

Forest Practices Biomass Work-Group
DRAFT: Wrap-Up Document
February 16, 2012

Prioritization “Buckets”

Biomass only.

Unique to biomass collection.

Topic: Definitions
1. There is currently no definition of “Biomass” in Washington’s Forest Practices Rules.
Existing Forest Practices Rules
The definition of “forest practice” in WAC 222-16-010 <i>General Definitions</i> includes processing timber or forest biomass . The following definitions and rules are most applicable to forest practices that involve a biomass collection and when taken as a whole delineate those areas where biomass can be removed:
Definitions: “bedrock hollows”, “channel migration zone (CMZ)”, “completion of harvest”, “contamination”, “convergent headwalls”, “critical habitat”, “cultural resources”, “debris”, “desired future condition (DFC)”, “equipment limitation zone”, “erodible soils”, “forest road”, “forest trees”, “full bench road”, “green recruitment trees”, “inner gorge”, “limits of construction”, “low impact harvest”, “plantable area”, “riparian function”, “riparian management zones (RMZ)”(core, inner, and outer zones are also defined), “road construction”, “road maintenance”, “sensitive sites”, “side casting”, “spoil”, “salvage”, “scarification”, “sensitive sites”, “site preparation”, “skid trail”, “slash”, “stream-adjacent parallel road”, “timber”, “temporary road”, “threatened or endangered species”, “water bar”, “watershed analysis”, “wetlands”, “wildlife”, “wildlife reserve trees”.
These definitions apply to the following rules:
WAC 222-10-030 *SEPA policies for potentially unstable slopes and landforms.
WAC 222-10-040 Class IV-special threatened and endangered species SEPA policies.
WAC 222-10-041 Northern spotted owl. (SEPA policies)
WAC 222-10-042 Marbled murrelet. (SEPA policies)
WAC 222-16-050 Class IV-special.
(1)(b) specific forest practices provided in WAC 222-16-080 on lands designated as critical habitat (state) of threatened and endangered species.
(d) potentially unstable slopes and landforms
(e) watershed analysis
(f) cultural resources
WAC 222-16-080 Critical habitats (state) of threatened and endangered species.
WAC 222-16-085 Northern spotted owl habitats.
WAC 222-16-086 Northern spotted owl special emphasis areas and goals.
WAC 222-16-100 Planning options for the northern spotted owl.
WAC 222-16-105 Cooperative habitat enhancement agreements.
WAC 222-20-120 Notice of forest practices to affected Indian tribes.
Chapter 222-22 WAC Watershed Analysis
WAC 222-23-010 Policy and definitions. (of Rivers and Habitat Open Space Program)
WACs 222-24-015 Construction in wetlands; 24-020 Road location and design; 24-026 Temporary roads; 24-030 Road construction; 24-035 Landing location and construction; 24-040 Water crossing structures; 24-052 Road maintenance (includes disturbance avoidance for northern spotted owls and marbled murrelets); 24-060 Rock quarries, gravel pits, borrow pits, and spoil disposal areas.
WAC 222-30-020 *Harvest unit planning and design.
(3) Western Washington riparian management zones. (See WACs 222-30-021 and 222-30-023.)
(4) Eastern Washington riparian management zones. (See WACs 222-30-022 and 222-023.)

Comment [WU1]: This doesn't make sense in the context of the language that follows.

Comment [WU2]: This needs to be moved to Section 2. This is where protection exists, harvest is limited.

(5) Riparian leave tree areas. (See WACs 222-30-021, 222-30-022, and 222-30-023.)
 (6) Forested wetlands.
 (7) Wetland management zones (WMZ).
 (10) Wildlife habitat.
 (11) Wildlife reserve tree management.
 WAC 222-30-021 *Western Washington riparian management zones.
 WAC 222-30-022 *Eastern Washington riparian management zones.
 (1) Type S and F waters, (b)(ii) (C) inner zone wildlife reserve trees.
 WAC 222-30-023 Riparian management zones for exempt 20-acre parcels.
 WAC 222-30-030 Stream bank integrity.
 WAC 222-30-045 Salvage logging within the RMZ.
 WACs 222-30-050 Felling and bucking; 30-060 Cable yarding; 30-065 Helicopter yarding; 30-070 Ground-based logging systems; 30-080 Landing cleanup; and 30-100 Slash disposal or prescribed burning.

Existing BMP's/Science Related to Issue

Biomass is vegetation removed from the forest, usually logging slash, small-diameter trees, tops, limbs, or trees not considered merchantable in traditional markets. (Evans et al. 2010)
 Woody biomass is defined as material from trees and woody plants, including limbs, tops, needles, leaves and other woody parts that are by-products of forest management, ecosystem restoration or hazardous fuel reduction treatments. (ODF 2008).
 CWM has been defined as more than 6 inches in diameter at the large end and FWM that is less than 6 inches in diameter at the large end (Minnesota Forest Resources Council 2007).
 The USDA Forest Service defines CWM as downed dead wood with a small-end diameter of at least 3 inches and a length of at least 3 feet, and FWM as having a diameter of less than 3 inches (Woodall and Monleon 2008).
 Fine woody debris: Any woody material 0.01-3" diameter
 Coarse woody debris Any woody material 3-10" diameter
 Logs: Any woody material greater than 10" diameter
 Stumps: Any snag less than 10 feet tall (Stewart et al. 2010)

Comments:

*Do you think rule change is needed? Guidance? Other?
 What specific changes/guidance is needed?*

[The Forest Practices Biomass Work-group proposes, by consensus, that the following definition of "Forest Biomass" be added to the Forest Practices Rules:](#)
 "Forest Biomass" is defined as material from trees and woody plants that are by-products of forest management, ecosystem restoration, or hazardous fuel reduction treatments.

Topic: Retention Levels

1. How much biomass should be left on site to ensure that forest resources/forest function is maintained?
2. Is the "bottom line" of retention, currently in the FP Rules, sufficient under the possibility of a market for more product that would have otherwise been left behind?
3. Rules lack retention targets for fine woody debris.
4. Is there a need for slash retention rules/BMP's?
5. Should special areas where ground wood is particularly important be identified?
6. Should the fact that stumps cannot be removed be clarified in light of an emerging biomass sector?

Existing Forest Practices Rules

WAC 222-30-020 (11) Wildlife reserve tree management. Western Washington, Three wildlife reserve

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trees, Two green recruitment trees and Two down logs per acre shall be left. In Eastern Washington, Two wildlife reserve trees, Two green recruitment trees and Two down logs per acre shall be left.
 WAC 222-30-040 Stream bank integrity. Avoid disturbing brush and stumps, and leave stumps and large tree root systems.
 WAC 222-30-060(5) Direction of yarding. Type S or F Water channel below 100-year flood level or within RMZ, care should be taken to minimize soil disturbance and prevent logs from entering water.
 WAC 222-30-070(8) Skid trail maintenance. Within 200 feet of typed water... use (leave)... slash to minimize sediment delivery to stream.
 WAC 222-30-100(3) Landing cleanup. Dispose or pile slash accumulations that would prevent reforestation.
 WAC 222-16-010 "Completion of harvest" definition. Preparation for reforestation including the timing of slash disposal.
 WAC 222-16-010 "Site preparation" definition. Preparation for reforestation; removal of slash, scarification, slash burning.

Existing BMP's/Science Related to Issue

Broad approach: Maintain ecosystem function (target background levels)

FSC Indicator 6.3.f requires that "management maintains, enhances, or restores habitat components and associated stand structures, in abundance and distribution that could be expected from naturally occurring processes"; these habitat components include "live trees with decay or declining health, snags, and well-distributed coarse down and dead woody material." (Evans et al. 2010)

FSC: Ecological functions and values shall be maintained intact, enhanced, or restored, including:

- Forest regeneration and succession
- Genetic, species, and ecosystem diversity
- Natural cycles that affect the productivity of the forest ecosystem.

