1		
31	CWH vm 2	66	6.13	9	408	37.2	13.3	HW60BA30YC6	S		N	0.0		
31	MH mm 1	66	3.16	9	408	37.2	13.3	HW60BA30YC6	S		N	0.0		
			<b>9.35</b>											
32	CWH vm 2	702	8.41	9	384	29.7	9.3	BA60HW30FD5			N	0.0		Adjacent Jane Creek drainage (historic mining)
32	MH mm 1	702	11.90	9	384	29.7	9.3	BA60HW30FD5			N	0.0		Adjacent Jane Creek drainage (historic mining)
32	MH mm 1	703	16.08	9	369	32.3	10.4	BA60HW30FD5			N	0.0		Adjacent Jane Creek drainage (historic mining)
			<b>36.39</b>											
35	CWH dm	618	5.28	9	324	30.6	11.4	H50CW30FD20			N	0.0		Adjacent marine foreshore
			<b>5.28</b>											
36	CWH dm	759	7.19	9	309	34.2	18.0	FD40HW40CW20			C	1.0		
36	CWH dm	763	7.76	8	189	37.5	22.1	FD50HW40CW10			C	1.0		
36	CWH dm	937	6.85	7	129	28.8	19.3	FD40HW30CW20			C	1.0		
36	CWH dm	938	0.03	8	152	35.2	22.2	FD50HW35CW15			C	1.0		
36	CWH dm	939	0.06	7	132	35.3	21.3	CW50HW30FD20			C	1.0		
36	CWH dm	940	0.02	0	0	0	40				C	1.0		
36	CWH dm	1209	1.95	9	309	34.2	18.0	FD40HW40CW20			C	1.0		
			<b>23.85</b>											
37	CWH vm 1	718	2.91	7	124	28.1	16.6	BA60HW40			C	1.0		slide track
37	CWH vm 2	714	2.60	9	259	34.4	14.1	HW50BA40CW10			C	1.0		slide track
37	CWH vm 2	715	0.69	9	268	32.4	12.2	BA60HW40			N	0.0		slide track
37	CWH vm 2	718	2.39	7	124	28.1	16.6	BA60HW40			C	1.0		slide track
37	MH mm 1	715	19.38	9	268	32.4	12.2	BA60HW40			N	0.0		slide track
37	MH mm 1	744	7.09	9	269	30.5	11.3	BA60HW40			N	0.0		slide track
			<b>35.05</b>											
38	CWH vm 2	673	6.51	9	298	32.4	11.6	BA45HW45YC10	S		N	0.0		
38	CWH vm 2	675	0.40	9	298	34.4	12.5	BA45HW45YC10			N	0.0		
38	CWH vm 2	676	0.22	9	424	37.1	13.1	HW60YC30CW10			C	1.0		
38	CWH vm 2	676	2.38	9	424	37.1	13.1	HW60YC30CW10			N	0.0		
38	MH mm 1	673	3.12	9	298	32.4	11.6	BA45HW45YC10	S		N	0.0		
38	MH mm 1	675	7.03	9	298	34.4	12.5	BA45HW45YC10			N	0.0		
38	MH mm 1	676	0.11	9	424	37.1	13.1	HW60YC30CW10			N	0.0		
			<b>19.78</b>											
39	MH mm 1	669	10.30	9	334	52.9	21.7	BA90HW10	S		P	0.1		lake riparian/rec values/part of larger OGMA complex
39	MH mm 1	669	0.68	9	334	52.9	21.7	BA90HW10	S		N	0.0		lake riparian/rec values/part of larger OGMA complex
			<b>10.98</b>											
40	AT p	582	2.75	9	309	35.4	12.7	BA80HW20	S		N	0.0		productive forest and is actually MHmm1
40	MH mm 1	582	3.66	9	309	35.4	12.7	BA80HW20	S		N	0.0		lake riparian/rec values/part of larger OGMA complex
40	MH mm 1	596	2.67	9	308	43.4	16.7	BA45HW40CW15			C	1.0		lake riparian/rec values/part of larger OGMA complex

