

Virginia Department Of Forestry

Pre-Harvest Best Management Practices Plan

Landowner: Mr. Len Dillon

Address: PO Box 549 Bassett , VA 24055

Tract Number: HNY93051

Tax Parcels 178950008, 048840002, 180640000

Acreage: 402+/- Acres

Location: Northern Henry County VA near intersection of Original Henry Road and Forest View Road

Prepared by: Jon Barnes, Consulting Forester - William H. Lock and Associates, Inc.

This Pre-harvest Plan has been prepared to assist in the planned timber harvest on this tract to adhere to Virginia's Silvicultural Water Quality Law (§10.1-1181.1 through 10.1-1181.7, Code of Virginia) and Virginia's "Debris in Streams" Law (§62.1-194.2, Code of Virginia). This plan does not relieve the owners and operators from their responsibility under these laws.

The recommendations within this Plan follow the guidelines outlined within the Virginia Department of Forestry's *Forestry Best Management Practices (BMP's) for Water Quality Fifth Edition Technical Manual*. The utilization of BMP's is a good stewardship ethic and it helps protect soil and water quality. The locations of planned haul roads, landings, skid trails, culverts and other constructed features necessary for timber harvesting are approximate. The need for, and location of, these BMP's will depend upon the characteristics of each logging operator and site, and can be modified through consultation with local VDOF personnel. Any changes to this Plan must also meet the standards of the BMP program, and will be noted in an amended Plan.

HARVEST SITE MAP

A map is included with harvest boundaries, logging decks, road locations, water bodies and associated streamside management zones.

HARVEST RECOMMENDATIONS (see attached map):

Haul Road Layout:

Follow the contour as much as possible with grades between 2% and 10% when establishing new haul roads. Vary road grades frequently to help reduce road surface erosion and out-slope whenever road gradient will permit. To help ensure proper road surface drainage, construct roads on the sides of ridges. Locate haul roads outside of the SMZ unless no other alternative exists. Approaches to stream crossings should be stabilized with suitable material. Roads should be daylighted (shade removed) to aid in drying of the road surface where possible. Road should be wide enough to provide for safe passage. Install mats, rock or other suitable material when access road intersects public road(s), and insure that any required permitting for State Highway access is attained prior to access installation. Maintain drainage systems along haul road(s).

The section on haul roads is found on pages 17-21 and 100 in the BMP manual.

Broad Based Dips/Rolling Dips:

Properly spaced and constructed broad based dips are designed to maintain haul roads. A broad based dip is a water diversion structure that diverts surface water off the road while allowing vehicles to maintain normal travel speeds. Broad based dips are effective for grades up to 12%.

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A broad based dip is a 20 foot long, 3% reverse grade constructed into the existing roadbed. The outslope of the broad based dip should be 2-3%. On some soils the dip and reverse grade section may require three inches of crushed stone to avoid rutting the road surface.

More information on broad based dips and their spacing can be found on pages 105-107 in the BMP manual.

Ditches and Turn Outs :

It is important to maintain all ditching as needed along roads and turn ditches out into the surrounding landscape with turn outs or wing ditches in areas where erosion and sedimentation will not occur. It is also important to direct this water along the contour and avoid pointing concentrated water flow straight down steep slopes or directly at a water body. Regular ditch cleaning is required to maintain water flow away from the road. Extra care must be taken to turn ditch water out well above stream crossings to prevent sedimentation.

Water Bars:

Upon completion of harvesting and/or road use, water bars could be installed as needed if the road will no longer be subjected to regular use. Water bars can make road use difficult and should only be installed in areas subject to erosion and on slopes 2% and greater that have no other erosion protection in place. Properly spaced and constructed water bars will help maintain the road template after the harvest. Water bars control water in small amounts and prevent excessive erosion by diverting surface runoff from the road surfaces into ditches and/or the surrounding landscape. Water bars should have a 30-45 degree angle to the road and cross the entire length of the road. The uphill end of the water bar should be tied into the bank and the outlet should extend slightly beyond the road and be open. The water bar should have a 2% outslope and be at least one foot in height. Soil should be compacted on water bars and gravel or vegetation should be utilized to protect the bars. Do not direct water directly down steep slopes or directly at a water body.