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Stewart et al. 2010, Table 24: Summary of dead and downed wood retention targets from states with existing biomass harvesting guidelines

- Retain the forest floor, litter layer, root systems, stumps
- Retain as many logs/snags and as much slash as possible
- Retain a minimum number of logs/snags and and a minimum percent or volume of slash
 - % left intentionally plus assumed incidental breakage (10-15%)
- Retain woody debris from multiple tree species and size classes, with an emphasis on larger structures
- Retain more debris in stands with little woody debris prior to harvest
- Retain and limit disturbance to pre-existing CWD/FWD

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Soil productivity BMPs (broad)

- Soil disturbance classification (Scott 2007)
 - Limit soil disturbance to class 1, minimize class 2, and avoid classes 3-5
- Where possible, delay yarding after felling to allow slash/needles to dry and fall off in more even distribution across the site
- Stewart et al. 2010, Table 27: Summary of soil productivity protection measures from states with existing biomass harvesting guidelines

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Soil erosion/unstable slopes (see topic 3)

Soil compaction (see topic 4)

Wildlife/biodiversity BMPs (broad)

- Wildlife will benefit most from a conservation strategy that optimally combines both fine filter and coarse filter approaches (Hunter 1990, Lindenmayer et al. 2006).
 - Fine filter approach: focuses on rare or specialized species
 - Coarse filter approach: protecting entire ecosystems

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- Carey & Johnson 1995
 - Our empirical data suggest that 15-20% cover of coarse woody debris on the forest floor, well distributed across the site, would be adequate for most small mammals, whereas 5-10% cover would not allow the mammals to reach their potential abundances. But coarse woody debris, especially large, standing and fallen dead trees, is not only an important habitat component for forest floor small mammals, but also provides critical habitat elements for birds (Carey et al. 1991) and amphibians (Bury et al. 1991a, Corn and Bury 1991b).
- How Should We Spatially Distribute Dying and Dead Wood? (Bunnell et al 2002b)
 - Maintain a target density of 2-3 large snags (> 50 or 30 centimeter diameter) per hectare, among 10-20 smaller snags per hectare through the rotation. However, ensure variation in densities, not an even distribution everywhere.
 - Providing for future recruitment of snags in coniferous stands is necessary to ensure that target densities are maintained through the rotation and after harvest. Suggested densities do not apply to each hectare of forest. Because of the diversity of organisms using snags, variability in density of snags must be maintained within and among stands.
 - Maintain a range of log sizes from 6 cm to >50 cm in diameter at densities of 100 to 200 cubic meters/hectare or more
 - Maintain patches of snags and DWD of at least 1-3 ha using both aggregated and dispersed retention
 - Meet dead wood requirements for larger species in areas where the emphasis is not on intensive fiber production.
- Retain as much dead wood as possible (FWD, CWD, logs, snags) from various size and decay classes and tree species
 - Retain 7-25 den trees and 6-12 snags per acre (MO)
 - Retain at least 1.6 logs per acre (at least 16 feet in length and 12 inches in diameter on the coast and 6.5 feet in length and 3 inches in diameter in the interior; BC).
 - In areas under uneven-aged management, retain a minimum of 6 secure cavity and/or snag trees per acre, with one exceeding 18 inches DBH and 3 exceeding 12 inches DBH. In areas lacking such cavity trees, retain trees of these diameters with defects likely to lead to cavity formation. (NH)
 - In areas under even aged management, leave an uncut patch for every 10 acres harvested, with patches totaling 5 percent of the area. Patch size may vary from a minimum of 0.25 acre. Use cavity trees exceeding 18 inches DBH or active den trees as nuclei for uncut patches. Remember, the larger the tree, the more species that can use it. Riparian and other buffers can help to satisfy this goal. (NH)
 - Leave up 15 to 30% of harvestable biomass as coarse woody debris.
- Stewart et al. 2010, Table 25
 - Retain some green wildlife trees (trees with cavities and rot; GRTs)
 - Retain some mast-producing trees (hardwood species) and shrubs of various species and size classes
 - Retain fruit-producing shrubs and trees
 - Retain biological legacies in clumps and buffers
 - Retain slash piles that show evidence of use by wildlife
 - Avoid biomass harvests within sites where endangered or threatened plant or animal species are known to exist (practices should protect and enhance habitat)
 - Avoid/limit biomass harvesting in areas of high conservation value/sensitive sites (wetlands, springs/seeps, vernal pools/ponds, riparian zones, cliffs, caves)
 - Avoid harvest activity in leave tree clumps
 - Avoid damaging existing downed woody debris, especially large (18+ inches) hollow or rotten logs and rotten stumps during harvesting operations (including tree falling, skidding,

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and road and skid trail layout).

- Avoid disrupting upturned tree roots during the breeding season to protect nesting birds.
- Avoid “hard edges,” by creating a gradual transition into harvested areas
- Consider creating travel corridors in large harvests (>40 acres)
- Leave additional woody debris in stands with low levels of woody debris prior to biomass harvests
- Avoid biomass harvests more than once per rotation to prevent a decline in the quantity and quality of woody biomass pools over time
- Oregon
 - Select silviculture treatments that provide a diversity of forest structure so a wider range of habitats for wildlife and understory plants can provide for overall biodiversity.
 - Hagar and others (2004) suggest using a variety of thinning intensities and patterns, from no thinning to very widely spaced residual trees, to maximize avian diversity at the landscape scale and structural diversity both within and among stands.
 - Pilliod and others (2006) suggest that managers should retain refugia of untreated stands and critical habitat elements, particularly slow to recover features such as large-diameter down wood and snags, to increase habitat heterogeneity, benefit the greatest number of species over time, minimize the effects of direct mortality, and accelerate recovery.
 - We believe there is an adequate amount of literature informing the potential effects of woody biomass removal on forest species to warrant a precautionary approach to its management until further research can be conducted.

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Carbon storage BMPs (broad)

- Gershenson et al. 2010
 - Limit high disturbance site preparation activities to 10% of the total project area to minimize loss of soil C.
 - Since initial losses from whole tree harvest can be as high as 20% of ecosystem carbon, an inter-harvest period of adequate length (at least 50 years) is critical for ensuring that such losses are replenished.
 - Ensuring appropriately long intervals between thinning treatments, and ensuring that biomass residues are left onsite is critical in order to minimize soil carbon losses.
- Evans and Ducey 2010
 - One argument against basing [lying dead wood: CWD] LDW retention guidance on the carbon it stores is the uniqueness of the other ecological roles LDW plays. Other forest structures (such as live trees) could sequester the carbon lost from LDW, but nothing can replace the habitat, hydrologic function, regeneration, or nutrient cycling role that LDW plays.
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Site-specific approaches:

Soil productivity

- Retain logging slash on site, especially on sites with nutrient-limited and coarse-textured soils (Page-Dumroese et al. 2010).
- Stewart et al. 2010 (Table 27): soil productivity protection measures from states with existing biomass harvesting guidelines
 - Sensitive soil types
 - Retain as many tops and branches as possible on low fertility sites, sallow soils, coarse sandy soils, poorly drained soils, steep slopes, and other erosion-prone sites (Maine)
 - Avoid additional biomass harvests from erosion-prone sites; install erosion control devices (Minnesota)

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- [Avoid biomass harvesting on ombrotrophic, organic soils deeper than 24 inches; aspen/hardwood cover types on shallow soils \(8 inches or less to bedrock\) \(Minnesota\)](#)
- [Do not harvest FWD on shallow soils \(bedrock within 20 inches of surface; Wisconsin\)](#)
- [Do not harvest FWD on dry, nutrient-poor, sandy soils \(Wisconsin\)](#)
- [Do not harvest FWD on soils classified as dysic Histosols \(wetland soils with 16 inches organic material, nutrient-poor and low pH; Wisconsin\).](#)
- [For shallow soils and droughty sands, consider retaining 33% or more of the FWD post-harvest \(Minnesota\)](#)
- [On shallow, nutrient poor soils, consider leaving additional residue \(more than 33%; Michigan\)](#)

[Soil erosion/unstable slopes \(see topic 3\)](#)

[Soil compaction \(see topic 4\)](#)

[Wildlife/biodiversity](#)

- [To determine the degree to which an ecosystem is fully functional, a manager can determine which habitat elements and associated species could be influenced by the proposed management activities \(positively or negatively\), determine the set of KEF categories associated with the affected species \[using the SHP/ICBEMP/DecAID databases\] and compare this with other alternative management activities or expected changes in wildlife habitats, structures, and elements over time \(Marcot 2002\).](#)
- [CWD](#)
 - [WRT, GRT: Prioritize largest](#)
 - [Range of size and decay classes](#)
 - [Avoid damaging existing DWD, especially large \(18+ inches\) hollow or rotten logs and rotten stumps during harvesting operations](#)
- [FWD:](#)
- [Duff/litter layer](#)
- [Understory shrubs/herbs](#)
- [Non-merchantable trees](#)
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[Carbon storage](#)

- [Slesak et al. 2010](#)
 - [The total soil C concentration was significantly higher in the 80% coverage treatment at Matlock, but there was little difference between the 0 and 40% coverage treatments](#)
 - [It appears that there is an effect of logging debris on the total soil C pools at these sites, but the effect is limited to situations where relatively large amounts of debris are retained and are undetectable when the initial soil C pool is large.](#)

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Comments:
Do you think rule change is needed? Guidance? Other?
What specific changes/guidance is needed?

