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Ministry of Forests, Mines  
and Lands

Stewardship Division

MEMORANDUM

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To: Regional Executive Directors  
District Managers

From: Jim Snetsinger, RPF  
Chief Forester

**Re: Guidance for the incorporation of western larch into Forest Stewardship Plan and Woodlot Licence Plan stocking standards in areas of assisted range and population expansion**



On June 3, 2010, the *Chief Forester's Standards for Seed Use* was amended to expand the seed transfer limits of western larch (*Larix occidentalis*) beyond its contemporary species range (<http://www.for.gov.bc.ca/code/cfstandards/amendmentJun10.htm>). The intent of this initiative is to expand the species profile across British Columbia and, more specifically, allow the planting of larch in areas deemed climatically suitable based on projected climate modelling for the year 2030. The goal is to increase species diversity as a climate change adaptation strategy as a means to increase ecosystem resilience and address potential future forest health and productivity impacts that may occur in these areas. The incorporation of western larch into stocking standards in areas of range expansion will be necessary if forest licensees plan to plant larch and use it to meet their free growing obligations in the future.

The intent of this memo is to provide guidance for the development of stocking standards for the range expansion area in the context of the existing legislative requirements, and to highlight some key considerations when planting larch in these areas.

### **Forest Stewardship Plan and Woodlot Licence Plan Stocking Standards Requirements**

As part of the Minister's consideration of Forest Stewardship Plan stocking standards, under *Forest Planning and Practices Regulation* (FPPR) Sections 26(3) and (4), stocking standards and free growing height need to:

1. Demonstrate that the areas will be stocked with ecologically suitable species that address the immediate and long term forest health issues;
2. Maintain or enhance an economically valuable supply of commercial timber; and
3. Be consistent with the timber supply analysis and forest management assumptions that apply to the area.

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Similarly for Woodlots, under the *Woodlot Planning and Practices Regulation (WLPPR)* Section 18 (3), the minister must be satisfied that an alternative performance requirement in Woodlot Licence Plan in respect of stocking standards will:

1. Result in the area being stocked with Ecologically suitable species that address immediate and long term forest health issues;
2. Be consistent with the timber supply projections and forest management assumptions that apply to the area.

I would like to highlight specific aspects of the above requirements to provide guidance as to how standards incorporating western larch can satisfy them.

### ***Ecologically Suitable***

Although western larch did not historically occur in the expanded range areas, based on a detailed future climate analysis (Rehfeldt and Jaquish, 2010<sup>1</sup>), it is reasonable to consider western larch to be ecologically suitable in these areas for the purposes of the tests in FPPR 26. Outside of the contemporary species range, stocking standards will need to limit where western larch is ecologically suitable to the specific areas delineated in the amendment to the *Chief Forester's Standards for Seed Use*. Typically, the situations and circumstances to which a stocking standard applies are based on the provincial BEC classification system applied at the site series level. However, the areas identified for western larch assisted range expansion do not align well with BEC subzone and variant boundaries, and the analysis on which the expanded range is based does not take into account site specific factors such as slope position, aspect, soil types, etc.

It is expected that, over time, experience will be gained in the planting of western larch over a range of site series and more specific guidance will be available in the future. At this time it is expected that forest professionals will be able to apply their understanding of the silvicultural characteristics of western larch and the site specific conditions where they are operating to make decisions regarding the planting of western larch beyond its contemporary range. Forest professionals are encouraged to consult with regional silviculture specialists and regional ecologists for information on site specific factors that may impact the successful establishment of western larch in their operating areas and influence the site series where it is considered to be ecologically suitable.

### ***Immediate and Long Term Forest Health***

The incorporation of western larch into stocking standards for range expansion areas is intended, in part, to address potential risks to long term forest health associated with a changing climate and the uncertainty it brings. The risks to immediate and long term forest health where western larch is planted outside of its natural range, should be assessed in light of the forest health information found in guide books and Stand Establishment Decision Aids

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<sup>1</sup> Rehfeldt, G.E. and Jaquish, B.C. 2010. Ecological impacts and management strategies for western larch in the face of climate-change. *Mitigation and Adaptation Strategies For Global Change*. 15: 283-306.

