Proposed Changes to the AMPs
April 2012 Draft Version

General Vermont Family Forest Comments:

- **Excellent process by VT FP&R! Thank you!**
- **The AMPs should be simple and crystal clear. Minimize need for interpretation based on site conditions or other extenuating factors.**
- **If AMPs cannot be complied with due to site conditions, cost, or other factors, create a simple process that would give landowners more latitude for practices such as brushing in roads, using forwarders, and other bio-remediation techniques.** Conditional Management Practices **(CMPs). Perhaps there could be a fee associated to cover ANR administration costs. Again, if there is no discharge, there is no problem. CMPs would give landowners more latitude while putting more of the burden of proof on the landowner, logger and/or consulting forester.**
- **Distances in Table 1 should be considered maximums.**
- **Drainage in Table 1 could be for 'closed' and 'active' truck roads, forwarding paths, and skid trails. Are these to be the same for roads, trails and paths? If so, only two columns are needed.**
- **Add a section describing forwarders and their associated benefits. Again, should standards for be different than those required for skid trails?**
- **Always use % rather than degrees.**
- **Clarify the differences between 'during' and 'after' logging. This would include clarifying what do to with ancient, old, steep, dugways that we have all inherited.**
- **Use VCGI mapping to identify areas (i.e. riparian zones, slopes over 25%, Site IV soils, wetlands, rare and very rare natural communities etc.) for Optional Conservation Strategies (OCS) such as 'leave alone'. Perhaps this could be used for UVA .**
- **Need a simple, consistent, effective, user-friendly protocol for AMP compliance monitoring. Welsch's method, which is great for broad reporting needs, is likely too expensive and too expert-dependent for logging operation monitoring.**
- ***Voluntary* verses *Required* needs to be explored further. For example, shouldn't some level of AMP compliance be required for logging operations that are supplying publicly-funded biomass plants?**

TRUCK ROADS

Practices to Be Applied During Logging

(AMP #1 in the 'orange book') Steep pitches (greater than 10%) on permanent truck roads shall not exceed 300 feet in length.

RECOMMENDATION: Minor editing suggested. Specify percent grade since that is the common term used as a measure of a road's steepness as it rises or descends.

Proposed AMP #1 –Steep pitches greater than 10 percent grade on permanent truck roads shall not exceed 300 feet in length.

VFF COMMENT AMP #1: Great!

(AMP #2 in the 'orange book') Road surfaces shall be adequately drained. Ditches shall be used to divert water away from the road surface. Where it is necessary to prevent an excessive accumulation of ditch water volume or to bring water under the road on road grades greater than 10 percent, pole culverts or metal culverts shall be used. Broad based dips can be used instead of culverts to relieve ditches or to bring water across the road when road grades are less than 10 percent. Drainage structures shall be installed with a gradient (slope from the uphill side of the structure to the outlet) of at least 4 degrees when ledge and rock permit and kept free of debris. Drainage structures shall be spaced according to Table 1 where conditions permit.

RECOMMENDATION: Much of AMP #2 provides technical guidance rather than stating the management practice. Omit sentences 2-5 in this AMP and move it to the *Supportive Information and Technical Guidance* section. In the last sentence, change "where conditions permit" to "where rock and ledge permit."

Proposed AMP #2 –Drainage structures on truck roads shall be properly installed to intercept surface runoff. Drainage structures shall be spaced at intervals according to Table 1 where rock and ledge permits.

VFF PROPOSED AMP #2: Drainage structures on truck roads shall be properly installed to intercept surface runoff. At a minimum, drainage structures shall be spaced at intervals according to Table 1.

(AMP #3 in the 'orange book') Water entering a roadway shall be moved under or away from the roadway before gaining sufficient flow and velocity to erode ditches. Spacing of culverts used for ditch drainage shall be according to Table #1. Culverts used for ditch drainage shall be at least 15 inches in diameter and sized according to Table #2.

RECOMMENDATION: This AMP can be misleading because it addresses spacing of culverts for relief of ditch drainage water from runoff (Table 1) and also for determining culvert diameter size when truck roads cross streams (Table 2). Spacing of culverts for ditch drainage relief is based upon percent grade. Culvert diameter for a stream crossing is determined by area of the watershed (acres) draining to the culvert. The focus of proposed AMP #3 should be on controlling surface water runoff on truck roads. Determining culvert diameter size for stream crossings is addressed in proposed AMP #12.