[Group has evaluated the issue, based on today's practices and the UW supply study \(DNR, 2012\); we don't see a need for rules or guidance at this point. Group would recommend the topic be revisited as technology changes, biomass value increases, and biomass sector grows. This reevaluation shall take place no later than 2016.](#)

[Outcome: No consensus at this point. We will evaluate other specific areas to determine if there are exceptions, nuances, etc. that are more site specific.](#)

Topic: Slope

<p>What is the percent slope threshold at which biomass should not be collected due to risks collection with <u>will</u> pose on soil erosion, water quality, etc.?</p>
<p>Existing Forest Practices Rules</p> <p>WAC 222-10-030 SEPA policies for potentially unstable slopes or landforms. Requirements for analysis of potential for mass wasting or sedimentation or debris to a public resource.</p> <p>WAC 222-30-020 Harvest unit planning and design. (1) Logging systems <u>Forest Practices activities</u> must be appropriate for the terrain, soils, and timber type so that yarding and skidding can be economically accomplished and achieve ecological goals of the rules (aquatic resource protection, wetland function).</p> <p>WAC 222-30-060 Cable yarding. Uphill yarding preferred; where downhill yarding is used, lift leading end of the log to minimize downhill movement of slash and soils.</p> <p>WAC 222-30-070 Ground-based logging systems.</p> <p>(6) Protection of residual timber. Reasonable care shall be taken to minimize damage from skidding to the stems and root systems of residual timber and to young reproduction.</p> <p>(8) Skid trail maintenance; water barred, grade breaks, seeding with noninvasive species.</p> <p>(9) Slope restrictions. Shall not be used on slopes where DNR determines actual or potential damage to a public resource would result.</p> <p>WAC 222-34-040 Site preparation and rehabilitation.</p> <p>(1) Heavy equipment. Heavy equipment shall not be used in connection with site preparation or rehabilitation work:</p> <p>a) When, because of soil moisture conditions or the type of soils, undue compaction or unnecessary damage to soil productivity would occur or erosion would result in damage to water quality; or</p> <p>b) Within riparian management zones, Type A and B Wetlands, wetland management zones, or within equipment limitation zones of Type Np and Ns Waters on slopes of 30 percent or less. On slopes greater than 30 percent heavy equipment shall not operate within 50 feet of Type S through Ns Waters unless a site specific plan has been approved by the department.</p>
<p>Existing BMP's/Science Related to Issue</p> <ul style="list-style-type: none"> • <u>Retain at least 30% of the fine woody debris on slopes conducive to ground-based harvesting and 50% or more on steeper slopes. (Harrison et al. 2011)</u> • <u>Incorporated into soil site risk assessment?</u> <ul style="list-style-type: none"> o <u>soil erosion and/or mass wasting hazard metrics (see 10/24/11 soil operational guidelines)</u> • <u>Cram et al. 2007</u> <ul style="list-style-type: none"> o <u>Given similar vegetation cover types and soils, forest prescription guidelines and on-site priorities [should] be focused on not necessarily avoiding all traffic but rather on minimizing severe surface disturbance [large areas of exposed bare soil] particularly on steep slopes.</u> o <u>Although exposed soil is subject to runoff and erosion, the confluence of adjacent litter and slash piles will help slow runoff and promote infiltration.</u> o <u>Scattering slash, straw mulching, and erosion control blankets can cover exposed mineral soil resulting in increased infiltration, and reduced runoff and sedimentation (surface remediation at highly disturbed sites, Robichaud et al. 2005)</u>
<p>Comments:</p> <p><i>Do you think rule change is needed? Guidance? Other?</i></p> <p><i>What specific changes/guidance is needed?</i></p>
<p><u>The group suggests the following rule revision:</u></p> <p><u>WAC 222-30-020 Harvest unit planning and design. (1) Logging systems <u>Forest practices activities</u> OR <u>forest biomass removal operations must be appropriate for the terrain, soils, and timber type so that yarding and skidding can be economically accomplished and achieve ecological goals of the rules.</u></u></p>

Comment [WU3]: Suggested rule change.

Comment [WU4]: Flag.

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Consensus is that the intent of this revision is captured and Marc will look at the larger impacts this revision may have on the rules as a whole to ensure that there are no unintended consequences.

Topic: Soil Health

On sensitive soils, should biomass collection should be limited to the landings during certain seasons (allow removal during dry soil conditions or prohibit a return to the site)?

Existing Forest Practices Rules

WAC 222-16-010

"Equipment limitation zone" means a 30-foot wide zone measured horizontally from the outer edge of the bankfull width of a Type Np or Ns Water. It applies to all perennial and seasonal nonfish bearing streams.

"Erodible soils" means those soils that, when exposed or displaced by a forest practices operation, would be readily moved by water.

WAC 222-20-040 Approval conditions. Applicant shall notify DNR 2 days before operating, when DNR requests it on an approved FPA due to soil condition, proximity to a water course or other unusual factor. WAC 222-24-030 Road construction.

(4) If erodible soil could enter stream network, soils must be seeded with noninvasive plant species.

(6) Uncompleted road construction to be left over winter shall be drained by outsliping or drainage structures.

(7) Construction must be accomplished when moisture and soil conditions not likely to result in erosion and/or soil movement.

(8) Skid trail maintenance.

WAC 222-30-020 Harvest unit planning and design.

(1) Logging systems must be appropriate for the terrain, soils, and timber type so that yarding and skidding can be economically accomplished and achieve ecological goals of the rules (aquatic resource protection, wetland function).

(9) Future productivity. Harvest must leave land in condition conducive to future timber production (except RMZs and lands being converted).

WAC 222-30-021

~~1~~(1) Western WA Type S and F Water. (a) Core zone; no timber harvest or construction. (b) Inner zone; forest practices must be conducted in a way that meets or exceeds stand requirements; (c) Outer zone – leave tree requirements.

~~2~~(2) Western WA Type Np and Ns Water.

(a) 30-foot wide equipment limitation zone; (i) on-site mitigation required if activities expose the soil on >10% of the surface area of the zone. (ii) replace the equivalent lost functions especially prevention of sediment delivery.

(b) no timber harvest within buffers of sensitive sites.

(c) operation will avoid management activities which would result in soil compaction, loss of protective vegetation or sedimentation in perennially moist areas...

WAC 222-30-022

~~1~~(1) Eastern WA Type S and F Water. (a) Core zone; no timber harvest or construction. (b) Inner zone; forest practices must be conducted in a way that meets basal area and leave tree requirements per timber habitat type. (c) Outer zone – leave tree requirements.

~~2~~(2) Eastern WA Type Np and Ns Water.

~~1~~(a) 30-foot wide equipment limitation zone; (i) on-site mitigation required if activities expose the soil on >10% of the surface area of the zone. (ii) replace the equivalent lost functions especially prevention of sediment delivery.

WAC 222-30-060 (5) Direction of yarding; (c) parallel to Type S or F water within RMZ or below 100-year flood level, reasonable care shall be taken to minimize soil disturbance and prevent logs rolling.

WAC 222-30-070 Ground-based logging systems.