More information on water bars and spacing guidelines can be found on pages 108-109 in the BMP manual.

Site Specific Haul Road Recommendations and Specifications:

There are two existing roads on the property that will be used to access the tract for logging purposes. These roads have been marked on the attached map. There are several existing drainage structures that will need re-working in order to drain properly (See section above:

Broad Based Dips/Rolling Dips)

Skimming of the haul road is not allowed. A heavy layer of stone will be applied (and maintained) to the road surface if wet weather logging access is needed.

The grade of the roads will be maintained. After logging is complete the roads will be stabilized as described in **Disturbed Soil Stabilization & Revegetation** in a manner that will allow future access into the tract. A temporary or permanent vegetative cover will be established on all denuded areas on the haul road immediately after reconstruction of drainage structures, including denuded banks alongside roads.

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Landings/Log Decks:

These are the areas where logs are concentrated, processed, sorted and loaded for trucking. Locate landings/decks outside of SMZ's and in an area that is well-drained and flat or gently sloping. Landings should be located prior to road construction as to minimize skid trails. The size of the landings should be kept as small as possible; ¼ to ½ acre is normally adequate. Capture all equipment fluids and trash and dispose of properly. Proper close out BMPS often include scarification followed by lime, fertilizer and seed covered with adequate straw mulch. In many cases the deck is covered with slash or chips and other woody debris found on site. It is also important that decks on slopes have appropriate drainage structures to move water off the deck and reduce erosion and sedimentation risk.

The section on landings is found on pages 48-49 in the BMP manual.

Site Specific Log Landing Recommendations and Specifications:

Four possible deck site locations have been marked on the attached map. These are suggestions and other sites may be used if approved by William H. Lock and Associates, Inc. and Virginia Department of Forestry. At the completion of the logging job, deck sites will be smoothed and stabilized to prevent erosion.

Skid Trails:

A skid trail is a temporary unsurfaced trail used to facilitate the transport of wood products from the forest to the landing. Trails should be located as to minimize damage to residual stand, reduce erosion and provide for the most economical method of harvesting. Trail grades should be less than 15% and not exceed 35% for a short distance. Skid trails should be located outside of SMZ's. The section on skid trails is on pages 46-48 and 101 in the BMP manual.

Water Bars:

Upon completion of skidding of each parcel, water bars should be installed immediately in areas subject to erosion and on slopes 2% and greater. Properly spaced and constructed water bars will maintain the skid trails both during and after the harvest. Water bars control water in small amounts and prevent excessive erosion by diverting surface runoff from the skid trails into the surrounding landscape. Water bars should have a 30-45 degree angle to the road and cross the entire length of the road. The uphill end of the water bar should be tied into the bank and the outlet should extend slightly beyond the road and be open. The water bar should have a 2% outslope and be at least one foot in height. Compact the soil on water bars and establish a permanent vegetative cover on exposed soil.

More information on water bars and spacing guidelines can be found on pages 108-109 in the BMP manual.

Slash Matts

Scatter or pile logging slash on trails as appropriate and compact it with equipment traffic to enhance soil stability and reduce runoff. Slash matts are often utilized during the operation as equipment can often operate over the matts preventing site damage and soil erosion. This method is particularly useful on slopes near stream crossings and on wet ground that is susceptible to rutting. Do not remove functioning slash matts in order to build water bars and seed unless it is necessary to prevent erosion and sedimentation or to meet some other objective.

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Research indicates that slash is a very effective bmp and reduces erosion as much as well established vegetation.

Site Specific Skid Trail Recommendations and Specifications:

Skid trail locations will be determined by the operator. Dispersed skidding is recommended where possible. When logging activities are complete skid trails will be closed out in accordance with BMP manual guidelines. Water bars will be installed on all skid trails with slopes equal to or greater than 2%, permanent vegetation will be established on all skid trails with slopes equal to or greater than 5%. Mulch and debris may be used to prevent soil movement.