## Appendix IV: OGMA Summary and Rationale Description for East Howe LU

OGMA #	BEC Variant	Poly. #	Area in OGMA	Age Class	Proj. Age	Proj. Height	Site Index	Species Composition	ESA 1	ESA 2	Cont. Class	Inclus. Factor	Protected Area	Additional Comments
			<b>9.09</b>											
41	AT p	580	3.07	9	309	30.4	10.5	BA90HW10	SP		N	0.0		productive forest and is actually MHmm1
41	MH mm 1	580	1.26	9	309	30.4	10.5	BA90HW10	SP		N	0.0		lake riparian/rec values/part of larger OGMA complex
			<b>4.33</b>											
42	AT p	573	0.26	9	308	43.4	16.7	BA45HW40CW15			C	1.0		productive forest and is actually MHmm1
42	AT p	574	0.03	9	309	28.3	10.7	HW50BA40YC10			N	0.0		productive forest and is actually MHmm1
42	AT p	577	0.61	9	309	30.4	10.5	BA90HW10	SP		N	0.0		productive forest and is actually MHmm1
42	MH mm 1	573	11.16	9	308	43.4	16.7	BA45HW40CW15			C	1.0		lake riparian/rec. values/cross-elevational link
42	MH mm 1	574	4.65	9	309	28.3	10.7	HW50BA40YC10			N	0.0		lake riparian/rec. values/cross-elevational link
42	MH mm 1	576	20.56	9	308	43.4	16.7	BA45HW40CW15			C	1.0		lake riparian/rec. values/cross-elevational link
42	MH mm 1	577	3.77	9	309	30.4	10.5	BA90HW10	SP		N	0.0		lake riparian/rec. values/cross-elevational link
42	MH mm 1	769	6.45	9	358	43.3	15.5	BA45HW40CW15			C	1.0		lake riparian/rec. values/cross-elevational link
42	MH mm 1	776	16.62	9	309	49.4	20.2	BA90HW10			C	1.0		lake riparian/rec. values/cross-elevational link
			<b>64.11</b>											
43	CWH dm	477	16.12	6	119	31.0	21.4	FD40HW40CW20		W	P	0.1		builds on Murrin/AC 5 stands appear older
43	CWH dm	478	0.59	5	99	28.3	21.2	FD50HW50		R	C	1.0		builds on Murrin/AC 5 stands appear older
43	CWH dm	479	8.30	6	119	28.3	16.7	HW60FD20CW20		W	P	0.1		builds on Murrin/AC 5 stands appear older
43	CWH dm	481	5.95	5	99	27.6	18.4	HW50FD30CW20			C	1.0		builds on Murrin/AC 5 stands appear older
43	CWH dm	488	2.00	8	209	34.6	15.6	HW60FD30CW10			C	1.0		builds on Murrin/AC 5 stands appear older
43	CWH dm	996	0.55	5	99	28.3	21.2	FD50HW50		R	N	0.0	Murrin	builds on Murrin/AC 5 stands appear older
43	CWH dm	996	9.32	5	99	28.3	21.2	FD50HW50		R	C	1.0		builds on Murrin/AC 5 stands appear older
43	CWH dm	1005	6.91	6	114	37.4	26.1	FD100			C	1.0		builds on Murrin/AC 5 stands appear older
43	CWH dm	1007	7.39	8	209	34.6	15.6	HW60FD30CW10			C	1.0		builds on Murrin/AC 5 stands appear older
43	CWH dm	1008	6.89	5	99	27.6	18.4	HW50FD30CW20		S	P	0.4		builds on Murrin/AC 5 stands appear older
43	CWH dm	1052	0.02	6	114	37.4	26.1	FD100		R	C	1.0	Murrin	builds on Murrin/AC 5 stands appear older
43	CWH dm	1203	0.37	6	119	31.0	21.4	FD40HW40CW20		W	P	0.1		
			<b>64.40</b>											
44	CWH dm	496	18.35	9	259	30.4	12.3	HW40FD30YC20			N	0.0		
			<b>18.35</b>											
46	CWH vm 2	499	2.38	9	309	32.3	12.3	HW30BA20CW20		R	N	0.0		lake riparian
46	CWH vm 2	502	21.62	9	309	30.3	11.5	HW60YC20FD10			N	0.0		
46	CWH vm 2	850	2.62	9	309	32.3	12.3	HW30BA20CW20			N	0.0		lake riparian
46	MH mm 1	502	2.32	9	309	30.3	11.5	HW60YC20FD10			N	0.0		
			<b>28.93</b>											
47	CWH vm 2	449	0.98	9	309	30.3	11.5	HW50BA50			N	0.0		
47	MH mm 1	449	16.56	9	309	30.3	11.5	HW50BA50			N	0.0		
			<b>17.54</b>											
48	MH mm 1	423	14.13	9	308	30.3	11.5	HW75BA20YC5			N	0.0		slide track
48	MH mm 1	424	4.08	9	268	35.4	14.4	HW45BA40YC15			N	0.0		slide track
48	MH mm 1	425	5.17	9	289	26.4	9.3	BA60HW40	SP		N	0.0		
48	MH mm 1	426	6.42	9	289	26.4	9.3	BA60HW40	SP		N	0.0		slide track
48	MH mm 1	427	4.25	9	268	35.4	14.4	HW45BA40YC15			N	0.0		slide track
48	MH mm 1	428	28.53	9	308	30.3	11.5	HW75BA20YC5			N	0.0		
			<b>62.57</b>											
49	MH mm 1	400	4.04	9	324	34.5	12.0	BA80HW20	SP		N	0.0		creek riparian