Comment [WU5]: Erodible soils is the term used to describe sensitive soils and vulnerable soils in rule language. Erodible soils are on soil maps and part of the pre-review of Forest Practices applications.

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(1) No ground-based logging systems in wetlands, or on exposed erodible soils or saturated soils, or when soil moisture high.
 (8) Skid trail maintenance; water barred, grade breaks, seeding with noninvasive species.
 (9) Slope restrictions. Shall not be used on slopes where DNR determines actual or potential damage to a public resource would result.
 WAC 222-30-080 Landing cleanup. Within 60 days after log hauling, establish slope to prevent water accumulation of running down erodible fill; seed (or use other means) to prevent exposed soil from causing public resource damage.

Chapter 222-34 WAC. In general: Reforestation or natural regeneration must result in a specified number of seedlings per acre within specified number of years. Competing vegetation must be controlled to the extent necessary for establishment survival.

WAC 222-34-040 Heavy equipment shall not be used in connection with site preparation or rehabilitation work when undue compaction or damage to soil productivity would occur or erosion would result in damage to water quality; or within RMZs, wetlands, WMZs or equipment limitation zones of Type Np and Ns Waters on slopes \leq 30%...

Existing BMP's/Science Related to Issue

Comments:

*Do you think rule change is needed? Guidance? Other?
 What specific changes/guidance is needed?*

Timber issues that affect biomass.

Primarily an issue with timber harvest, road construction, etc., but that has or could relate to the impacts of biomass collection.

Topic: Definitions
Evaluate the definitions of: -Slash -Salvage -Debris -Hazard -Harvest -Risk -Consequence
Existing Forest Practices Rules
WAC 222-16-010 General definitions " Clearcut " means a harvest method in which the entire stand of trees is removed in one timber harvesting operation. Except as provided in WAC 222-30-110, an area remains clearcut until: It meets the minimum stocking requirements under WAC 222-34-010(2) or 222-34-020(2); and The largest trees qualifying for the minimum stocking levels have survived on the area for five growing seasons or, if not, they have reached an average height of four feet. " Completion of harvest " means the latest of: Completion of removal of timber from the portions of forest lands harvested in the smallest logical unit that will not be disturbed by continued logging or an approved slash disposal plan for adjacent areas; or Scheduled completion of any slash disposal operations where the department and the applicant agree within 6 months of completion of yarding that slash disposal is necessary or desirable to facilitate reforestation and agree to a time schedule for such slash disposal; or Scheduled completion of any site preparation or rehabilitation of adjoining lands approved at the time of approval of the application or receipt of a notification: Provided, That delay of reforestation under this paragraph is permitted only to the extent reforestation would prevent or unreasonably hinder such site preparation or rehabilitation of adjoining lands. " Debris " means woody vegetative residue less than 3 cubic feet in size resulting from forest practices activities which would reasonably be expected to cause significant damage to a public resource. " Even-aged harvest methods " means the following harvest methods: Clearcuts; Seed tree harvests in which twenty or fewer trees per acre remain after harvest; Shelterwood regeneration harvests in which twenty or fewer trees per acre remain after harvest; Group or strip shelterwood harvests creating openings wider than two tree heights, based on dominant trees; Shelterwood removal harvests which leave fewer than one hundred fifty trees per acre which are at least five years old or four feet in average height; Partial cutting in which fewer than fifty trees per acre remain after harvest; Overstory removal when more than five thousand board feet per acre is removed and fewer than fifty trees per acre at least ten feet in height remain after harvest; and Other harvesting methods designed to manage for multiple age classes in which six or fewer trees per acre remain after harvest. Except as provided above for shelterwood removal harvests and overstory removal, trees counted as remaining after harvest shall be at least ten inches in diameter at breast height and have at least the top one-third of the stem supporting green, live crowns. Except as provided in WAC 222-30-110, an area remains harvested by even-aged methods until it meets the minimum stocking requirements under WAC 222-34-010(2) or 222-34-020(2) and the largest trees qualifying for the minimum stocking levels have survived on the area for five growing seasons or, if not, they have reached an average height of four feet. " Forest practice " means any activity conducted on or directly pertaining to forest land and relating to growing, harvesting, or processing timber or forest biomass

<p>"Green recruitment trees" means those trees left after harvest for the purpose of becoming future wildlife reserve trees under WAC 222-30-020(11).</p> <p>"Low impact harvest" means use of any logging equipment, methods, or systems that minimize compaction or disturbance of soils and vegetation during the yarding process. The department shall determine such equipment, methods or systems in consultation with the department of ecology.</p> <p>"Merchantable stand of timber" means a stand of trees that will yield logs and/or fiber: Suitable in size and quality for the production of lumber, plywood, pulp or other forest products; Of sufficient value at least to cover all the costs of harvest and transportation to available markets.</p> <p>"Partial cutting" means the removal of a portion of the merchantable volume in a stand of timber so as to leave an uneven-aged stand of well-distributed residual, healthy trees that will reasonably utilize the productivity of the soil. Partial cutting does not include seedtree or shelterwood or other types of regeneration cutting.</p> <p>"Salvage" means the removal of snags, down logs, windthrow, or dead and dying material.</p> <p>"Scarification" means loosening the topsoil and/or disrupting the forest floor in preparation for regeneration.</p> <p>"Site preparation" means those activities associated with the removal of slash in preparing a site for planting and shall include scarification and/or slash burning.</p> <p>"Slash" means pieces of woody material containing more than 3 cubic feet resulting from forest practices activities.</p>
Existing BMP's/Science Related to Issue
Comments: <i>Do you think rule change is needed? Guidance? Other?</i> <i>What specific changes/guidance is needed?</i>

Topic: Timing
<ol style="list-style-type: none"> Will road abandonment and slash disposal requirements interfere with the need for forest biomass to cure over a period of 6-18 months? Biomass harvest could challenge DNR's ability to monitor for compliance with FP rules.
Existing Forest Practices Rules
<p>WAC 222-08-160 Continuing review of forest practices rules.</p> <p>(2) Adaptive management program. The adaptive management program will be used to determine the effectiveness of forest practices rules in aiding the state's salmon recovery effort and provide recommendations to the board on proposed changes to forest practices rules to meet timber industry viability and salmon recovery.</p> <p>(4) Compliance monitoring. The department shall conduct compliance monitoring that addresses the following key question: "Are forest practices being conducted in compliance with the rules?"</p>
Existing BMP's/Science Related to Issue
Comments: <i>Do you think rule change is needed? Guidance? Other?</i> <i>What specific changes/guidance is needed?</i>

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Timber only.

Effects timber harvest, road construction, etc. only; does not directly affect impacts of biomass collection.

Topic: Retention Levels
1. WRT/GRT requirements haven't been updated in over 20 years. Do these need to be modernized?
Existing Forest Practices Rules
WAC 222-16-010 "Green recruitment trees" definition. Future wildlife trees. WAC 222-16-010 "Wildlife reserve trees" definition. Habitat for wildlife species dependent on standing trees. WAC 222-30-020 (11) Wildlife reserve tree management. (b) Western WA: 3 wildlife reserve trees/acre, 2 green recruitment trees/acre, and 2 down logs/acre shall be retained. Eastern WA: 2 wildlife reserve trees/acre, 2 green recruitment trees/acre, and 2 down logs/acre shall be retained.
Existing BMP's/Science Related to Issue
Comments: <i>Do you think rule change is needed? Guidance? Other?</i> <i>What specific changes/guidance is needed?</i>

Topic: Other Issues
1. How is sufficient large woody debris maintained in unbuffered Type Ns and Np streams? (Water Quality, Riparian Zones/Unstable Slopes, Water Infiltration)
Existing Forest Practices Rules
WAC 222-30-021(2) Western WA Type Np and Ns Water. (a) 30-foot wide equipment limitation zone. WAC 222-30-022 (2) Eastern WA Type Np and Ns Water. (a) 30-foot wide equipment limitation zone.
Existing BMP's/Science Related to Issue
Comments: <i>Do you think rule change is needed? Guidance? Other?</i> <i>What specific changes/guidance is needed?</i>

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State lands only.

Unique to state lands, due to requirements of HB 2481.