Proposed AMP #3 – Water entering a roadway shall be moved under or away from the roadway before gaining sufficient flow and velocity to erode ditches. Culverts used for ditch drainage on truck roads shall be at least 15 inches in diameter, properly installed and spaced according to Table #1 where rock and ledge permits.

VFF PROPOSED AMP #3 – Water entering a roadway shall be moved under or away from the roadway before gaining sufficient flow and velocity to erode ditches. Culverts used for ditch drainage on truck roads shall be at least 15 inches in diameter and properly installed. At a minimum, drainage structures shall be spaced at intervals according to Table 1.

(AMP #4 in the 'orange book') Drainage ditches shall not terminate where they will feed water directly into streams or other surface waters.

RECOMMENDATION: Minor editing suggested. Delete "where they will feed water."

Proposed AMP #4 – Drainage ditches shall not terminate directly into streams or other surface waters.

VFF COMMENT AMP #4: Great!

TRUCK ROADS

Practices to Be Applied Upon Closeout

(AMP #18 in the 'orange book') - Waterbars on temporary roads shall be properly installed and spaced at intervals shown in Table 1. They shall be at least 8 inches deep and installed with a 4 degree gradient when ledge and rock permit.

RECOMMENDATION: Although this AMP refers to temporary truck roads, (those that will not be open to vehicular traffic after logging) the supportive guidance states that "Deep waterbars should be used on roads that will be closed to vehicle traffic and should be 24-30 inches deep." That standard should be reflected in this AMP.

Proposed AMP #5 – Waterbars on temporary truck roads shall be properly installed and spaced at intervals shown in Table 1 where rock and ledge permits. They shall be 24 – 30 inches deep and properly installed with a 4 degree gradient.

VFF PROPOSED AMP #5 – Waterbars on temporary truck roads shall be properly installed and spaced at intervals shown in Table 1 at a minimum. Waterbars shall be at least 24 inches deep and properly installed with a 4% gradient.

SKID TRAILS

Practices to Be Applied During Logging

(AMP #5 in the 'orange book') - Skid trails shall not go straight up a slope but proceed at a gradual angle across the slope. Short, steep sections of up to 20% grade are permissible but shall not exceed 300 feet in length.

RECOMMENDATION: Remove the first sentence. Traversing slopes using a series of switchbacks to control grade will expose more soil, thus increasing the potential for increased soil erosion and sedimentation. The objective of this AMP is to keep skid trails to the minimum grade practicable while minimizing the potential for soil erosion and sedimentation.

Proposed AMP #6 - Grades on skid trails should not exceed 20 percent. Short, steep sections of up to 20 percent grade shall not exceed 300 feet in length.

VFF COMMENT AMP #6: Great!

(AMP #6 in the 'orange book') - Long straight stretches of skid trail shall be adequately drained using outsloping, turn-ups, broad-based dips (on grades of 10 percent or less) or pole culverts. Spacing of drainage structures shall be determined according to Table 1.

RECOMMENDATION: Minor editing – added waterbars and deleted "pole culverts" and "long straight stretches." Qualify locations of drainage structures by adding "where conditions allow."

Proposed AMP #7 - Drainage structures on skid trails shall be properly installed to intercept surface runoff. Drainage structures shall be spaced at intervals according to Table 1 where rock and ledge permits.

VFF PROPOSED AMP #7 - Drainage structures on skid trails shall be properly installed to intercept surface runoff. At a minimum, drainage structures shall be spaced at intervals according to Table 1.

SKID TRAILS

Practices to Be Applied Upon Closeout

(AMP #19 in the 'orange book') - Ruts should be filled and smoothed if they offer any potential for gullying.

RECOMMENDATION: Leave as is.

Proposed AMP #8 - Ruts on skid trails should be filled and smoothed where they offer any potential for gully erosion.

VFF COMMENT AMP # 8: Great!

(AMP #20 in the 'orange book') - Waterbars shall be installed at proper intervals according to Table 1.

RECOMMENDATION: Minor editing – add "on skid trails"; add 'functioning properly' and delete "proper."

Proposed AMP #9 - Waterbars on skid trails shall be properly installed and spaced at intervals according to Table 1 where rock and ledge permits.

VFF PROPOSED AMP #9 - Waterbars on skid trails shall be properly installed and, at a minimum, spaced at intervals according to Table 1.

STREAM CROSSINGS

Practices to Be Applied During Logging

(AMP #8 in the 'orange book') - Streams and all bodies of water shall be kept free of slash and other logging debris.

