Response to the draft:

Nova Scotia Silvicultural Guidelines for the Ecological Matrix Lands

(Version # 3, formerly entitled **Forest Management Guides**)

by the

Healthy Forest Coalition

February 15, 2021

Introduction

The third revision of the Forest Management Guides (FMGs), presently entitled the **Nova Scotia Silvicultural Guide for the Ecological Matrix** (SGEM), is the main tool created and adopted by the Department of Lands and Forestry (DLF) to move our Crown land forestry practices toward more enlightened and modern forestry based on ecological values. William Lahey made it abundantly clear in his "*Independent Review of Forestry Practices in Nova Scotia*" (Lahey Review) that the status quo forestry practices have not been sustainable from both economic and ecological perspectives. Therefore, in order to sustain healthy forest ecosystems, and to restore those that are degraded, and to revitalize our declining industry, it is paramount that the proposed SGEM and its associated Pre-Treatment Assessments (PTAs) become a reliable and science-based, functional tool to achieving the recommendations of the Lahey Review.

The Healthy Forest Coalition (HFC) is pleased to see improved features, such as the exclusion of forest activities from some exceptionally biodiverse and sensitive sites, as well as generally more residual forest cover retained, and the inclusion of permanent reserve trees**.** It is essential that Matrix lands are managed with ecological values serving as the integral foundation from which all management decisions are derived. If this is not achieved the recommendations of the Lahey Review will not be attained.

The HFC remains concerned that the proposed SGEM still perpetuates a management approach to our public forests that leans too heavily towards industry and economic considerations. This approach continues to manage our forests with the foregone conclusion that our forests WILL be harvested and that ecological integrity is subservient. This approach is incorporated directly into the very essence of the entire document whereby minimum 'retention levels' are the chosen metrics, rather than shifting the language and focus to maximum extraction levels. The old *volume requirements* desired for pulp must be refocused toward 'growth for maximum *value'*. This perspective will likely be perpetuated until the **Crown Lands Act** and **Forests Act** are revised to broaden the perspective that public forests must be managed through a lens of multiple values to meet modern day needs and challenges.

When the High Production Forestry leg of the triad is taken into consideration, it is essential that the Ecological Matrix leg of the Triad be based purely in ecological forestry values. Ecological forestry cannot be subjected to heavy harvests and conversions to plantations. Adding to this context is the recognition that most of the Matrix lands have already been subjected to intensive clearcutting and have sustained damages that will endure for centuries. The remnant, intact Matrix forests must be managed with enhanced prudence, as they are all we have left until a lengthy period of regrowth/restoration takes place. Our public forests are also being subjected to detrimental effects from several invasive pests and climate change, causing them to be less resilient than in former times. In consequence, our

forest industry, ecological and social values depend upon public forests being managed more carefully than ever before.

The HFC is concerned about a number of components in the SGEM that do not reflect the recommendations of the Lahey Review or forestry that is truly based on ecological considerations. We issue this response to the draft SGEM in an effort to affirm positive steps and to point out areas for immediate improvement.

HFC tentative acceptance of the SGEM as part of interim adaptive management for the Ecological matrix forests:

The wait to begin ecological forestry has been long and trying in the more than 2.5 years since the Lahey recommendations were released. Public forests continued to be cut unsustainably and many Nova Scotians have grown outraged by the obvious, great harm incurred to their forests and its wildlife populations and rare species components. While the new SGEM requires still further and very serious alterations, as outlined below, the HFC cautiously accepts the SGEM implementation as soon as possible under the auspices of adaptive management, and ONLY IF the following caveats are met:

1. No more than 30 % removals, mainly using gap-based harvests, to any forest stands are conducted during a single entry, with harvests not exceeding ~ 1 % over a time frame of 100 years;

2. Removal of the 'Azonal-Zonal' concept; instead closely adhering to the Forest Ecosystem Classification (FEC) and the Nutrient Budget Model (NBM) guidance to *improve* soil nutrients and quality of forest growth on damaged sites. (This would, by necessity remove the arbitrary lower retention thresholds set for the azonal lands and poorer sites, which has no basis in science.)

3. Removal of Restoration Keys until they are completely revamped to truly 'restore' forests rather than subject them to unacceptable heavy cuts and near-plantation conversions. The maintenance of forest cover and selectively harvesting in small gaps, rather than planting, are some of the best, cheapest, and most ecological means of *'restoring* forest'. The injection of heavy cuts and 'planting' into the SGEM was, in our view, a despicable, contrived act against the ecological matrix lands.