Timing
1. State timber contracts require that the purchaser complete road abandonment work. How does this interplay with a biomass collector coming back to the site. Do they need to re-abandon the road again?
Existing Forest Practices Rules

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None
Existing BMP's/Science Related to Issue
Comments: <i>Do you think rule change is needed? Guidance? Other?</i> <i>What specific changes/guidance is needed?</i>

Outside the jurisdiction of existing FP Rules.

Forest Practices currently have no jurisdiction over this issue.

Topic: Definitions
Sustainability. A definition of sustainability is not currently contained in the Forest Practices Rules. Ecologically sustainable forestry. A definition of ecologically sustainable forestry is not currently contained in the Forest Practices Rules. Biological Diversity. A definition of biological diversity is not currently contained in the Forest Practices Rules.
Existing Forest Practices Rules
WAC 222-30-010 Policy--Timber harvesting. *(1) This chapter covers all removal of timber from forest lands in commercial operations, commercial thinning, salvage of timber, relogging merchantable material left after prior harvests, postharvest cleanup, and clearing of merchantable timber from lands being converted to other uses. It does not cover removal of incidental vegetation or removal of firewood for personal use. To the extent practicable, the department shall coordinate activities using a multiple disciplinary planning approach. *(2) The goal of riparian rules is to protect aquatic resources and related habitat to achieve restoration of riparian function; and the maintenance of these resources once they are restored. *(3) The rules provide for the conversion and/or treatment of riparian forests which may be understocked, overstocked or uncharacteristically hardwood dominated while maintaining minimum acceptable levels of function on a landscape scale. The diversity of riparian forests across the landscapes is addressed by tailoring riparian prescriptions to the site productivity and tree community at any site. *(4) Wetland areas serve several significant functions in addition to timber production: Providing fish and wildlife habitat, protecting water quality, moderating and preserving water quantity. Wetlands may also contain unique or rare ecological systems. The wetland management zone and wetland requirements specified in this chapter are designed to protect these wetland functions when measured over the length of a harvest rotation, although some of the functions may be reduced until the midpoint of the timber rotation cycle. Landowners are encouraged to voluntarily increase wetland acreage and functions over the long-term. WAC 222-16-080 Critical habitats (state) of threatened and endangered species
Existing BMP's/Science Related to Issue
Comments: <i>Do you think rule change is needed? Guidance? Other?</i> <i>What specific changes/guidance is needed?</i>

Topic: Retention Levels
1. Is soil quality within the jurisdiction of the Forest Practices Rules to regulate?
Existing Forest Practices Rules
RCW 76.09.010 Legislative finding and declaration. (1) The legislature hereby finds and declares that the forest land resources are among the most valuable of all resources in the state; that a viable forest products industry is of prime importance to the state's economy; that it is in the public interest for public and private commercial forest lands to be managed consistent with sound policies of natural resource protection; that coincident with maintenance of a viable forest products industry, it is important to afford protection to forest soils , fisheries, wildlife, water

quantity and quality, air quality, recreation, and scenic beauty.

(2) The legislature further finds and declares it to be in the public interest of this state to create and maintain through the adoption of this chapter a comprehensive statewide system of laws and forest practices rules which will achieve the following purposes and policies:

(a) Afford protection to, promote, foster and encourage timber growth, and require such minimum reforestation of commercial tree species on **forest lands as will reasonably utilize the timber growing capacity of the soil following current timber harvest**;

(b) **Afford protection to forest soils** and public resources by utilizing all reasonable methods of technology in conducting forest practices;

(c) Recognize both the public and private interest in the profitable growing and harvesting of timber;

(d) Promote efficiency by permitting maximum operating freedom consistent with the other purposes and policies stated herein;

(e) Provide for regulation of forest practices so as to avoid unnecessary duplication in such rules;

(f) Provide for interagency input and intergovernmental and tribal coordination and cooperation;

(g) Achieve compliance with all applicable requirements of federal and state law with respect to nonpoint sources of water pollution from forest practices;

(h) To consider reasonable land use planning goals and concepts contained in local comprehensive plans and zoning regulations;

(i) Foster cooperation among managers of public resources, forest landowners, Indian tribes and the citizens of the state;

(j) Develop a watershed analysis system that addresses the cumulative effect of forest practices on, at a minimum, the public resources of fish, water, and public capital improvements of the state and its political subdivisions; and

(k) Assist forest landowners in accessing market capital and financing for the ecosystem services provided to the public as a result of the protection of public resources.

(3) The legislature further finds and declares that it is also in the public interest of the state to encourage forest landowners to undertake corrective and remedial action to reduce the impact of mass earth movements and fluvial processes.

(4) The legislature further finds and declares that it is in the public interest that the applicants for state forest practices permits should assist in paying for the cost of review and permitting necessary for the environmental protection of these resources.

Existing BMP's/Science Related to Issue
Comments:
<i>Do you think rule change is needed? Guidance? Other?</i>
<i>What specific changes/guidance is needed?</i>

Topic: Ecosystem Functionality
1. What is the possibility for the Forest Practices Rules to apply an ecosystem functionality approach to rules, in general. Increasing the scale of management – a crosswalk of conservation measures under existing HCP.
Existing Forest Practices Rules
WAC 222-30-010 Policy--Timber harvesting. *(1) This chapter covers all removal of timber from forest lands in commercial operations, commercial thinning, salvage of timber, relogging merchantable material left after prior harvests, postharvest cleanup, and clearing of merchantable timber from lands being converted to other uses. It does not cover removal

of incidental vegetation or removal of firewood for personal use. To the extent practicable, the department shall coordinate activities using a multiple disciplinary planning approach.

*(2) The goal of riparian rules is to protect aquatic resources and related habitat to achieve restoration of riparian function; and the maintenance of these resources once they are restored.

*(3) The rules provide for the conversion and/or treatment of riparian forests which may be understocked, overstocked or uncharacteristically hardwood dominated while maintaining minimum acceptable levels of function on a landscape scale. The diversity of riparian forests across the landscapes is addressed by tailoring riparian prescriptions to the site productivity and tree community at any site.

*(4) Wetland areas serve several significant functions in addition to timber production: Providing fish and wildlife habitat, protecting water quality, moderating and preserving water quantity. Wetlands may also contain unique or rare ecological systems. The wetland management zone and wetland requirements specified in this chapter are designed to protect these wetland functions when measured over the length of a harvest rotation, although some of the functions may be reduced until the midpoint of the timber rotation cycle. Landowners are encouraged to voluntarily increase wetland acreage and functions over the long-term.

Existing BMP's/Science Related to Issue
Comments: <i>Do you think rule change is needed? Guidance? Other?</i> <i>What specific changes/guidance is needed?</i>

Topic: Carbon Storage
Should carbon storage be addressed by FP rules? It is not currently within our statutory authority.
Existing Forest Practices Rules
None specific, however a number require leaving of timber, slash and debris: WAC 222-30-020 (11) Wildlife reserve tree management. Western Washington, Three wildlife reserve trees, Two green recruitment trees and Two down logs per acre shall be left. In Eastern Washington, Two wildlife reserve trees, Two green recruitment trees and Two down logs per acre shall be left. WAC 222-30-040 Stream bank integrity. Avoid disturbing brush and stumps, and leave stumps and large tree root systems. WAC 222-30-060(5) Direction of yarding. Type S or F Water channel below 100-year flood level or within RMZ, care should be taken to minimize soil disturbance and prevent logs from entering water. WAC 222-30-070(8) Skid trail maintenance. Within 200 feet of typed water... use (leave)... slash to minimize sediment delivery to stream. WAC 222-30-100(3) Landing cleanup. Dispose or pile slash accumulations that would prevent reforestation. WAC 222-16-010 "Completion of harvest" definition. Preparation for reforestation including the timing of slash disposal. WAC 222-16-010 "Site preparation" definition. Preparation for reforestation; removal of slash, scarification, slash burning.