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OGMA #	BEC Variant	Poly. #	Area in OGMA	Age Class	Proj. Age	Proj. Height	Site Index	Species Composition	ESA 1	ESA 2	Cont. Class	Inclus. Factor	Protected Area	Additional Comments
49	MH mm 1	403	9.56	9	324	34.5	12.0	BA80HW20	SP		N	0.0		creek riparian
49	MH mm 1	405	4.16	9	259	12.2	4.6	BA90HW10	P		N	0.0		creek riparian
			<b>17.76</b>											
51	CWH dm	253	1.61	9	309	34.3	13.2	HW50FD40YC10			C	1.0		remnant riparian forest patch
51	CWH vm 2	253	3.19	9	309	34.3	13.2	HW50FD40YC10			C	1.0		remnant riparian forest patch
51	CWH vm 2	254	12.08	9	309	39.3	15.5	HW50YC30FD20			C	1.0		remnant riparian forest patch
			<b>16.88</b>											
52	CWH dm	239	38.75	9	278	19.2	7.4	HW55CW30FD15	R		N	0.0	Stawamus Chief	
			<b>38.75</b>											
54	CWH dm	241	9.93	9	259	26.3	10.5	HW40FD40CW10	R		N	0.0	Stawamus Chief	
			<b>9.93</b>											
55	CWH dm	220	7.08	9	309	34.3	13.2	HW60CW30FD10			N	0.0	Stawamus Chief	stream riparian with headwater wetland feature
55	CWH dm	222	7.16	9	259	23.3	9.3	HW50CW30FD20			N	0.0	Stawamus Chief	stream riparian with headwater wetland feature
55	CWH dm	242	2.45	9	259	28.4	11.4	HW40FD30CW20		SR	N	0.0	Stawamus Chief	stream riparian with headwater wetland feature
			<b>16.68</b>											
56	CWH dm	58	6.41	9	318	30.2	11.3	HW50CW30FD20			N	0.0	Stawamus Chief	
			<b>6.41</b>											
57	CWH dm	69	2.15	9	259	30.4	12.3	HW40CW30FD20	S		N	0.0		Stawamus R. CWS/stream riparian to upland link
57	CWH dm	74	12.43	9	309	43.4	17.4	HW50CW30FD20		SP	P	0.4		Stawamus R. CWS/stream riparian to upland link
57	CWH dm	599	0.78	9	310	43.4	17.4	HW50CW30FD20	P	S	N	0.0	Stawamus Chief	Stawamus R. CWS/stream riparian to upland link
57	CWH dm	599	5.94	9	310	43.4	17.4	HW50CW30FD20	P	S	P	0.4		Stawamus R. CWS/stream riparian to upland link
57	CWH vm 1	69	14.11	9	259	30.4	12.3	HW40CW30FD20		S	N	0.0		Stawamus R. CWS/stream riparian to upland link
57	CWH vm 1	74	17.32	9	309	43.4	17.4	HW50CW30FD20		SP	P	0.4		Stawamus R. CWS/stream riparian to upland link
57	CWH vm 1	195	10.49	9	309	46.4	19.0	HW50YC30BA20	S		N	0.0		Stawamus R. CWS/stream riparian to upland link
57	CWH vm 1	195	1.02	9	309	46.4	19.0	HW50YC30BA20	S		P	0.1		Stawamus R. CWS/stream riparian to upland link
57	CWH vm 1	197	5.96	9	294	38.6	15.4	HW40FD40CW20	S		N	0.0		Stawamus R. CWS/stream riparian to upland link
57	CWH vm 1	197	0.07	9	294	38.6	15.4	HW40FD40CW20	S		P	0.1		Stawamus R. CWS/stream riparian to upland link
57	CWH vm 1	813	8.16	9	259	30.4	12.3	HW40CW30FD20		S	N	0.0		Stawamus R. CWS/stream riparian to upland link
57	CWH vm 2	197	0.37	9	294	38.6	15.4	HW40FD40CW20	S		P	0.1		Stawamus R. CWS/stream riparian to upland link
57	CWH vm 2	197	22.71	9	294	38.6	15.4	HW40FD40CW20	S		N	0.0		Stawamus R. CWS/stream riparian to upland link
57	CWH vm 2	205	9.66	9	309	32.3	12.3	HW70BA30			N	0.0		Stawamus R. CWS/stream riparian to upland link
57	CWH vm 2	813	4.51	9	259	30.4	12.3	HW40CW30FD20		S	N	0.0		Stawamus R. CWS/stream riparian to upland link
			<b>115.68</b>											
58	CWH vm 1	277	2.20	9	284	36.8	14.7	HW40YC40BA20	SP		N	0.0		Stawamus R. CWS/stream riparian/larger complex
58	CWH vm 2	277	2.19	9	284	36.8	14.7	HW40YC40BA20	SP		N	0.0		Stawamus R. CWS/stream riparian/larger complex
58	CWH vm 2	282	4.94	9	309	32.3	12.3	HW70BA30		SP	N	0.0		Stawamus R. CWS/stream riparian/larger complex
58	MH mm 1	282	0.28	9	309	32.3	12.3	HW70BA30		SP	N	0.0		Stawamus R. CWS/stream riparian/larger complex
			<b>9.61</b>											
59	CWH vm 2	283	1.86	9	309	32.3	12.3	HW70BA30	SP		N	0.0		Stawamus R. CWS/slidetrack/larger OGMA complex
59	CWH vm 2	284	1.81	9	309	38.3	15.0	HW40BA30YC30	P		N	0.0		Stawamus R. CWS/slidetrack/larger OGMA complex
			<b>3.67</b>											
60	CWH vm 1	285	2.29	9	309	38.3	15.0	HW40BA30YC30	S		N	0.0		Stawamus R. CWS/slidetrack/larger OGMA complex
			<b>2.29</b>											