4. A full and final review of the SGEM draft by an independent third party is required in order to repair the most recent breach of public trust stemming from three failed attempts to create a system of ecological forestry while finding ways to continue very harmful forest practices. (In our view, Dr L. Kenefic and/or Dr R. Seymour are the most suited reviewers since they are familiar with the guides, the forest type, a history of involvement, and have strong academic credentials. Restoration keys and other issues can be modified by them.)

It is the enduring hope of the HFC that Nova Scotians will one day experience an 'honest broker' in government that acts on the best interests of the 'people's forests'.

We insist that the new prescription approaches in the SGEM (as outlined above with appropriate caveats) be applied retro-actively to all previously approved harvests that have not yet been carried out. Re-computing the previously gathered PTA data can be easily put through the new system, requiring little time and effort, to generate new and more ecologically appropriate harvest prescriptions.

We remind DLF that the HFC requested a moratorium on all even-aged treatments, which was submitted to the Minister of Lands and Forestry during November 2020. Allowing the ongoing harm to be inflicted on public forests is highly destructive to both our environment, climate change adaptability, and future forest economy.

Requested changes to the SGEM

The SGEM is an extremely technical guide to ecological forestry that is certain to raise concerns of many forestry practitioners. A reasonable, much more simplified alternative to achieving ecological forestry may be to simply never exceed more than 30 % forest removal, using gap-based systems, consistently favoring LIT species for retention and permanent leave trees, with harvests not exceeding 1 % over a time frame of 100 years or more, and biodiversity values, wildlife needs, and broader landscape requirements always favored.

1. Retention levels must be increased to promote a saw log economy and ecological forestry:

   Higher retention levels with a 10-30 % BA removals using gap-based systems must be the majority of harvests in order to:

   a. Approximate natural gap disturbances

   b. To manage for biodiversity

   c. Maintain and restore soil nutrients (depleted from previous harvests, historic anthropogenic wildfires, and acid rain in many areas of NS)

   d. Maintain and restore carbon in both trees and soil stores

   e. Move forests along restoration pathways to achieve LIT species

   f. Integrate wildlife habitat requirements for food and shelter

g. To better maintain and restore older age classes

h. To create better growing conditions (e.g. partial shade) for producing quality saw logs

2. Reject Azonal-Zonal site classification

a. This new terminology arrived in the "11th hour" in the SGEM. No one was familiar with it and it was not adequately explained. The terms seemed rather benign until the decision keys indicated that most of the poorer sites ('azonal') would be subjected to heavier cuts and generally less retention. This runs counter-intuitively to soil nutrient science. We assume (without benefit seeing of any maps) that azonal forestry practices would likely extend over nearly the entire southwestern Crown forest region (lands largely harvested by WestFor) including extensive stand types such as Spruce-Pine. It may cover 60% or more of NS. Why use the azonal-zonal designations when we have a nutrient budget model and an FEC to guide forestry? Suspicions run high on motives that may best serve pulp mills and biomass rather than saw mill interests. The HFC sharply rejects the more harsh treatment on Azonal sites based on standard ecological premises.

b. The SGEM stated that "*Azonal Acadian ecosites with more severe site limitations support more frequently disturbed and shorter-lived climax forests that are more appropriately managed with simpler silvicultural systems with lower retention levels.*" - Pg. 8 The HFC believes this greatly exaggerates the Nova Scotia disturbance regime situation (an act that DLF has been guilty of promoting over many years) and ignores the centuries of anthropogenic disturbances that have greatly altered current forests and reduced soil fertility. DLF does not have adequate justification for setting lower minimum thresholds for retention and numbers of 'Permanent reserve trees' on Azonal sites. Given that 'Permanent leave trees' are for wildlife habitat and ecological legacies, it is unjustifiable to lower the number of stems to a paltry 15 trees. Many azonal sites require recovery from anthropogenic fires and acid rain impacts; thus requiring lighter harvests until higher levels of LIT species and nutrient levels recover. Higher levels of hardwood trees, regardless of species, on such sites must be preserved to enhance soil qualities and future forest growth. The HFC is shocked by this emboldened move to contrive new justification for ongoing heavy removals on poor sites after three revisions of this guide and the clear direction received by Lahey, the public, and experts. An opportunity has been lost to restore public faith that the Department of Lands and Forestry is acting on behalf of the diverse values possessed by Nova Scotians and their public forests.

c. Under this model, many azonal sites may end up being considered to have no potential to support LIT species, but any small amounts of LIT trees present must be preserved. This must be added to SGEM Keys.

d. Removing ~ 60-80 % of the forest on nearly any site is driven purely by economic interests and is highly injurious to general forest ecology. These sites need higher retention, particularly of hardwood tree species.