Existing BMP's/Science Related to Issue
Comments: <i>Do you think rule change is needed? Guidance? Other?</i>

<i>What specific changes/guidance is needed?</i>

Topic: Other Issues
<p>1. Reforestation species: will species shift for biomass production? Mostly in outer limits of RMZ. NOTE: This is 'thin ice' with regard to telling landowners what to plant. (Silviculture)</p> <p>+2. Interim Step: Biomass industry infrastructure in eastern Washington is so immature it is not possible to address what constitutes appropriate biomass harvest on the Eastside of the Cascades.</p> <p>+a. Need a field trip. Spring 2012. Public and private lands; pre and post- harvest. (Disturbance)</p> <p>+3. Aquatics emphasis in rules; not a lot that relates to uplands with regard to disturbances. Gaps in rules related to uplands vs. aquatics. (Disturbance)</p> <p>+4. Forest Health Bill excluded riparian areas because CMER was supposed to be looking at that. Not in the rules. (Disturbance)</p> <p>+5. Dynamic forest products market that defines end use of all products. (Disturbance)</p> <p>+6. We can't currently determine the efficacy of the existing FP rules with regard to dead wood and slash disposal. (Dead wood, slash disposal, carbon storage)</p> <p>+7. L&I rules conflict with replanting and the ability to leave snags. Leaving snags is important for wildlife habitat. Clumping is one potential solution. (Wildlife, Biodiversity, and Cultural Resources)</p> <p>+8. Site prep information where rules discuss harvest, salvage, etc. (Wildlife, Biodiversity, and Cultural Resources)</p> <p>+9. Will shrub layer be collected in the future for utilization as biomass? (Wildlife, Biodiversity, and Cultural Resources)</p>

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Existing Forest Practices Rules
<p>WAC 222-34-010 Required reforestation — West of Cascades Summit.</p> <p>1) Reforestation - where required.</p> <p>a) Unless the harvest application indicates that the land will be converted to another use, or the lands are identified in WAC 222-34-050 as having a likelihood of conversion to urban uses, reforestation is required for forest lands harvested after January 1, 1975 in the following instances:</p> <p>i) Clearcutting; or</p> <p>ii) Partial cutting where 50 percent or more of the timber volume is removed within any 5-year period, unless the department determines that the live trees remaining will reasonably utilize the timber growing capacity of the soils.</p> <p>b) Reforestation is not required where:</p> <p>i) Individual dead, dying, down or windthrown trees are salvaged; or</p> <p>ii) A tree or trees not constituting a merchantable stand are removed from lands in actual use for other purposes; for example, removal of individual trees from lands used for farming or grazing; or</p> <p>iii) Trees are removed under a thinning program reasonably expected to maximize the long-term production of commercial timber; or</p> <p>iv) An average of 190 vigorous, undamaged, well-distributed seedlings per acre of a commercial tree species are established on the area harvested (up to 20 percent of the harvested area may contain fewer than 190 seedlings per acre, but no acre of the harvested area with timber growing capacity may contain less than 150 seedlings per acre); or</p> <p>v) A minimum of 100 vigorous, undamaged, well-distributed saplings or merchantable trees per acre of a commercial species or combinations thereof, remain on the area harvested.</p> <p>2) Reforestation standards. A harvested area is reforested when that area contains an average of 190 or more vigorous, undamaged commercial species seedlings per acre that have survived on the site for at</p>

least 1 growing season. Up to 20 percent of the harvested area may contain fewer than 190 seedlings per acre, but no portion of the harvested area with timber growing capacity may contain less than 150 seedlings per acre. The department may determine that less than an average of 190 seedlings per acre is acceptable if fewer seedlings will reasonably utilize the timber growing capacity of the site.

3) Competing vegetation. Competing vegetation shall be controlled to the extent necessary to allow establishment, survival, and growth by commercial species.

4) Artificial regeneration standards.

a) Satisfactory reforestation - clearcuts. Satisfactory reforestation of a clearcut harvest occurs if within 3 years of completion of harvest, or a period of from 1 to 10 years as determined by the department in the case of a natural regeneration plan, the site is restocked to at least the acceptable stocking levels described in subsection (2) of this section: Provided, That regeneration failures from causes beyond the applicant's control will not result in violation of this section, but supplemental planting or reforestation may be required except in riparian management zones (see WAC 222-34-030(4)).

The department may grant an extension of time for planting or seeding if suitable seedlings or if seeds are unavailable, or if weather conditions or other circumstances beyond the forest land owner's control require delay in planting or seeding.

i) Reforestation species. Where the species proposed for reforestation after timber harvesting differs from the removed stand, the department may approve use of the proposed species where the reforestation plan reveals that the proposed species is preferable from any of the following standpoints:

A) Site data indicates better potential production for the proposed species than the existing species.

B) Control of forest insects or diseases.

C) Greater economic return.

ii) Seedling or seeding standards. Except as approved by the department to qualify as acceptable reforestation, the seedlings or seeds must be from an appropriate seed source zone. The department shall establish seed zones and guidelines for their use.

b) Satisfactory reforestation - partial cuts. Where reforestation is required in connection with a partial cut, the harvest application shall include a plan for stocking improvement. The plan shall be approved unless the department determines that it will not reasonably utilize the timber growing capacity of the site.

5) Natural regeneration standards. A natural regeneration plan may be approved as acceptable reforestation if:

a) A seed source of well formed trees of commercial tree species, capable of seed production is available.

b) The owner of the seed source agrees in writing not to harvest the seed source for the time period specified in the plan, or until issuance of a satisfactory reforestation inspection report.

c) The seed source must consist of:

i) Seed blocks of sizes and locations shown on the plan and satisfactory to the department; or

(ii) An average of at least 8 individually marked, well-distributed, undamaged, vigorous, windfirm seed trees per acre of plantable area and no inadequately stocked area is more than 400 feet from the nearest seed tree; and

(iii) Competing vegetation shall be controlled to the extent necessary to allow establishment, survival, and growth by commercial species.

(6) Any alternate plan for natural reforestation may be approved if it provides a practical method of achieving acceptable stocking levels as described in subsection (2) of this section within a period of 1 to 10 years.

WAC 222-34-020 Required reforestation — East of Cascades Summit.

1) Reforestation - where required.

a) Unless the harvest application indicates that the land will be converted to another use, or the lands are identified in WAC 222-34-050 as having a likelihood of conversion to urban use, reforestation is required for forest lands harvested after January 1, 1975 in the following instances:

i) Clearcutting; or

ii) Partial cutting where 50 percent or more of the timber volume is removed within any 5-year period, unless the department determines that the live trees remaining will reasonably utilize the timber growing capacity of the soils

b) Reforestation is not required where:

i) Individual dead, dying, down or windthrown trees are salvaged; or

ii) A tree or trees not constituting a merchantable stand are removed from lands in actual use for other purposes, for example, removal of individual trees from lands used exclusively for farming or cultivated pasture; or

iii) Trees are removed under a thinning program reasonably expected to maximize the long-term production of commercial timber; or

iv) An average of 150 vigorous, undamaged, well-distributed seedlings per acre of a commercial tree species are established on the area harvested (up to 20 percent of the harvested area may contain fewer than 150 seedlings per acre, but no acre of the harvested area with timber growing capacity may contain less than 120 seedlings per acre); or

v) A minimum of 100 vigorous, undamaged, well-distributed advanced regeneration, saplings or merchantable trees per acre of a commercial tree species or combinations thereof, remain on the area harvested.

2) Reforestation standards. A harvest area is reforested when that area contains an average of 150 or more vigorous, undamaged commercial species seedlings per acre that have survived on the site for at least 1 growing season. Up to 20 percent of the harvested area may contain fewer than 150 seedlings per acre, but no portion of the harvested area with timber growing capacity may contain less than 120 seedlings per acre. The department may determine that less than an average of 150 seedlings per acre is acceptable if fewer seedlings will reasonably utilize the timber growing capacity of the site.

3) Competing vegetation. Competing vegetation shall be controlled to the extent necessary to allow establishment survival and growth by commercial species.

4) Artificial regeneration standards.

a) Satisfactory reforestation - clearcuts. Satisfactory reforestation of a clearcut harvest occurs if within 3 years of completion of harvest or a period of from 1 to 10 years as determined by the department in the case of a natural regeneration plan, the site is restocked to at least the acceptable stocking levels described in subsection (2) of this section: Provided, That regeneration failures from causes beyond the applicant's control will not result in a violation of this section, but supplemental planting may be required except in riparian management zones (see WAC 222-34-030(4)).