RECOMMENDATION: Leave as is. Minor editing – specify logging slash in the AMP.

Proposed AMP #10 - Streams and other surface waters shall be kept free of logging slash and other logging debris.

VFF COMMENT AMP #10: Great!

(AMP #13 in the 'orange book') - Stream crossings shall be made at right angles where possible.

RECOMMENDATION: This AMP provides technical guidance that addresses only one of the many elements to consider when locating and installing a stream crossing. Revise this AMP to address all site and stream conditions to consider when locating stream crossing sites.

Proposed AMP #11 - Stream crossings shall be located where the stream channel is well defined, streambanks are stable, approaches are level or gently sloping and at right angle to the stream channel and stream gradient is low to moderate.

VFF COMMENT AMP #11: Great!

(AMP #9 in the 'orange book') – Truck road crossings of all permanent streams shall be over a bridge or culvert. Streams may be forded by skid trails only where streambeds have stable beds and stable, gradual approaches (gravel or ledge). Streams may also be crossed by brushing-in during frozen winter conditions but all brushed-in material shall be removed from the stream channel when skid trail use has been completed or before spring runoff, whichever occurs first.

RECOMMENDATION: AMP #12 should be separated into two AMPs; one that addresses **stream crossings on truck roads** and another that addresses **stream crossings on skid trails.** The types and designs for stream crossing structures varies greatly depending on whether the stream crossing structure is on a truck road or a skid trail and whether it is a permanent or temporary structure. This AMP restricts stream crossings on truck roads of all permanent streams to a bridge or a culvert. Constructed stone fords could also be an alternative where conditions permit. Those conditions would be where the stream is shallow and there is a stable streambed and stable, gradual approaches of cobble or ledge. This type of stream crossing is appropriate where occasional or low-level vehicular traffic is expected. When occasional access is required for logging, fording a stream with a truck compared to using skidders or forwarders will minimize the number of trips and reduce the potential for sedimentation and disturbance to the streambed.

Proposed AMP #12 - Stream crossings on truck roads shall be over a bridge or culvert. Structure size opening shall be determined according to Table 2. Constructed stone fords are allowed, but only where streams have low banks, stable beds (cobble or ledge) and stable, gradual approaches.

VFF PROPOSED AMP #12 - Stream crossings on truck roads shall be over a bridge or culvert. Structure size opening shall be determined according to Table 2. Constructed stone fords may be allowed as a Conditional Management Practice where streams have low banks, stable beds (cobble or ledge) and stable, gradual approaches.

Proposed AMP #13 - Skid trail crossings on streams shall be over a bridge, culvert or pole ford. Structure size opening shall be determined according to Table 2. Open ford crossings are allowed on skid trails, but only where streams have low banks, stable beds (cobble or ledge) and stable, gradual approaches. Streams may also be crossed by brushing-in, but only during frozen winter conditions. Brushed-in material shall be removed when skid trail use has been completed or before spring runoff, whichever occurs first.

VFF PROPOSED AMP #13 - Skid trail crossings on streams shall be over a bridge, culvert or pole ford. Minimum structure size opening shall be determined according to Table 2. Open ford crossings may be allowed on skid trails as a Conditional Management Practice where streams have low banks, stable beds (cobble or ledge) and stable, gradual approaches.

(AMP #10 in the 'orange book') – Logging activities, except for the necessary and proper construction of stream crossing structures, shall be kept out of stream channels.

RECOMMENDATION: Include "constructed and open ford crossings" as an exception.

Proposed AMP #14 - Logging equipment shall be kept out of stream channels, except for the necessary and proper construction of stream crossing structures or the use of constructed stone fords or open ford crossings.

VFF PROPOSED AMP #14 - Logging equipment shall be kept out of stream channels. When a stream crossing requires the installation of a bridge, culvert or constructed stone ford, an excavator, forwarder, or mechanized timber harvester shall be employed.

(AMP #11 and AMP #7 in the 'orange book') AMP #11: Turn-ups or broad-based dips shall be used before a truck road or skid trail crosses a stream. AMP #7: Silt fencing, hay bale erosion checks or water diversions shall be used to prevent sediment from skid trails from entering streams and other surface waters.

RECOMMENDATION: AMP #7 recommends the use of hay bales to prevent sediment originating on skid trails from entering streams. The same would also apply to truck roads. AMP #7 fits better under the section of *Stream Crossings.* Incorporate language from AMP #7 and AMP #11 in the 'orange book' into proposed AMP #15.