3. <u>AGS and UGS criteria less focussed on merchantability to encompass ecological importance:</u>

a. The restrictions on what qualifies as AGS must be lessened (this was previously requested), using a template similar to the Ontario tree marking guide. It is essential that these definitions be rewritten to reflect ecological values, not economic assignments. When applied to the Matrix lands, the intention of the application of a AGS/UGS must be positioned to restore ecological integrity, not maximise economic return.

b. Lower AGS thresholds criteria are required in many of the keys (discussed during the stakeholder forum) so we can grow a greater diversity of products on Matrix lands for wider markets.

c. Many of the physical tree attributes contained within the UGS definitions are actually required for supporting biodiversity values, especially in regard to species at risk - i.e. interior rot (cavity trees - chimney swift, southern flying squirrels, etc.), forked/crooked tops (large bird nests such as northern goshawk), stands with standing dead trees with a presence <25% (black-backed woodpeckers).

d. Tree damage, especially damage from previous harvests, cannot play a factor in determining UGS, and may be only a minor defect. If it remains within this system this becomes a self-fulfilling tactic for perpetuation of higher levels.

4. <u>Integration of the soil Nutrient Budget Model (NBM) into the SGEM</u>

"*Enough progress has been made that NBM-NS can now be used to inform harvest planning by estimating sustainable mean annual increment (SusMAI) values for various combinations of FEC vegetation and soil types across Nova Scotia*." - Pg. 10

a. The HFC is glad to see integration of the NBM. Given the degraded state of Crown forests in many localities, the preservation of nutrient levels in forests will require much higher levels of forest retention than are currently proposed within the SGEMs. Based on the advice of DLF, the retention of hardwoods, longer rotations, and retention of higher levels of coarse woody materials are recommended to maintain or restore nutrients. Given the complete lack of soil nutrient recovery in some ecodistricts, this must be built into the foundation of the PTA process.

b. A more clear demonstration of DLF's commitment to soil nutrient and carbon retention considerations is required. Acknowledgement in the Guides of Lahey Recommendation 8 e. and *16 a.: the department *"must take immediate and sustained action [ ] to be responsive to concerns about the potential adverse impact of forestry on Crown lands on [ ] (a) sensitive soils, particularly on Crown lands <u>in the western region</u>"*.

c. Lahey Recommendation 39 stated *"DNR must dramatically increase its reliance on science [ ] to move NS in the direction of ecological forestry"*. To this end, the departmental time and tax dollars spent on researching soil nutrients must be adequately incorporated. On degraded forest regions, focus must be placed on restoration of nutrients, not just maintenance of anthropogenically-created low levels.

d. Inserting the NBM as a small box in each flow chart would serve to remind the practitioner of this essential step in derivation of the ecological forestry prescriptions. Alternatively, it could be referred to on the text page located opposite from the decision keys.

e. A better explanation is required in the preamble of the SGEM on how the NBM will be integrated into harvest prescriptions and how adjustments will be made to enhance/restore nutrient levels. A better job of describing the highly unique situation of soil nutrient depletion in NS vs elsewhere, such as NB, could assist with public understanding of why this is so essential. Explain how leaving more hardwoods helps to mitigate low nutrient levels and how most of the landscape requires forestry practices that attempt to increase soil cations while still allowing the removal of some of the resource.

f. PTA protocols require assessment of soil quality, which is often poor in NS, and can be partly guided by observing the presence of an obvious ash layer from former wildfires at/near the soil surface, acid-loving understory flora (e.g. Vaccinium, Kalmia, Gaylussacia, etc), as well as integrating ecodistricts (i.e. underlying

geology-slow-weathering bedrock material), and noting post-clearcut soil damage to soil nutrients and carbon stores.