The department may grant an extension of time for planting or seeding if suitable seedlings or seeds are unavailable, or if weather conditions or other circumstances beyond the forest landowner's control require delay in planting or seeding.

i) Reforestation species. Where the species proposed for reforestation after timber harvesting differs from the removed stand, the department may approve use of the proposed species where the reforestation plan reveals that the proposed species is preferable from any of the following standpoints:

A) Site data indicates better potential production for the proposed species than the existing species.

B) Control of forest insects or diseases.

C) Greater economic return.

ii) Seedling and seed standards. Except as approved by the department to qualify as acceptable reforestation, the seedlings and seed must be from an appropriate seed source zone. The department shall establish seed zones and guidelines for their use.

b) Satisfactory reforestation - partial cuts. Partial cuts not meeting the specifications of subsection (1)(b)(iv) or (v) of this section shall have a seed source as required in subsection (5)(c)(ii) of this section.

5) Natural regeneration standards. A natural regeneration plan may be approved by the department as acceptable reforestation if:

a) A seed source of well-formed, vigorous trees of commercial tree species capable of seed production is available.

- b) The owner of the seed source agrees in writing not to harvest the seed source for the time period specified in the plan or until issuance of a satisfactory reforestation inspection report.
- c) The seed source consists of one of the following, or combinations thereof:
 - i) Seed blocks which total a minimum of 5 percent of the area of each 40 acre subdivision or portion thereof harvested: Provided, That the seed block should be reasonably windfirm, at least 1/2 acre in size, and reserved in locations shown on the plan and approved by the department; or
 - ii) A minimum of 4 undamaged seed trees per acre, well distributed over each 40 acre subdivision or portion thereof harvested: Provided, That the distance from seed trees of harvested areas that are not adequately stocked should not be more than 200 feet. Seed trees shall be of commercial tree species, vigorous and of seed-bearing age and size.
- 6) Any alternate plan for natural reforestation may be approved if it provides a practical method of achieving acceptable stocking levels as described in subsection (2) of this section within a period of 1 to 10 years.

WAC 222-34-030 Reforestation — Plans — Reports — Inspections.

1) Reforestation plans. Reforestation plans must be submitted with the application or notification except where no reforestation is required. The department shall designate difficult regeneration areas utilizing silvicultural information. When a forest practice is proposed for such an area, the department may require additional information regarding harvest systems and post harvest site preparation, as well as regeneration. The department shall approve the reforestation plan for difficult regeneration areas if it determines that such a plan will achieve acceptable stocking according to WAC 222-34-010 and 222-34-020.

2) Reforestation reports. The landowner, forest landowner, or his/her designee shall file a report with the department either at the time of completion of planting or reforestation or at the end of the normal planting season. When artificial seeding is used the report shall be filed 2 growing seasons after seeding.

3) The reports in subsection (2) of this section must contain at least the following:

- a) The original forest practices application or notification number.
 - b) Species reforested, planted, or seeded.
 - c) Age of stock planted or seed source zone.
 - d) Description of actual area reforested, planted, or seeded.
- 4) Inspection; supplemental planting or reforestation directives.

a) Within 12 months after a reforestation report is received, the department shall inspect the reforested lands. The department shall issue written notice to the landowner, forest landowner, or his/her designee stating whether supplemental planting or reforestation or further inspection is required within 30 days after the deadline for inspection or the reforestation shall be deemed satisfactory.

b) If the inspection shows that acceptable stocking levels have not been achieved, the department shall direct the forest landowner to perform supplemental planting in accordance with the planting standards of WAC 222-34-010 (3) and (4)(a)(ii), 222-34-020 (3) and (4)(a)(ii): Provided, That:

i) In lieu of such supplemental planting, the department and the forest landowner may agree on a supplemental reforestation plan.

ii) Supplemental planting or reforestation shall not be required where in the opinion of the department planting or reforestation is not feasible due to rocky ground, dry conditions, excessively high water table or other adverse site factors and the department determines that there is little probability of significantly increasing the stocking level.

iii) Where supplemental planting or reforestation has been required by the department, the landowner, forest landowner, or his/her designee shall file a report of supplemental planting or reforestation upon completion.

iv) Except where stocking improvement is necessary to protect public resources and is feasible, further supplementary planting shall not be required where acceptable stocking levels have not been achieved after two properly performed supplemental plantings.

- c) Within 12 months after a supplemental planting or reforestation report is received, the department shall inspect the reforested lands.
- d) Evidence of compliance. The department shall within 30 days after the deadline for inspection or reinspection and when requested by the forest landowner confirm in writing whether acceptable stocking levels have been achieved, provided field conditions do not prevent the department from properly evaluating the reforestation.
- e) Where a natural regeneration plan has been approved by the department, the department may allow up to 10 years to achieve acceptable stocking levels.

WAC 222-34-040 Site preparation and rehabilitation.

- 1) Heavy equipment. Heavy equipment shall not be used in connection with site preparation or rehabilitation work:
 - a) When, because of soil moisture conditions or the type of soils, undue compaction or unnecessary damage to soil productivity would occur or erosion would result in damage to water quality; or
 - b) Within riparian management zones, Type A and B Wetlands, wetland management zones, or within equipment limitation zones of Type Np and Ns Waters on slopes of 30 percent or less. On slopes greater than 30 percent heavy equipment shall not operate within 50 feet of Type S through Ns Waters unless a site specific plan has been approved by the department.
- 2) Surface water drainage. Where site preparation or rehabilitation involves contouring or terracing of slopes, drainage ditches, or similar work:
 - a) The gradient of ditches or other artificial water courses in erodible soils shall not cause significant stream, lake, pond, or wetland siltation.
 - b) Ditches and other artificial water courses shall not discharge onto any road, landing or fill.
 - c) Ditches and other artificial water courses shall not be constructed to discharge onto the property of other parties without their consent.
- 3) Stream channel realignment. Where work involves deepening, widening, straightening or relocating the channel; or bulkheading, riprapping or otherwise stabilizing the banks of a Type S or F Water, a hydraulic project approval is always required, and the work shall be done only:
 - a) After consultation with any party having an appropriation permit or registered right to appropriate waters from the affected stream segment in cases of streams used for domestic water supplies.
 - b) Where no significant adverse effects on either the peak or minimum water levels or flows downstream can be expected.
 - c) In a manner not expected to result in long-term damage to public resources or to adjacent or downstream property.

Existing BMP's/Science Related to Issue

Comments:

*Do you think rule change is needed? Guidance? Other?
What specific changes/guidance is needed?*

Comprehensive List of “Flagged” Items

Topic: Definitions
<p>Silviculture Revisit terms contained in specific treatments (the entire definitions section of the WACs should be revisited as they pertain to biomass harvest).</p>
<p>Disturbance Define subset of materials for which biomass is possible = all types of material are part of the discussion. Goes back to the need for a clear definition of biomass.</p> <p>a. It’s currently pre-mature to define it; this process could help. Example: Slash may be biomass, thinning may be something else.</p> <p>“Slash” is 3 cubic feet or bigger in the rule. Does this need to be revised?</p>
<p>Dead wood, Slash Disposal, and Cultural Resources Does course woody debris include stumps?</p> <p>ea. Need to look into definitions section. eb. Might need to clarify that stumps can’t be taken in a guidance document. Do stumps count toward contributing to ecological requirements?</p> <p>Should “salvage” be added to this section (after harvesting)?</p> <p>Bigger issue: Definitional evaluation of “salvage” and “harvest” to avoid unintentional harvest.</p> <p>California’s Forest Practices Rules identify “biological diversity” as a consideration of forest and watershed planning. This is different from Washington’s rules and points to a Watershed analysis approach to biomass collection.</p> <p>Will SEPA be triggered only if it’s a “harvest” and not a “salvage?” Is biomass a harvest or a salvage? Both because it includes harvest activities that are FP activities.</p> <p>(For Definition) Ecologically sustainable forestry “perpetuating ecosystem integrity while continuing to provide wood and non-wood values.”</p>

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Topic: Timing
<p>Soil Productivity For state timber sales, major obstacle is the timber contract requirement to abandon roads, a return by the biomass collector requires the roads to re-built and then re-abandoned again.</p>
<p>Roads Timing of road abandonment is key. Don’t want to tear out a road after timber harvest is complete if biomass harvest is planned. How can roads be left open after timber contracts expire? DNR state lands issue mostly with regards to long term biomass contracts.</p> <p>Biomass removal may require more roads slated for abandonment to remain open longer: what burden does that put on DNR state lands managers to monitor? Staffing issues have been better for roads than other issues. How will staffing needs be met if roads are open longer? Work-load issue. This would be a timing issue for the forest practices RMAP program, the number and miles of road abandonment will remain the same.</p>

Abandonment: there is a need to coordinate RMAP plan/work with biomass harvest.