(SEDA). Also, for the most current and best available information the appropriate regional forest health specialist should be contacted. The amendment to the *Chief Forester's Standards for Seed Use* limits the use of western larch to 10 percent of the total planted seedlings (see sections 8.11 and 8.12). The intent is to allow a limited component of western larch to be planted in conjunction with the currently approved species to increase diversity. For stocking standards that are structured using the "preferred" and "acceptable" species categories, it is recommended that western larch be included as an "acceptable" species. This will ensure that no more than 50 percent of well spaced free growing stems will be composed of western larch in any given standards unit ensuring that if western larch does not perform well on these sites over the long term there will still be some stocking remaining on site.

### ***Free Growing Height***

Stocking standards must specify free growing heights. The free growing height must be sufficient to demonstrate that the tree is adapted to the site, is growing well, and can reasonably be expected to continue to do so. For many of the areas where we may now be planting western larch, we do not have any specific growth rate information. In the interim, it is recommended that professionals base their free growing heights on other early successional conifer species that may occur on the site, such as lodgepole pine, and adjust it based on the SIBEC Species Conversion Tables:

([http://www.for.gov.bc.ca/hre/sibec/SIBEC\\_RDM\\_Appendix\\_1.htm](http://www.for.gov.bc.ca/hre/sibec/SIBEC_RDM_Appendix_1.htm)).

For example, if your site has a SIBEC site index estimate of 20 for lodgepole pine, the Species Conversion Table suggests that western larch would have a site index of 21.2 (6 percent higher). Therefore, if the recommended minimum height is 2 m for lodgepole pine on the site, a reasonable minimum height for western larch would be 2.1 m. Forest professionals are encouraged to contact regional silviculture specialists for up to date information on the early growth rate of western larch as, in some areas, a height of 2.1 m can be quickly achieved and as such may need to be increased in order to allow forest health factors sufficient time to express themselves prior to a free growing assessment.

### ***Maintain or Enhance and Economically Valuable Supply of Timber***

Increasing species diversity in areas by facilitating the planting of western larch as a component of managed stands will be consistent with maintaining an economically valuable supply of timber in most instances. A key management goal for implementation of this policy initiative is to reduce tree species vulnerability due to anticipated climate change<sup>2</sup>, and reduce the probability of productivity impacts.

### ***Consistency with Timber Supply and Forest Management Assumptions***

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<sup>2</sup> Woods, Alex J. et.al., 2010, Forest health and climate change: A British Columbia perspective, The Forestry Chronicle, Vol. 86, No. 4.

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Stocking standards should normally be linked to local assumptions for the sustainability of timber flows over time. This linkage is normally addressed by comparing stocking standards to the latest timber supply review assumptions; however, since TSR is a backwards look at past practices, newly developed standards that contain western larch in areas where it has not been planted previously will not have established analysis units that contain the species. In FSPs that contain only small areas of range expansion, this will not be an issue as this test is applied to the stocking standards as a whole. In FSPs which contain substantial assisted range expansion areas, the standards may not be consistent with timber supply assumptions. In these areas in FSPs the standards can still be approved under FPPR 26(5) as the inclusion of western larch is still reasonable in regards to future timber supply. In the case of WLPs, the inclusion of western larch can be considered an innovative means of meeting the intent of the requirement to specify an alternative stocking standard for the purposes of WLPPR Section 18(4).


### **Guidance on Key Silvicultural Considerations**

At the present time we do not have specific recommendations down to the site series level to guide the planting of western larch within the expanded range areas. Given the current lack of site-specific data, it is important to highlight some key information that should be considered when planting western larch in new areas:

1. Western larch has a low tolerance to water surplus and moderate tolerance to water deficits. In its natural range, it is absent on hygric to subhydric sites and rarely occurs on subxeric to xeric sites.
2. Western larch is a very shade intolerant and exposure requiring species. Avoid planting in high retention silvicultural systems.
3. Western larch is only moderately tolerant to frosts and should not be planted in areas where growing season frosts are likely to occur.

### **Concluding Remarks**

It is expected that as this initiative unfolds over the next few years, forest professionals will share their information and experiences on both the successful and unsuccessful attempts to establish western larch within the climatic envelope but beyond its current range. This information will help build a more detailed record on which to make future assisted migration decisions.



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