5. Harvest MAI adjusted to increase/restore many nutrient poor sites:

   a. The Harvest Mean Annual Increment (MAI) is an outcome of Nutrient Budget considerations. It is incorporated into a procedure for including sustainability of nutrient supply as a factor in harvest planning, however the guide is vague in regard to what happens when the calculations show that a proposed harvest is not compatible with maintaining nutrient supply; "*If HarMAI is greater than SusMAI ('Sustainable' MAI) for a given vegetation type and soil type combination, then harvest plan adjustments will be made*". Examples of what those adjustments actually might be are required in order for us to assess this aspect of the SGEM.

   b. There appears to be no acknowledgement and provision to allow nutrient status to improve on soils which are severely calcium-depleted due to acid rain (and in some areas, also due to previous harvesting and severe anthropogenically-caused wildfire). Older forests on those soils that we have today were established prior to the severe acid rain era and hold nutrients that will not be available to the next generations of trees if they are harvested, so yields will be lower. Severe calcium depletion affects many birds, fish and other wildlife (birds have weaker shells for example). Nova Scotia has some of the most severely depleted forest soils anywhere, they need to be allowed to *recover*, which means very light harvesting, if any, on the most severely depleted soils. See Keys et al. 2016 Fig 3; the bright red areas are" an inconvenient truth". https://file.scirp.org/pdf/OJF_20160929145904O1.pdf and here: http://nsforestnotes.ca/.../why-is-the-low-base.../

   c. A consideration of low nutrient values must be considered for aquatic health and populations of fish, aquatic invertebrates, and herptiles. Testing waterways for pH prior to conducting extensive harvesting is prudent in watersheds that are already nearing dangerous thresholds required to support brook trout and other native freshwater components.

   d. Differences in SusMAI between hardwoods and softwoods are also problematic if stands are managed for maintenance of nutrient levels

for softwoods only. That will reduce the land's ability to support hardwoods, leading to further borealization of our forests, at a time when climate change dictates that we need more hardwoods to reduce impacts of climate warming.

e. The insertion of the new terms Azonal and Zonal at this late stage in the Management Guide process is suspect and is completely counter-productive to what the NBM imposes for nutrient-poor sites. The assertion that Azonal nutrient-poor sites will receive heavier harvests is inappropriate and requires removal from the SGEM.

6. Windthrow mitigation

a. We are pleased with the modification to the new guides where more trees remain when windthrow hazard is elevated; a definite improvement from the previous version where 80 % of the stand was cut in many instances.

b. We reiterate that harvests must not exceed more than 30 % removal at any given time, as this also serves to mitigate against increased frequency of high wind events under climate change. The department's very own research concluded that "Wind damage can be avoided when less than 30% of the basal area is removed from stands with Height: Diameter ratios between 80 and 85 or less" (McGrath and Ellingson 2009).

7. Reforestation and Planting:

Pg. 56-57 - ***Plantations do not have a place in the Ecological Matrix** although restorative interplanting or 'underplanting' can be useful in extenuating circumstances. However, planting must not be used as justification for heavy levels of extraction.

a. Planting must be avoided in most cases. The very premise of ecological forestry is to retain higher levels of overstory that will provide seed sources and provide a more favourable environment for seedling establishment. Under the shade of a retained forest cover, many LIT species will establish on their own, and local tree genetics is maintained. Thus, if true ecological forestry is achieved, planting will not be necessary.

b. Planting allowed in the SGEM essentially allows plantations to be created. Management of the Matrix Lands cannot morph to become

'plantation forestry', as this agro-forestry practice belongs sharply in the High Production Forestry leg of the Triad.

c. Planting of mal-adapted boreal species must be avoided given the realities of the projected climate change progression (Table 7, pg 58 in the SGEM).

d. Planting must only be carried out within small gaps (inter-planting or underplanting) under a partial canopy. LIT species generally require some degree of shelter and higher moisture content generally created under partial shade.

e. Risk of browse and disease is much higher in heavily cut sites. Planting hardwood species will be successful only in situations where populations of browsers, such as white-tailed deer are low.

f. It is unclear who will pay for the site preparation, seedlings, and planting labor that is involved with 'planting', but Nova Scotians will likely prefer the natural and free seed sources that healthy forests provide when left intact. Seeds disperse to most sites over time, given opportunity.

8. Medium and Low-Retention Irregular Shelterwoods:

a. 60-80% retention of the basal area must be the minimum for irregular shelterwoods, with removals of 20-30% in small gaps being standard practice for ecological forestry over long time spans. The determination of a minimum threshold of BA from third-party is required.

b. Given the current state of degraded landscapes, only be moderate to high retention forestry must be promoted. Low retention irregular shelterwoods serve no ecological purpose and are driven by industry.

c. Flexibility in the SGEMs must allow increases to minimum retention levels during harvest operations as a basic tenet of ecological forestry. Practitioners and machine operators must be granted flexibility to leave trees standing on the landscape on the discovery of rare tree species, inclusions of old growth, legacy features, unusual features, and if wildlife are found. The SGEMs must grant latitude to the harvest operators to choose to retain more (never less) than the prescribed retention level amount.