Proposed AMP #15 – Drainage structures shall be properly installed on approaches to stream crossings on truck roads and skid trails. Silt fencing, hay bale erosion checks or turn-outs shall be used to prevent sediment from skid trails and truck roads from entering streams and other surface waters.

VFF COMMENT AMP #15 – Great!

(AMP #12 in the 'orange book') – Areas of exposed soil within 25 feet of streams must be seeded and mulched with application rates as shown in Table 3.

RECOMMENDATION: Leave as is

Proposed AMP #16 - Areas of exposed soil within 25 feet of streams shall be seeded and mulched with application rates as shown in Table 3.

VFF COMMENT AMP #16 – Great!

STREAM CROSSINGS

Practices to Be Applied Upon Closeout

(AMP #21 in the 'orange book') – All non-permanent structures shall be removed from streams and the channel restored. Permanent culverts left in streams must be sized according to Table 2.

RECOMMENDATION: In the first sentence, state that the stream channel shall be restored to its condition prior to logging and change "non-permanent" to 'temporary'. In the second sentence replace 'culverts' with 'structures'.

Proposed AMP #17 - All temporary structures shall be removed from streams and the channel restored to its condition prior to logging. Permanent structures left in streams shall be sized according to Table 2.

VFF COMMENT PROPOSED AMP #17 – Great!

(AMP #22 in the 'orange book') – Following the close of an operation, all approaches to streams between the stream and the first water diversion of either side, and all disturbed stream banks shall be stabilized, seeded and mulched at application rates according to Table 3 as soon as conditions are favorable to seed germination but no longer than one year after logging is completed.

RECOMMENDATION: This AMP allows up to one year for seeding and mulching approaches to stream crossings and exposed soil adjacent to streams. This raises the risk of increased soil erosion and sedimentation. The AMP also does not specify a recommended distance from streambanks for seeding and mulching approaches to stream crossings. Provide for a recommended distance for seeding and mulching approaches to stream crossings to restore filtering capacity within the buffer strip. Reduce the time period allowed to accomplish seeding and mulching.

Proposed AMP #18 - All approaches to stream crossings shall be stabilized by seeding and mulching at application rates according to Table 3 immediately after logging or as soon as growing conditions permit. Seed and mulch approaches to stream crossings to the first water diversion or a minimum of 25 feet on each side of the stream as measured from the top of the streambank.

VFF PROPOSED AMP #18 - All approaches to stream crossings shall be stabilized by seeding and mulching at application rates according to Table 3 immediately after logging or as soon as conditions permit. Approaches to stream crossings to the first water diversion or a minimum of

25 feet on each side of the stream shall be seeded and mulched as measured from the top of the streambank.

BUFFER STRIPS

(AMP #14 in the 'orange book') – Except for the necessary construction of stream crossings, a protective strip shall be left along streams and other bodies of water in which only light thinning or selection harvesting can occur so that breaks made in the canopy are minimal and a continuous cover is maintained. Log transport machinery must remain outside a 25 foot margin along the stream or waterbody. Including this 25 foot margin, the width of the protective strip shall be according to Table 4.

RECOMMENDATION: Change 'protective strip' to buffer strip; emphasize that the buffer shall be a 'forested' buffer; replace 'light thinning or selection harvesting' with 'partial cutting'.

Proposed AMP #19 - Except for the necessary construction of stream crossings, a forested buffer strip shall be left along streams and other surface waters in which only partial cutting can occur so that breaks made in the canopy are minimal and continuous cover is maintained. Log transport machinery must remain outside a 25 foot margin along the stream or waterbody. Including this 25 foot margin, the width of the buffer strip shall be according to Table 4.

VFF PROPOSED AMP #19 - Except for the necessary construction of stream crossings, a forested buffer strip shall be left along streams and other surface waters in which only partial cutting can occur. Any breaks made in the canopy shall be minimal and a minimum of 75% crown cover should be maintained. Log transport machinery shall remain outside a 25 foot margin along the stream or waterbody. Including this 25 foot margin, the width of the buffer strip shall be according to Table 4.

Proposal for new AMP

RECOMMENDATION: The AMPs were originally intended to prevent discharges of mud, woody debris and petroleum products from entering waters of the State. The AMPs include suggested practices to prevent discharges of mud and woody debris but there is no AMP that addresses discharges due to petroleum products. A new AMP should be proposed that addresses how petroleum products should be managed on a log job to prevent discharges to State waters.

