



Minnesota Logger Education Program's Minnesota Master Logger Certification Program

Program Participant Responsibility Areas Include:

- Area One: *Protection of Water Quality And Soils*
- Area Two: *Management of Visual Quality*
- Area Three: *Conformance with Acceptable Silvicultural, Operational
and Utilization Standards*
- Area Four: *Compliance with Government Regulations Applicable to
Logging Operations*
- Area Five: *Adherence to Site Specific Harvest and Management
Plans*
- Area Six: *Sound Business Management and Practices*
- Area Seven: *Participation in a Continuing Logger Education and
Training Program*
- Area Eight: *Continuous Minnesota Master Logger Certification
Program Improvement*

***Minnesota Logger Education Program's
Minnesota Master Logger Certification Program***

Areas of Responsibility, Performance Standards, and Practices

**Area One:
Protection of Water Quality and Soils**

Performance Standard I-A

Harvest and skidding operations protect soils, slopes, wetlands, streams and sensitive areas as outlined in the Minnesota Voluntary Site-level Forest Management Guidelines (FMGs).

FMG Practices

1. Skid trail locations are planned prior to commencement of harvest operations to minimize the number of trails and site disturbance.
2. Where possible, skid trails are located outside filter strips, wetlands and riparian management zones.
3. Topography is considered in skid trail layout to avoid steep areas (over 35% slope) and wet areas when possible.
4. When necessary to operate in soft, wet or steep areas, steps are taken to minimize rutting and erosion (use of seasonal operations, using tops and slash as matting, etc).
5. Water diversion structures are properly installed to divert surface runoff when necessary.
6. Slash is kept out of drainage areas where runoff may wash it into streams, wetlands, or water bodies.
7. Skidding traffic is concentrated or dispersed to disturb or to protect soils, consistent with silvicultural objectives.
8. Low ground pressure equipment and reducing loads carried by logging equipment used to minimize rutting and compaction.
9. When possible, leave snags, decayed, and cavity trees on site; take care not to disturb down logs and uprooted stumps on the harvest area.
10. During biomass harvests, tops and limbs are retained on deep peat soils and shallow soils over bedrock.
11. Approximately 1/3 of fine woody debris (FWD) is retained on biomass harvest.
12. Landings and areas used to store/pile biomass are left in a condition that favors regeneration of native vegetation and trees following use.
13. Avoid re-entry to the general harvest areas for the purpose of retrieving biomass once regeneration has begun or planting has been completed.
14. Erosion control measures are re-established and in working order on roads that are re-opened to retrieve biomass.

Additional Practices

15. Layout of skid trails considers the predominant lean of the stand where chainsaw felling is used.
16. Plans address wet weather events (e.g., inventory systems, wet weather tracts, definitions of acceptable operating conditions).

Performance Standard I-B

Riparian management zones, filter strips and wetlands are maintained and managed per the FMGs.

FMG Practices

1. RMZs are clearly established.
2. Longer-lived trees of appropriate size, distribution and stocking are left within the RMZ consistent with landowner management objectives and FMGs.
3. Roads and skid trails are located outside of RMZs and filter strips, except for necessary crossings of streams, lakes or wetlands.
4. Landings and fueling/maintenance areas are located outside of RMZs and filter strips.
5. No slash, clearing debris or fill is deposited in filter strips, RMZs, streams, lakes or non-forested wetlands.
6. Filter strips are established on all streams, lakes and wetlands with widths appropriate to slopes (as recommended in FMGs).
7. Keep logging residue that does not originate within the wetland out of all seasonal ponds and wetlands.
8. Soil exposure, rutting and compaction are minimized in RMZs, filter strips and wetlands with stabilization measures taken to prevent erosion.
9. Harvesting in wetlands is done under frozen ground conditions whenever necessary.
10. No borrow pits are located within filter strips or RMZs.
11. Coarse woody debris is retained in RMZs consistent with recommendations contained in FMGs.
12. Harvesting of biomass is avoided in RMZs except for the tops and limbs of trees harvested under the FMGs as part of a round wood harvest.