9. Uniform Shelterwoods

a. It would be a complex undertaking to determine which of the even-aged stands across the province are a result of natural processes. As such, uniform shelterwoods do not fall under a precautionary principle and that of restoration. In all cases wherein a uniform shelterwood would have been prescribed, it must now be moved to an irregular shelterwood.

10. Landscape Level Planning

While the SGEM is a tool that focuses on stand level forestry practices, there must be strategic oversight at a broader or coarse-filter scale on the landscape or watershed level in which the stands are located prior to prescribing individual stand-by-stand management. The public has lost faith that a 'master plan' exists to ensure that landscape-level processes and ecosystem services have been carefully taken into account.

a. Landscape considerations must be incorporated into ecological forestry, as it is of utmost importance to consider the extent of cumulative forest removals that have already occurred within a watershed (peer-reviewed science exists on forest practices in watershed management), as well as acknowledge connectivity,travel and dispersal corridors, food, residual shelter for wildlife species at risk, such as moose and American marten.

b. Too much harvesting in a given watershed can result in increases to stream acidity for trout and salmon populations, augment storm flashiness that can flood loon nests and can cause stream bank erosion, and other adverse impacts. Over past years, no consideration has been demonstrated for these factors, resulting in far too many harvest blocks approved, and too much forest cover intensively removed within a given watershed, with public comments consistently ignored.

c. Landscape level factors must acknowledge the Southwest Nova Biosphere Reserve, moose core habitat areas, etc.

d. Expansion of riparian zones must be acknowledged in the Guides as per Lahey Recommendation 25 and the peer-reviewed science, as well as existing departmental research. Wider stream buffers will not only improve aquatic ecosystems but also improve wildlife habitat connectivity and travel corridors within this rich ecotone. There is extensive literature that suggests that riparian zones must be a minimum of 100 m in order to achieve these goals.

e. The department must instruct and authorize its IRM biologists and foresters to incorporate landscape level factors into any/all review of

forest harvest proposals. It is our understanding that presently the IRM biologists do not have the liberty to consider factors such as cumulative effects of adjacent cuts and watershed impacts. Please grant staff their liberty to evaluate harvests as biologists and professionals, and request that they consider ecosystem complexities that extend beyond individual stand considerations.

11. Wildlife management in the PTA process and the SGEM:

    a. Ecological forestry must incorporate an emphasis on the preservation of wildlife habitat, especially for species at risk and ensure harvests to not adversely affect breeding success. An example of how this must be implemented into practice is to have a no-harvest period during spring breeding bird season - early May until the end of July. Not enforcing this pause (silent, or 'singing' season) not only precludes the attainment of ecologically-based forestry, it breaks international law in the Migratory Bird Convention Act. As it was admitted on CBC radio in 2019 by WestFor, current practices destroy migratory bird nests and are in violation of the Act. This must be addressed.

    b. The full range of values on Crown land are still not being considered. Wildlife considerations require more than just retaining live and dead snags and residual clumps.

    c. A wildlife biologist or ecologist must conduct a field visit on each proposed harvest site in addition to the GIS exercise to investigate for other biodiversity values and new wildlife signs.

    d. Harvests that extend beyond one year following the original assessment will require another site inspection for wildlife species. Endangered mainland moose, American marten, or Northern goshawks, are among the wildlife species that may have begun to occupy the site slated for harvest in the interim period which we understand may be up to 4 or more years following the original assessment.

12. Integrate soil carbon stores protection into all harvest practices in the context of the current climate crisis

    a. Our Government acknowledged that we are in a climate crisis. It is a dereliction of duty not to acknowledge soil carbon losses that occur under heavy forest removals when exposed soils undergo accelerated decay releasing stored Carbon in the form of greenhouse gases that contribute to climate change. More than half the forest carbon may be stored in the soil, rather than in the trees. Presently, our national

forests are thought to emit more carbon than they sequester due to over-harvesting and other mismanagement practices. Alternatively, intact forests under high retention IS harvests can remain carbon sinks. Furthermore, older forests absorb more carbon.

b. Climate change and the goal of avoiding unnecessary greenhouse gas contributions through releasing soil carbon stores needs to be integrated into the Guides. This responds well to Lahey Recommendation 39, - an "*increased reliance on science*"

c. Integrating soil carbon considerations dovetails well with maintenance and restoration of soil nutrients which now can be a focus, given the outcomes of the department's years of Nutrient Budget Model research.