Stream Crossings:

Stream crossings are the points where haul roads and skid trails intersect a stream channel and they have the potential to adversely affect water quality by exposing soil at or near streams. It is well known that road networks accumulate and deliver water and sediment to streams. Crossings should be limited and located where the least amount of impact results. Bridges are the preferred method for crossing streams and should be installed at right angles to the stream and maintain at least 5' of bridge/ground contact on each side. Rock haul road approaches and brush skid trail approaches extending a minimum of 50' from the stream bank. Retired roads/trails should be stabilized with vegetation or non-erodible surface. It is often appropriate to leave slash mats behind and in some cases add new mats as a closeout bmp. Logs shall not be dragged through any stream for any reason and pipe sizes for stream crossings are available in the BMP Manual or from the VDOF. Close out stream crossings by establishing vegetation and/or sediment retention structures and packing slash where appropriate.

The guidelines set forth in the BMP manual for stream crossing installations on pages 39-45 will be followed.

Site Specific Skid Trail Recommendations and Specifications:

One stream crossing has been marked on the map. The location of this crossing has also been delineated on the ground with blue and pink flagging. This crossing may be used to access the Loblolly thinning which sits across the creek from the other thinning block. During the use of the crossing mulch and/or slash will be used at both the approach and the departure of the crossing. This can be left in place after logging to prevent soil movement.

Streamside Management Zones (SMZ's):

Areas adjacent to streams, lakes, ponds, natural springs, municipal water supplies are extremely important to the protection of water quality. There should be no disturbance within the SMZ, leaving the forest floor essentially undisturbed. Keep loading decks, haul roads and skid trails as far away from SMZ's as possible.

Not only does the SMZ help protect stream quality, but it also makes most landowners eligible for the Virginia Riparian Buffer Tax Credit Program. This is a non-refundable tax credit for retaining buffers associated with the harvesting of timber. The amount of the credit is equal to 25 percent of the value of the timber retained as a buffer up to \$17,500 in the tax year in which the harvesting operation was completed. Please refer to the enclosed brochure for details on the application requirements for this program.

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The section on SMZ's can be found on pages 35-39 in the BMP manual.

Site Specific SMZ Recommendations and Specifications:

A 100 foot no-cut SMZ has been established and is painted with blue paint. No trees within this area are to be harvested. Trees may be cut in order to facilitate a skid trail and/or stream crossing.

Disturbed Soil Stabilization & Revegetation:

Upon the completion of the harvest, all temporary roads, trails and log decks will be reclaimed properly. The skid trails will be smoothed, outsloped, and water barred where not properly outsloped. Water bars will be installed on grades 2% and greater. The construction of the water bars shall be constructed to accommodate light vehicular traffic. All grades 5% and greater will be seeded with an appropriate seed for the season and at the recommended rate to establish a permanent cover of vegetation. Mulch may be needed on the steeper areas and areas in full sunlight.

The landings should be smoothed and sloped to allow for proper drainage. Butt-offs should be piled neatly and all trash disposed of properly. The area should then be seeded with appropriate seed for the season and at the recommended rate and mulched to establish a permanent cover of vegetation.

The haul road should be smoothed and outsloped if needed. Broad based dips or some type of water diversion structure should then be installed to allow future access into tract. The road should be seeded with an appropriate seed for the season at the recommended rate and mulched to establish a permanent cover of vegetation, or graveled.

The stream crossings (if there are any) should be left in a manner which allows the stream to flow freely. The stream crossing approaches will have broad based dips or water bars installed and a non-erodible surface of either vegetation, logging slash, or gravel to the top of the grade on each side. Do not install drainage structures such as water bars, rolling dips, etc. within the SMZ.

Additional harvest closure recommendations can be found on pages 50-51 and recommendations for the type of seed and application rates can be found on pages 151-157 in the BMP manual.

Additional BMP's:

Maintenance of the haul road, stream crossings (if there are any), log decks and skid trails is critical. Grade roads and trails and maintain water diversions structures. Keep a clean layer of rock or non-erodible running surface on the stream crossings (if there are any) and their approaches. During the harvest and especially during periods of inactivity or heavy rain forecast, install temporary water diversion structures on skid trails, and reshape broad based dips if needed to prevent erosion during rain events.