## Appendix IV: OGMA Summary and Rationale Description for East Howe LU

OGMA #	BEC Variant	Poly. #	Area in OGMA	Age Class	Proj. Age	Proj. Height	Site Index	Species Composition	ESA 1	ESA 2	Cont. Class	Inclus. Factor	Protected Area	Additional Comments
61	CWH vm 1	287	4.01	9	309	31.4	11.0	BA40HW30YC30		SP	N	0.0		Stawamus R. CWS/slidetrack/larger OGMA complex
61	CWH vm 2	287	8.13	9	309	31.4	11.0	BA40HW30YC30		SP	N	0.0		Stawamus R. CWS/slidetrack/larger OGMA complex
			<b>12.14</b>											
62	CWH vm 1	288	4.91	9	309	31.4	11.0	BA40HW30YC30	SP		N	0.0		Stawamus R. CWS/slidetrack/larger OGMA complex
62	CWH vm 2	288	2.34	9	309	31.4	11.0	BA40HW30YC30	SP		N	0.0		Stawamus R. CWS/slidetrack/larger OGMA complex
62	CWH vm 2	289	4.27	9	259	28.5	10.7	BA60HW20YC20	SP		N	0.0		Stawamus R. CWS/slidetrack/larger OGMA complex
62	MH mm 1	289	5.91	9	259	28.5	10.7	BA60HW20YC20	SP		N	0.0		Stawamus R. CWS/slidetrack/larger OGMA complex
			<b>17.44</b>											
63	CWH vm 1	291	0.18	9	309	38.4	14.1	BA60HW30YC10	S		P	0.1		Stawamus R. CWS/slidetrack/larger OGMA complex
63	CWH vm 1	291	1.48	9	309	38.4	14.1	BA60HW30YC10	S		N	0.0		Stawamus R. CWS/slidetrack/larger OGMA complex
63	CWH vm 2	291	1.41	9	309	38.4	14.1	BA60HW30YC10	S		P	0.1		Stawamus R. CWS/slidetrack/larger OGMA complex
63	CWH vm 2	291	6.61	9	309	38.4	14.1	BA60HW30YC10	S		N	0.0		Stawamus R. CWS/slidetrack/larger OGMA complex
63	CWH vm 2	386	8.12	9	309	28.3	10.7	HW40YC30BA30	SP		N	0.0		Stawamus R. CWS/slidetrack/larger OGMA complex
63	MH mm 1	386	6.54	9	309	28.3	10.7	HW40YC30BA30	SP		N	0.0		Stawamus R. CWS/slidetrack/larger OGMA complex
			<b>24.34</b>											
64	CWH vm 2	591	0.17	9	359	36.2	13.4	HW60CW20BA20	S		P	0.1		Stawamus R. CWS
64	CWH vm 2	591	1.90	9	359	36.2	13.4	HW60CW20BA20	S		N	0.0		Stawamus R. CWS
64	MH mm 1	587	14.93	9	358	29.2	10.5	HW60BA30YC10	P		N	0.0		Stawamus R. CWS
64	MH mm 1	591	5.46	9	359	36.2	13.4	HW60CW20BA20	S		N	0.0		Stawamus R. CWS
			<b>22.46</b>											
65	MH mm 1	657	40.82	9	324	30.0	11.2	HW50BA50		SP	N	0.0		Stawamus R. CWS/adjacent wet meadow feature
			<b>40.82</b>											
66	MH mm 1	598	57.98	9	308	30.3	11.5	HW60BA20YC20			N	0.0		Stawamus R. CWS/adjacent wet meadow feature
66	MH mm 1	628	10.31	9	324	34.5	12.0	BA60HW30YC10			N	0.0		Stawamus R. CWS/adjacent wet meadow feature
66	MH mm 1	630	28.03	9	308	27.2	10.2	HW70BA20YC10	SP		N	0.0		Stawamus R. CWS/adjacent wet meadow feature
66	MH mm 1	631	0.85	9	424	31.2	9.4	BA60HW40			N	0.0		Stawamus R. CWS/adjacent wet meadow feature
			<b>97.16</b>											
67	CWH vm 2	381	22.19	9	509	30.6	10.0	HW40BA30YC30	P		N	0.0		Stawamus R. CWS/large riparian forest patch
67	CWH vm 2	382	17.06	9	509	30.6	10.0	HW40BA30YC30			N	0.0		Stawamus R. CWS/large riparian forest patch
			<b>39.26</b>											
68	CWH vm 2	384	4.64	9	309	40.4	15.1	BA50HW40YC10			C	1.0		Stawamus R. CWS/remnant riparian patch
			<b>4.64</b>											
69	CWH vm 2	295	6.34	9	309	33.4	11.8	BA50HW40YC10	S		N	0.0		Stawamus River CWS/adjacent slidetrack feature
69	MH mm 1	295	11.29	9	309	33.4	11.8	BA50HW40YC10	S		N	0.0		Stawamus River CWS/adjacent slidetrack feature
			<b>17.62</b>											
70	CWH vm 1	294	2.65	9	309	36.3	14.1	HW50BA30YC20		S	N	0.0		Stawamus R. CWS/adjacent slidetrack feature
70	CWH vm 1	294	0.09	9	309	36.3	14.1	HW50BA30YC20		S	P	0.4		Stawamus R. CWS/adjacent slidetrack feature
70	CWH vm 2	294	15.83	9	309	36.3	14.1	HW50BA30YC20		S	N	0.0		Stawamus R. CWS/adjacent slidetrack feature
70	MH mm 1	294	2.11	9	309	36.3	14.1	HW50BA30YC20		S	N	0.0		Stawamus R. CWS/adjacent slidetrack feature
			<b>20.68</b>											
71	AT p	184	0.56	9	309	26.3	8.9	BA90HW10	SP		N	0.0		productive forest and is actually MHmm1
71	CWH vm 2	178	0.63	9	309	32.3	12.3	HW60BA30YC10			N	0.0		Stawamus R. CWS/large patch/potential MAMU habitat
71	CWH vm 2	181	32.64	9	324	28.1	10.4	HW50FD30BA10		S	N	0.0		Stawamus R. CWS/large patch/potential MAMU habitat