13. The Maritime Boreal Ecosites have been expanded and potentially over-emphasized. A map of precisely where the Maritime Boreal Ecosites are believed to occur would have been helpful. This appears to translate to maintaining even-aged stands through heavier cuts. A greater emphasis on restoration rather than maintenance is required.

a. Many treatments propose ⅕-⅓ (20-33%) minimum retention levels, which is ecologically detrimental in the modern context of climate change and knowledge of how soil carbon and nutrient stores are affected. This will perpetuate many of these stands as predominantly even-aged. The HFC requests that the minimum retention always be 7/10 (70%).

b. The HFC believes that further scientific research on these sites would reveal that many of these forests have been anthropogenically altered and that more complex forests likely existed and will exist again if properly managed. Hence we suggest using the precautionary approach, with an avoidance of heavy removals until more data is gathered to justify the harvesting proposed in the SGEM.

14. "*Given that partial disturbances dominate Nova Scotia's forest landscape, it follows that silviculture must focus on uneven-aged systems, where applicable,..*" - Pg. 8 There is general consensus that a forest regenerates at a rate of 1% per year from natural disturbances in the Acadian forest region (Seymour et al. 2002), it is reasonable to conclude that in cases where the higher the removal % is carried out, the longer period of time between successive harvests is required in order to meet ecological goals.

The current status of our forest must not be used as a means to perpetuate even-aged forests where a true, uneven-aged, Acadian forest ecosystem

would have historically existed, or where the site has the potential to support one.

15. Restoration Keys require essential modification by an independent advisor.

a. Restoration Keys in the SGEM flow out of the Irregular Shelterwood harvest decision keys. We were shocked to discover how easily an intolerant hardwood or mixedwood stand, for example, gets 'punted' from a seemingly appropriate Irregular Shelterwood prescription toward a Restoration key whereby up to 80 % of the stand is promptly removed and planted. Say what? Clearly this worsens conditions in the context of soil nutrient and carbon stores, wildlife habitat, biodiversity and ecosystem processes.

b. "*Restoration pathways in SGEM are triggered when LIT species and vertical structure are deficient relative to late-successional conditions except where they do not naturally occur*." - Pg. 8 The HFC finds this statement that assumes late successional species do not naturally occur to be reckless and without acknowledgement that in many cases anthropogenic disturbances wiped out LIT tree species and the approaches outlined in the SGEM will not allow their return.

c. Forests that do not possess LIT species, or in some cases merely fall short of the prescribed thresholds, are dismissed as not possessing the ability to support them. The HFC demands that if LIT species are present, even in small amounts, their survival must be protected, nurtured and encouraged.

16. The Silvics Table still does not reflect the true maximum age of some species. For example, red spruce and eastern hemlock have both been documented to reach ages over 425-450 years old in NS.

We believe that American beech, red maple and red pine should be included in the list of LIT species for their ability to live for relatively long periods of time and their ecological suitability for some circumstances.

17. The HFC is pleased to see this statement: "*Stands with low proportions of AGS will be considered for high-retention Irregular Shelterwood Treatments*". - Pg. 17 However, we believe these criteria should be *required*, rather than "considered", for high-retention irregular shelterwoods.

18. "*The proportion of LIT species and AGS must be higher after treatment. Biodiversity features must be maintained after treatment. If retention levels do*

not support nutrient sustainability, harvest plans must be revised until it is nutrient sustainable." - Pg. 22

The HFC is pleased to see this commitment. In order for this approach to be effective, it is essential that the nutrient sustainability be considered prior to any harvests.

20. "One of the main objectives of this SGEM is to restore late- succession species, such as red spruce, sugar maple, eastern hemlock, yellow birch, white pine, white ash, and red oak, where they would naturally occur but are currently low in number. " - Pg. 22

This restoration must also apply to areas where they do not exist currently but could if the area were restored.