Additional Practices

13. Appropriate restricted equipment operation zones are established and/or observed for RMZs.

Performance Standard I-C

Crossings of streams, lakes, and open-water wetlands comply with the FMGs and required water crossing permits.

FMG Practices

1. All required water crossing permits (state and federal) are in place and followed.
2. Stream, lake or open-water crossings are avoided where possible.
3. Appropriate stabilization practices are used to minimize soil erosion into streams.

4. Stream crossings installed at a right angle to the stream channel with approaches to stream banks with low percent slopes and short slope lengths.
5. Normal water flow in wetland or water body undisturbed following harvest operations with fish and other aquatic life migration unimpeded.
6. Culverts have appropriate diameter and length for the stream size and road width.
7. Culverts are properly installed with appropriate fill and riprap.
8. Road drainage is diverted into an appropriate filter strip.
9. Stream crossing approaches are properly stabilized to minimize sedimentation.
10. Temporary crossing structures are properly anchored to prevent washouts and to facilitate removal when no longer needed.
11. Temporary crossings are removed to the extent practical after use is complete.
12. Natural fords (water crossings) have low stream banks and firm rock/gravel base.
13. Equipment avoids stream banks for all non-frozen intermittent and perennial streams regardless of size; instead use improved crossings.

Performance Standard I-D

Mineral soil, shallow and deep peat wetlands, seep, and spring crossing construction and removal comply with the FMGs.

FMG Practices

1. Wetland crossings are avoided or minimized to the extent practical.
2. All required water crossing permits (state and federal) are in place and followed.
3. Soil from mineral soil and shallow peat wetlands (as defined in the FMGs) removed during construction of crossing are backfilled with appropriate granular soils.
4. Provide adequate cross-drainage by using frozen crossings, or utilizing construction methods that provide free flow through and away from the road bed or culverts of sufficient size at each end of the wetland crossing and at least every 300 feet, properly installed to minimize disruption of normal water flow across landscape.
5. Wetland crossings select shortest possible routes, avoid crossing open water or active springs, avoid using soil fill, and do not block normal water flow.
6. Temporary crossings are removed to the extent practical after use is complete.

Performance Standard I-E

Roads and landing locations are placed in accordance with the FMGs.

FMG Practices

1. The number and size of roads and landings are kept to the minimum required (no more than 3 percent of the total harvest area) for the number of acres to be harvested, equipment used, and products cut.
2. Road locations allow for drainage away from the road.
3. Roads are located in well-drained soils if possible.
4. Road grades do not exceed 10%, grade lengths are minimized and drainage structures are used to minimize erosion where appropriate.
5. Roads follow natural contours, minimize cut/fills, and balance cut/fills.
6. Road surfaces are crowned, outsloped, or insloped to provide adequate drainage.
7. Clearing, excavation, and maintenance debris from new or reconstructed roads deposited outside filter strips and water bodies are not affected.

8. Cut/fill slopes are stable and will revegetate easily (either naturally or artificially).
9. Steep grades and erodable soils are surfaced to minimize surface erosion.
10. Ditches and cross drains are constructed to handle water runoff entering onto or adjacent to the road.
11. Culverts are properly sized and are installed at correct depth, angle, and location to provide effective cross-drainage.
12. Culvert base and fill is appropriate.
13. Broad-based dips, water bars and other water diversion structures are installed and maintained properly in the correct locations.
14. Landings are located and constructed to promote efficient drainage.
15. Cleared or excavated materials for landings deposited in stable locations outside of filter strips of lakes, streams, wetlands, and seasonal ponds.
16. Landings and roads are seeded (appropriate noninvasive seed mix preferred) if needed to prevent erosion and sedimentation.
17. Landings located outside of wetlands, filter strips or RMZs where possible.

Performance Standard I-F

Management of equipment, fuel & lubricants are consistent with the FMGs and applicable laws and regulations.