Dead wood, slash disposal, carbon storage

Rule addressing landing clean-up directs slash to be removed within 60 days or as soon thereafter as practical. Could this pose an issue for biomass collection? WAC 222-30-080

- a. If plans for removal are described in the Forest Practices application, intent of this requirement will be met. Must be explicit in application (can't negatively affect resources, roads might be an issue).
 - i. Need to cure biomass is not an excuse to hold off reforestation and/or risk resource damage.
- b. WAC 222-16-010 "Completion of Harvest." What happens when timber contractor is independent of biomass contractor? How do we address situations where two kinds of harvests are decoupled?
 - i. Possibly not enough time in the 6-month window.

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Topic: Retention Levels

Soil Productivity

How much biomass should be left on site to ensure soil quality is maintained? How much slash needs to be left for wildlife and soil quality, to control and reduce surface run-off, maintain ecosystem functionality (harvest cycle is a contributor = potential metric), and contribute to reforestation efficacy?

Piece size is missing from the rules to define both ends of the size spectrum for "biomass" collection. Slash is defined as "pieces of woody material containing more than 3 cubic feet resulting from forest activities" and debris is defined as "woody vegetative residue less than 3 cubic feet in size resulting from forest practices activities."

Silviculture

How much biomass should be left on site to ensure soil quality is maintained? How much slash needs to be left for wildlife and soil quality, to control and reduce surface run-off, maintain ecosystem functionality (harvest cycle is a contributor = potential metric), and contribute to reforestation efficacy?

Dead Wood, Slash Disposal, Carbon Storage

Is our group goal/intent to create broad goals like other states or more specific goals (site index) with regard to dead/down wood and retention levels (volumes)?

WRT/GRT requirements were last updated in 1992, need to determine if they need to be updated.

Rules lack retention targets for fine woody debris, need to determine if they need to be updated to include fine woody debris.

Water Quality, Riparian Zones/Unstable Slopes, Water Infiltration

How do we approach the issue of how much biomass needs to be left on site, in general: performance/prescriptive based or qualitative?

Methods for regulatory surrogate for identifying/measuring amount left on site. % ground cover, minimum bare soil.

Wildlife, Biodiversity, and Cultural Resources

Regarding retention levels: a) Retain a range of size and age classes of dead wood. b) Ensure that some large trees or snags are retained. c) Meet dead wood requirements for larger species in areas where the

emphasis is not on intensive fiber production.

Avoid damaging existing downed woody debris, especially large (18+ inches) hollow or rotten logs and rotten stumps during harvesting operations (including tree falling, skidding, and road and skid trail layout). *Special focus on decayed logs.

No rules exist for slash retention/protection for duff/litter, understory shrubs/herbs, or non-merchantable trees.

Topic: Slope

Water Quality, Riparian Zones/Unstable Slopes, Water Infiltration
WAC 222-30-070. Slope Restrictions

- a. 30% slope limit is SOP, but not specifically restricted in WAC. This is due to equipment restrictions and depends on the length of the slope, type of machinery used. 50% slope is more of a reasonable limit with site, seasonal, and equipment specifics. Operator skills also affect limits. Must meet performance objectives.
- b. Slopes over certain thresholds have different impacts on hydrology. Do we want to evaluate slopes in a stratified manner based on % slope?
 - i. FP rules already prohibit rutting.
- c. Biomass can't be removed from bounded areas identified as unstable slopes.
 - i. Who determines that an area is "off limits"/unstable slope? Geologist/DNR qualifies the report, experts are needed. Foresters who work in areas can identify unstable slopes. DNR won't approve a FP permit application without approval from geologists.
- d. Retain at least 30% of the fine woody debris on slopes conducive to ground-based harvesting and 50% or more on steeper slopes. (Harrison et al. 2011)
- e. Soils with the highest inherent erodibility contain high proportions of fine sand and silt, low amounts of oil organic matter, and slow permeability... these soils tend to erode easily when disturbed or exposed, especially on long slopes or slopes greater than 10%. (Minnesota BMP)
- f. Why are steepness thresholds so much lower in other states (35-40%) than in WA (65-70%)? Based on experience and vulnerability.

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Topic: Ecosystem Functionality

Wildlife, Biodiversity, and Cultural Resources
Can biodiversity be truly applied to FP rules?
Landscape vs. stand scale management. Complete the WDFW model that was started but not finished.

Water Quality, Riparian Zones/Unstable Slopes, Water Infiltration
Integrate parts of discussion into RMZ standards, etc. Look at interaction of effects (vegetation composition, invasives; organic material). How could/does biomass removal impact green recruitment in RMZ, buffered/unbuffered reaches?

No FP Rules for cumulative effects of traditional harvest at the watershed scale.

Topic: Soil Health & Productivity

For biomass harvest on sensitive soils, perhaps it would be best to say that no machinery can go back onto the site to collect; collection must be limited to the landing.

Difference between landing collection and going out onto the unit to collect biomass; difference should be made clear.

Topic: Carbon Storage

Silviculture

Be aware of carbon accounting issues.

Dead wood, slash disposal, carbon storage

If retaining soil carbon based on biomass is equal to keeping more biomass on the ground, the trade-off diminished opportunity for production of renewable fuels and energy.

What is the analytical boundary of this group? Need to stay focused on the FP Act/rules.

There are no FP rules related to carbon storage; group needs to think about whether such rules are necessary.

- a. Group could form a goal. Example: no net loss.
- b. Group could look at whether carbon is being sequestered adequately as a result of meeting other goals already articulated in the FP rules.
- c. What timeframe and scale is appropriate for this inquiry?

Carbon is not covered in the RCW, though it's still important to other elements of ecosystem health – regeneration, wildlife habitat, etc.

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Topic :Other Issues

1. Reforestation species: will species shift for biomass production? Mostly in outer limits of RMZ.

NOTE: This is 'thin ice' with regard to telling landowners what to plant. (Silviculture)

- +2. Interim Step: Biomass industry infrastructure in eastern Washington is so immature it is not possible to address what constitutes appropriate biomass harvest on the Eastside of the Cascades.

+a. Need a field trip. Spring 2012. Public and private lands; pre and post-harvest. (Disturbance)

- +3. Aquatics emphasis in rules; not a lot that relates to uplands with regard to disturbances. Gaps in rules related to uplands vs. aquatics. (Disturbance)

- +4. Forest Health Bill excluded riparian areas because CMER was supposed to be looking at that. Not in the rules. (Disturbance)

- +5. Dynamic forest products market that defines end use of all products. (Disturbance)

- +6. We can't currently determine the efficacy of the existing FP rules with regard to dead wood and slash disposal. (Dead wood, slash disposal, carbon storage)

- +7. How is sufficient large woody debris maintained in unbuffered Type Ns and Np streams? (Water Quality, Riparian Zones/Unstable Slopes, Water Infiltration)

- +8. L&I rules conflict with replanting and the ability to leave snags. Leaving snags is important for wildlife habitat. Clumping is one potential solution. (Wildlife, Biodiversity, and Cultural Resources)

- +9. Site prep information where rules discuss harvest, salvage, etc. (Wildlife, Biodiversity, and Cultural Resources)

- +10. Will shrub layer be collected in the future for utilization as biomass? (Wildlife, Biodiversity, and Cultural Resources)

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