## Appendix IV: OGMA Summary and Rationale Description for East Howe LU

OGMA #	BEC Variant	Poly. #	Area in OGMA	Age Class	Proj. Age	Proj. Height	Site Index	Species Composition	ESA 1	ESA 2	Cont. Class	Inclus. Factor	Protected Area	Additional Comments
71	CWH vm 2	189	0.03	9	309	29.3	11.1	HW50BA50			N	0.0		
71	CWH vm 2	811	1.95	9	309	32.3	12.3	HW60BA30YC10	S		N	0.0		Stawamus R. CWS/large patch/potential MAMU habitat
71	MH mm 1	178	11.59	9	309	32.3	12.3	HW60BA30YC10			N	0.0		Stawamus R. CWS/large patch/potential MAMU habitat
71	MH mm 1	181	17.11	9	324	28.1	10.4	HW50FD30BA10		S	N	0.0		Stawamus R. CWS/large patch/potential MAMU habitat
71	MH mm 1	182	5.99	9	309	32.3	12.3	HW50BA50	SP		N	0.0		Stawamus R. CWS/large patch/potential MAMU habitat
71	MH mm 1	183	5.47	9	309	32.3	12.3	HW50BA50	S		N	0.0		Stawamus R. CWS/large patch/potential MAMU habitat
71	MH mm 1	184	8.11	9	309	26.3	8.9	BA90HW10	SP		N	0.0		Stawamus R. CWS/large patch/potential MAMU habitat
71	MH mm 1	812	2.11	9	309	32.3	12.3	HW60BA30YC10	S		N	0.0		Stawamus R. CWS/large patch/potential MAMU habitat
			<b>86.18</b>											
73	MH mm 1	148	4.34	9	358	39.2	14.7	HW45CW35BA15			N	0.0		slide track, adj to #37
73	MH mm 1	197	17.57	9	309	34.3	13.2	HW50BA30CW20			N	0.0		slide track, adj to #37
			<b>21.91</b>											
74	CWH vm 1	713	0.81	9	259	34.4	14.1	HW50BA40CW10			C	1.0		
74	CWH vm 1	719	0.31	8	209	31.7	13.7	BA70HW30			C	1.0		
74	CWH vm 2	713	4.00	9	259	34.4	14.1	HW50BA40CW10			C	1.0		
74	CWH vm 2	716	2.22	9	268	32.4	12.2	BA60HW40			N	0.0		
74	CWH vm 2	717	1.80	7	124	28.1	16.6	BA60HW40			C	1.0		
74	CWH vm 2	717	0.27	7	124	28.1	16.6	BA60HW40			C	1.0		
74	CWH vm 2	719	1.85	8	209	31.7	13.7	BA70HW30			C	1.0		
74	CWH vm 2	719	2.79	8	209	31.7	13.7	BA70HW30			C	1.0		
74	MH mm 1	716	0.66	9	268	32.4	12.2	BA60HW40			N	0.0		
			<b>14.70</b>											
75	MH mm 1	562	9.39	9	309	43.4	16.7	BA80HW20			C	1.0		creek riparian
			<b>9.39</b>											