FMG Practices

1. Specified area used to drain lubricants from equipment during routine maintenance.
2. Maintenance vehicles with necessary equipment available to collect and store lubricants drained during repair activities.
3. Collected solid waste materials are recycled or disposed of properly.
4. Fueling and maintenance areas located away from open water, on upland sites, and outside filter strips or riparian management zones (whichever is wider) where practical.
5. Waste containers present in maintenance areas to collect and store lubricants, oil containers and filters, grease tubes and other trash.
6. Spills less than five gallons are thin spread to ensure adequate decomposition of hydraulic products.

Additional Practices

7. Equipment does not have excessive operating fluid leaks.
8. Spill Kit and a spill plan are maintained, complete, and on the logging site (active sales).
9. Spills greater than 5 gallons are handled according to the spill plan.

Area Two: **Management of Visual Quality**

Performance Standard II-A

Visual quality management techniques are used across the logging site, as consistent with the FMGs.

FMG Practices

1. Slash height does not exceed 24 inches in moderate to most sensitive sites as defined in the FMGs.
2. Time operations in moderate to most sensitive sites, either seasonally or time of day, to avoid visual and noise conflicts with users of recreational facilities (trails, resorts, campgrounds, water accesses, picnic areas) and/or neighboring landowners.

Additional Practices

3. Rock and geologic landforms are protected according to the harvest plan.
4. Inform neighbors and recreational users prior to and during operations (use signs and/or contact neighbors).

Performance Standard II-B

Landowner contract provisions regarding aesthetics are followed, as consistent with the FMGs.

FMG Practices

1. Landowner's aesthetic concerns or goals are discussed and incorporated into the sale design.
2. Aesthetic guidelines for the sale are made clear to all employees.

Performance Standard II-C

Special care is taken in highly visible areas to avoid negative visual impacts, as consistent with the FMGs.

FMG Practices

1. Irregular boundaries, feathered edges, leave trees, no-cut islands, vistas and other applications are used.
2. Disturbed areas, borrow pits, and landings are cleaned up, stabilized, leveled and seeded.
3. Slash is reduced to 24 inches maximum height in areas classified as most sensitive or moderately sensitive per the FMGs.
4. Muddy road exits are cleaned up.

Additional Practices

5. Land boundary markers are not damaged.
6. Stumps are less than ½ of stump diameter and do not exceed 18 inches unless otherwise specified in the contract.

7. Root wads, slash piles, hanging tops, broken trees are not present unless specified by the landowner.

Area Three:
Conformance with Acceptable Silvicultural, Operational and Utilization Standards

Performance Standard III-A

Acceptable silvicultural, operational, and utilization guidelines are followed for the tree species or timber types.

FMG Practices

1. Acceptable cutting system was used for the timber type in question that is compatible with landowner objectives.
2. For final harvests, regeneration was considered and planned for.
3. For thinnings and selective (all-aged) harvests, residual basal areas are within acceptable ranges per accepted silviculture practices.
4. Remaining crop and wildlife trees are acceptable for the management system being used.

Performance Standard III-B

Trees are utilized to the extent that current wood markets permit.

FMG Practices

1. All merchantable timber utilized within the road clearing.

Additional Practices

2. Cooperation with mill managers for better utilization of species and low-grade material.
3. Merchandising of harvested material to ensure use for its most beneficial purpose.
4. Stump pull and split logs are minimal.
5. All merchantable wood is utilized to contract specifications.
6. All cut wood products are forwarded to the landings.
7. Cut wood products are hauled from the landings (inactive or completed sales).
8. Operations within prescribed boundaries.
9. Marked or designated trees are harvested. Changes must be documented or agreed between seller and purchaser (must verify verbal agreements).

Performance Standard III-C

Harvest operations protect residual stands and/or provide for regeneration.

FMG Practices

1. Felling and skidding damage to residual trees is minimized (roots, boles, crown).
2. Protection of desirable or planned advanced *natural regeneration* during harvest.

Additional Practices

3. Feller places cut products where skidder can load without rutting soils or damaging residual timber.
4. Forest health issues (if any) identified in harvest plan are followed. If not followed, variances are approved by a known, credible source with supportive reasons and documentation.

Performance Standard III-D

Harvest operations effectively manage slash.

FMG Practices

1. Harvest operations disperse slash on site (rather than piling slash) where dispersal does not conflict with management objectives or reforestation.
2. Equipment used to move slash on site minimizes soil disturbance.
3. Landings left clean with little waste.