21. Trail Ratio minimization.

Though this was not addressed in the SGEM, harvests that result in a high trail ratio can alter the silvicultural outcome and result in much higher removal of timber than originally prescribed. Uniform shelterwoods, for example, can resemble strip cuts with more than 50 % removal. Using suitable machinery on the ecological matrix and minimizing the trail ratio is essential.

a. Extraction trail widths must be < 5 m, with preference provided to machinery that can operate on more narrow trail extraction routes. The current Crown allowance of up to 7 m wide trails is unnecessary, and no longer acceptable in ecological forestry. Preference must be granted to operators of machinery with no tail swing (allowing more narrow trails and minimizing damage risk to retained trees), a long reach (e.g. 10 m), and ability to do ghost trails.

b. Trail ratios must be less than 20 % and operations monitored to avoid 'trail ratio creeping up".

c. In linear trail layouts, leave strips of residual forest must be at least twice the width of the extraction routes.

d. Final BA or % removal must include the extraction routes.

22. P<u>ermanent Reserve Trees</u>

a. The maximum for any harvest type is 20 stems/ha (and only 15 stems/ha on 'azonal sites', which we sharply reject including the use

of azonal site classification). This is low and the HFC would propose that this number be increased to a minimum of 50 stems/ha.

23. Adjusting the software programs to prescribe for value objectives rather than volume

Timber supply software used to make high level decisions about harvesting is still based on maximizing timber volume, which makes little sense in the ecological matrix. Software must be set to maximize *economic value*, rather than *fibre volume*. This simple step helps to significantly reduce demands for clearcutting on the landscape. The software is set to volume simply because our biggest mill players have been pulp mills (who want volume, not value). To facilitate the change we must now focus on value rather than volume.

24. Gap shelterwood with Reserves

The HFC rejects this treatment in its current form due to low retention levels.

a. This section calls for 1/10 - 1/5 retention - 10-20% retention is essentially an even-aged treatment. Retention must be increased to a minimum of 7/10 (70%).

25. "Strip shelterwoods will be considered with special permission as a user defined prescription." - Pg. 46

a. This special consideration must not be considered often, ideally not at all.

b. Leave strips must be at least twice as wide as the harvest strips, with harvest strips restricted to narrow widths to encourage LIT establishment.

c. In general, this silvicultural system must be re-examined by 3rd party experts since the cutting appears to be too heavy, moving far too quickly through this type of prescription over time (5-10 years).

d. A consideration of another version of strip cutting by Salonius (2007) would be much more ecologically suited than what is proposed in the SGEM. This would also provide consideration for multi-aged stands-beyond the mere two-age stand concept presented.

e. We do not agree with partial overstory removal being prescribed with 1/5-1/3 retention on sites with inadequate seed sources, nor the regeneration of LIT species, followed by planting. Given adequate time (which can require much more than 5-10 years), LIT species

should return to the site. The low retention levels are wholly inadequate, and inappropriate on the ecological matrix.

f. Third party experts are required to inspect these shelterwood systems to ensure they meet the basic tenets of ecological forestry.

26. Salvage with Retention

a. Salvage harvests should be removed completely and be placed under the regular keys. A case in point, there are lots of balsam fir stands that are effectively 'nursing' regeneration of red spruce, hemlock, pine, hardwood, etc. Harvesting a dying fir stand would likely just promote more fir (and other early successional species).

b. The HFC is glad to see UGS presence of dead trees must exceed 50% of BA. However, trees "damaged" by previous harvests must not factor into this determination. Otherwise, previous harvests will create more of this treatment.

c. Pre-emptive cutting prior to tree mortality must not fall under salvage cutting. It is unclear whether this is the case.

d. Natural disturbance agents must not include invasive pests. This is suggested as clarification, since it was not stated whether invasive species were included in this context.

e. In terms of Eastern Hemlock forests that are infested with Hemlock Woolly Adelgid (HWA) and salvage cutting, practitioners in HWA management must be consulted prior to approving harvests (salvage or otherwise) on Matrix lands, such as CFS, Fredericton (Dr Sweeney), Dr Mark Whitmore, Cornell U., or Parks Canada. Pre-emptive cutting of hemlock must never take place since some trees may be resistant to HWA and this doesn't become evident until other stems surrounding resistant trees have died. It is paramount to maintain any living hemlock in infested stands for as long as possible due to the extensive ecosystem services they provide to aquatic systems as well as forest ecosystem components. Any purportedly resistant hemlock trees must be reported to CFS, the department currently researching management tools for HWA for Canada. Due to the generally slow death of hemlocks, it is best to allow these trees to remain standing as slow canopy thinning will provide more opportunity for LIT species to establish during the process. Hemlock trees can remain standing for a decade or more after mortality providing habitat for a variety of species. (Cancer-fighting hemlock reishi, growing only upon dead hemlock may provide a new niche market.)