Proposed AMP #20 - Petroleum products shall be stored in leak-proof containers outside of buffer strips and shall be removed when logging is completed.

VFF COMMENT PROPOSED AMP #20: Great!

LOG LANDINGS

Practices to Be Applied During Logging

(AMP #15 in the 'orange book') – Log landings shall be located on level or gently sloping, stable ground.

RECOMMENDATION: Leave as is**.**

Proposed AMP #21 - Log landings shall be located on level or gently sloping, stable ground.

VFF COMMENT PROPOSED AMP #21: Great!

(AMP #16 in the 'orange book') – Landings shall not be located in buffer strips. The width of the buffer strip shall be in accordance with Table 4.

RECOMMENDATION: Leave as is.

Proposed AMP # 22 – Log landings shall not be located in buffer strips. The width of the buffer strip shall be in accordance with Table 4.

VFF COMMENT PROPOSED AMP #22: Great!

(AMP #17 in the 'orange book') – Silt fencing, hay bale erosion checks or water diversions shall be used to prevent sediment from landings from entering streams and other surface waters.

RECOMMENDATION: Leave as is.

Proposed AMP #23 - Silt fencing, hay bale erosion checks or water diversions shall be installed on log landings to prevent sediment from entering streams and other surface waters.

VFF COMMENT PROPOSED AMP #23: Great!

LOG LANDINGS

Practices to Be Applied Upon Closeout

(AMP #23 in the 'orange book') – Log landings shall be graded and water diversions installed as needed to prevent sedimentation.

RECOMMENDATION: Add AMP #24 in the 'orange book to proposed AMP #24.

Proposed AMP #24 - Log landings shall be graded and water diversions installed to prevent sediment from entering streams and other surface waters. Areas of exposed soil within the buffer strip along streams and other surface waters shall be seeded and mulched at application rates according to Table 3.

VFF COMMENT PROPOSED AMP #24: Great!

(AMP #24 in the 'orange book') – Areas of exposed soil within the buffer strip along waterways shall be stabilized by seeding and mulching with application rates as shown in Table 3.

RECOMMENDATION: Add this AMP to proposed AMP #24. Suggest minor editing. Replace 'waterways' with 'streams and other surface waters.'

Table 1: Maximum Acceptable Distances between Drainage Structures on Skid Trails, Forwarding Paths, and Truck Roads

Road Grade (Percent)	(Closed Access) Maximum Distances Between Waterbars (Feet)	(Active Access) Maximum Distances Between Culverts, Turn-ups, Log Waterbars, and Broad Base Dips (Feet)
1	400	450
2	250	300
5	135	180
10	80	140
15	60	130
20	45	120
25	40	Close it!
30	35	Close it!
40	30	Close it!

Table 2: Minimum Acceptable Culvert Sizing

Drainage Area (Acres)	**Minimum Culvert Diameter (Inches)**	
	Temporary Installation (2-year flood event)	**Permanent Installation (25-year flood event)**
8	15	24
15	18	24
20	24	30
40	30	36
50	30	42
80	36	48
100	36	48
150	42	
200	48	

Table 3: Acceptable Methods of Seeding and Mulching Truck Roads, Log Landings, Skid Trails and Stream Crossings

Temporary Cover: Use any of the three options for establishing temporary cover to control soil erosion. Use only hay or straw mulch to encourage re-establishment of native vegetation. Annual Ryegrass and Winter Rye germinates quickly and becomes readily established.		
Material	Rate of Application	Timing of Application
Option 1. Hay or Straw Mulch Only	60 bales/acre	Anytime

Option 2. Annual Ryegrass	20 lbs./acre	Anytime
Option 3. Winter Rye	120 lbs./acre	Anytime
Permanent Cover: Use either or a combination of the two options listed below for establishing permanent cover to control soil erosion.		
Soil Conservation Mix	42 lbs./acre	Anytime. Best when applied between April 15 – June 15 OR August 1 – September 15
Critical Area Mix *Creeping Red Fescue 48%* *Redtop 4%* *Tall Fescue 48%*	42 lbs./acre	Anytime. Best when applied between April 15 – June 15 OR August 1 – September 15

Table 4: Minimum Acceptable Forested Buffer Strip Widths

Percent Slope of Land Between Skid Trails, Truck Roads or Log Landings and Streams or Other Surface Waters	Minimum Width from Top of the Streambank (Feet Along Surface of Ground)
0-10	50
11-20	70
21-30	90
31-40*	110

*Add 20 feet for each additional 10 percent slope