76	MH mm 1	670	1.95	9	334	52.9	21.7	BA90HW10			P	0.1		part of larger OGMA complex adj to #39
76	MH mm 1	670	0.20	9	334	52.9	21.7	BA90HW10			N	0.0		part of larger OGMA complex adj to #39
76	MH mm 1	672	2.00	9	298	32.4	11.6	BA45HW45YC10			N	0.0		part of larger OGMA complex adj to #39
			<b>4.14</b>											
77	CWH vm 1	524	0.15								P	0.1		creek riparian (Britannia Cr)
77	CWH vm 1	525	6.45	8	154	36.4	19.1	HW50FD30DR20			C	1.0		creek riparian (Britannia Cr)
77	CWH vm 1	526	0.69	2	33	17	29	CW60HW30FD10			C	1.0		creek riparian (Britannia Cr)
77	CWH vm 1	527	3.76	2	33	12.9	23	CW60HW30FD10			C	1.0		creek riparian (Britannia Cr)
77	CWH vm 1	545	3.32	3	41	21.5	27.8	HW70 BA10CW10			C	1.0		creek riparian (Britannia Cr)
77	CWH vm 1	550	0.27	3	49	27.8	27.9	DR60FD20HW20			N	0.0		creek riparian (Britannia Cr)
77	CWH vm 1	747	0.37	8	189	34.7	16.4	HW60CW20FD10			C	1.0		creek riparian (Britannia Cr)
77	CWH vm 1	797	0.07	1	7	1.5	22	HW45FD30CW25			C	1.0		creek riparian (Britannia Cr)
77	CWH vm 1	798	0.16	1	8	1.1	23	BA40FD40HW10			C	1.0		creek riparian (Britannia Cr)
77	CWH vm 1	799	2.91	8	209	31.4	18.1	FD70HW20CW10		SW	P	0.4		creek riparian (Britannia Cr)
77	CWH vm 1	903	2.75	3	41	20.7	22.8	DR60HW40			N	0.0		creek riparian (Britannia Cr)
			<b>20.90</b>											
78	CWH vm 1	767	8.76	8	189	37.5	22.1	FD50HW40CW10			C	1.0		shown as CWHdm on map, cold air drainage=CWHvm1
78	CWH vm 1	767	0.34	8	189	37.5	22.1	FD50HW40CW10			C	1.0		
			<b>9.10</b>											
79	CWH vm 2	303	4.65	9	289	37.4	14.9	HW70CW30	S		N	0.0		
			<b>4.65</b>											
81	CWH vm 2	22	1.49	8	209	31.6	14	HW50FD50			N	0		GWR
81	CWH vm 2	23	3.93	9	529	39.3	19	FD60HW40			C	1		GWR
81	CWH vm 2	23	3.59	9	529	39.3	19	FD60HW40			N	0		GWR
81	CWH vm 2	25	0.21	8	149	26.6	17	FD50HW40CW10			N	0		GWR
81	CWH vm 2	488	0.11	8	209	34.4	19.8	FD50HW40CW10		W	P	0.1		GWR
81	MH mm 1	23	0.94	9	529	39.3	19	FD60HW40			C	1		GWR
			<b>10.26</b>											
82	MH mm 1	732	8.37	8	224	31.4	17.8	FD60CW30H10			C	1		GWR