27. Commercial Thinning

"*This will take on average 15–20 years when retaining 60–70 percent of the basal area from the area between extraction trails on average sites*." - Pg. 54

a. It is essential that the post-harvest BA includes any % removed via extraction trails.

b. Pg. 54, Fig. 15 - Final cohort - "*Evaluate appropriateness to repeat this harvest schedule, or choose to regenerate*" - This is counter to the purposes of Commercial Thinning and the stand should instead be placed on long-term vision of improving quality.

28. Flood Plain Decision Key

a. still possesses a 20 m buffer while there is extensive science showing more is needed - ideally, +100 m. At minimum, the key must indicate that changes are on the way to increase buffer widths.

29. Monitoring PTAs and Harvests

a. Forestry infractions on Crown forests are rarely reported, though they exist. Ecological forestry practices require close monitoring by a third party. The concept of the licensee policing themselves will be detrimental to the ecological matrix forest.

Conclusions

The Healthy Forest Coalition concludes that the 3rd draft of the Forest Management Guides, presently entitled the SGEM, to be improved from the previous two versions in some aspects but still requires some extensive alterations. In some cases the SGEM may cause greater damage to the Matrix forests than before with regards to cases where some stands will receive heavy cuts (80 % removals) and be converted to plantations. This will lead to harvesting of more forest than is appropriate and a breach of public trust in the implementation of the recommendations of Lahey..

1. This is the third attempt from the Department of Lands and Forestry to create a system of guides that reflects the recommendations of the Lahey Review and a framework through which ecological forestry can occur within the Matrix lands. Within the Review, Lahey states the following:

"*I have concluded that protecting ecosystems and biodiversity should not be balanced against other objectives and values as if they were of equal weight or importance to those other objectives or values*" (Lahey, pg. iii, Executive Summary).

The SGEMs, as they are currently proposed, are not in alignment with these conclusions. After three attempts to address these issues, the HFC requests that the SGEMs return for final modifications by a third-party expert review in order to finalize the product, and to assure that they align with what Lahey recommended.

It is essential that the Guides are based on ecological values and decision-making. If this is not achieved, then the triad approach will not be in balance, especially when considered against the High Production Forestry leg. Therefore, if the Guides do not create more robust pathways to ecological forestry, the recommendations of the Lahey Report will not be fulfilled and the balance that we all seek for social, ecological, and economic values will not be achieved. This will serve to continue a culture of antagonism from proponents and opponents of industrial forestry, ecological foresters, and everyone in between. In order to restore public faith in the forestry industry, and within the DLF, it is essential that true ecological forestry is achieved within the Matrix lands. If this balance is achieved, the compromise of the High Production Forestry leg of the triad will be accepted by groups like the HFC as well as most of the broader public, enabling an environment of increased collaboration, mutual benefit, and support.

2. The HFC recommends that the currently proposed SGEMs function as an updated version of Interim Harvest Guidelines but must include the caveats we outlined, including the complete re-working of Restoration Keys and abandonment of azonal/zonal approaches. This step is required in the ensuing period needed to finalize the SGEMs so that they meet criteria for ecological forestry in the Matrix. Additional time and efforts are required to incorporate more emphasis on biodiversity and increase restoration of late successional species (two of the stated goals in the draft guides), as well as build in landscape, wildlife requirements, and nutrient budget concepts. The HFC has put forth many changes that we hope the department will take into careful consideration in order to be in keeping with ecological forestry.

3. The Crownlands Act and Forests Act must be revised to incorporate the multiple values that are desired from our public lands. These key pieces of legislation provide overarching direction toward more diverse considerations of our Crown forests in the context of climate change, social values, ecosystem services, precipitous declines in biodiversity, as well as economics -tourism, jobs, non-timber forest products, quality lumber production, and value-added products. The SGEM, by itself, cannot address

all of these objectives, but it can make a very large contribution to managing forests that more broadly meet a wider range of needs and expectations. A final revision of the SGEM by Dr. L. Kenefic and/or Dr. B. Seymour (objective third-party silviculturalists) and the inclusion of our recommendations, will help to make the SGEM a tool we can be proud to utilize into the future.