## Appendix IV: OGMA Summary and Rationale Description for East Howe LU

OGMA #	BEC Variant	Poly. #	Area in OGMA	Age Class	Proj. Age	Proj. Height	Site Index	Species Composition	ESA 1	ESA 2	Cont. Class	Inclus. Factor	Protected Area	Additional Comments
82	MH mm 1	734	1.85	8	224	25.4	10.2	B60H40			N	0		GWR
			<b>10.22</b>											
84	AT p	190	1.51	9	329	41.1	16	HW60BA30YC10	S	H	N	0		GWR
84	AT p	192	0.12	9	329	38.3	13.6	BA50HW40YC10	S	H	N	0		GWR
84	MH mm 1	190	0.37	9	329	41.1	16	HW60BA30YC10	S	H	N	0		GWR
84	MH mm 1	192	3.15	9	329	38.3	13.6	BA50HW40YC10	S	H	N	0		GWR
			<b>5.14</b>											

### Notes:

#### ESA codes:

ESA1-S: extremely fragile or unstable soils

ESA2-S: significantly fragile or unstable soils, but less than ESA1-S

ESA1-W: of critical importance to wildlife

ESA2-W: high value for wildlife but less than for ESA1-W

ESA1-P: severe regen problems caused by geoclimatic factors

ESA2-R: high recreational values, but less than ESA1-R

#### Contribution class codes:

N: Non-contributing

P: Partial contributing

C: Contributing

#### Additional Comments on OGMA

Comments provided are for the entire OGMA, primarily in regards to biological values.

The following describes the abbreviated terms and other OGMA descriptions provided to these comments:

pot. MAMU

large patch with potential marbled murrelet nesting habitat (based on general stand characteristics and patch size)

CWS

community watershed (designated under the Forest Practices Code)

cross-elevational link

notable cross-elevational linkage, generally providing linkage over 1 km (map distance, actual distance greater) and across BEC lines

slidetrack

notable slidetrack feature, with apparent wildlife forage values, associated with OGMA (i.e. within or adjacent to)

stream or lake riparian

OGMA includes riparian forests adjacent to a lake, including portions that overlap with riparian management areas under the Forest Practices Code

rec. values

notable recreational values associated with OGMA