Area Four:
Compliance with Government Regulations
Applicable to Logging Operations

Performance Standard IV-A

Appropriate federal, state and county laws, posting notices, checks and permits have been addressed.

Practices

1. Continuously identify wood from the stump to the primary processor as required for all sales.
2. Check with county to ensure property taxes have been paid before any cutting begins.
3. File any necessary notices and secure permits before logging operations begin.
4. Federal and state laws concerning cultural resources are followed to ensure that significant resources are taken into consideration.
5. Awareness of responsibilities under the U.S. Endangered Species Act and Minnesota's "Protection of Threatened and Endangered Species" statute.
6. Use of pesticides for the intended use and applied in accordance with label requirements.

Performance Standard IV-B

All federal and state safety standards and regulations pertinent to a logging business are followed.

Practices

1. Employee training is documented to comply with OSHA regulations.
2. OSHA regulations are implemented on the job site.

3. Annual meetings of OSHA safety requirements are conducted and documented as part of a larger safety program.
4. Company's written safety plan is on file and is present at the place of business.
5. LogSafe safety practices are implemented on the job site.
6. Monthly safety meetings with all employees to comply with logging standard.

Area Five: **Adherence to Site Specific Harvest and Management Plans**

Performance Standard V-A

A written management plan or harvest plan is in place for the property or specific site on which the timber harvest occurs.

Practices

1. Harvest plan is required for properties with less than 100 contiguous acres.
2. Harvest plan and management plan are required for properties with 100-499 contiguous acres.
3. For properties with 500 contiguous acres or more, the land must be certified.
4. Plan includes landowner objectives for the harvest.
5. Landowner receives information on Minnesota's Forest Management Guidelines (copy of the *Sustainable Forestry – A Landowner's Manual*).
6. Plan provides for regeneration of the stand.
7. Plan identifies and protects known important habitat elements for wildlife including critically imperiled and imperiled species and communities, threatened and endangered species, and cultural resources on the harvest site.
8. Logger and employees are familiar with the plan.
9. Leave trees and clumps are retained in representative habitats to provide benefits to soil, wildlife, regeneration, and include longer lived healthy trees consistent with the harvest management plan.
10. Plans consider the visual sensitivity resources identified for protection.
11. Plan addresses future recreational trail desires.

Performance Standard V-B

A written contract or written agreement exists for each harvesting site.

Practices

1. Contract or agreement is signed by both seller and purchaser.
2. Contract includes the basic categories of an acceptable timber sale contract (reference: *Sustainable Forestry – A Landowner's Manual*).
3. Harvest plan/contract includes a sale map identifying the cutting area, cutting specifications, and pertinent operational requirements and restrictions.
4. Harvest contract includes landowner verification of legal ownership of property and timber.

Performance Standard V-C

A clear understanding of sale terms and conditions must be established between seller and purchaser.

Practices

1. A pre-harvest meeting is held on-site with the landowner or landowner representative to discuss harvest plan, property boundaries, and all contract provisions found in the contract.
2. All contract provisions are met or exceeded.

Area Six:
Sound Business Management and Practices

Performance Standard VI-A

Contracts with landowners, mills, and subcontractors are in place.

Practices

1. Landowner contracts are honored, contract has been completed, and payments are timely, up-to-date, and complete.
2. Subcontractor contracts are honored, contract has been completed, and payments are timely, up-to-date, and complete.
3. Logger is responsible for subcontractor on-site work

Performance Standard VI-B

Insurance policies are in place.

Practices

1. General liability insurance is in place.
2. Worker's compensation insurance policy is in place for all employees.

Performance Standard VI-C

Logger participates in the logging industry at some level (local, state, regional, national).

Practices

1. Minnesota Master Logger Certification designation is marketed and promoted to end users and consumers.
2. Membership in professional and trade association is encouraged.
3. Career opportunities are developed for young men and women interested in the wood harvesting industry.
4. Logger responsive to the Minnesota Forest Resources Council Public Concerns Registration Process and to logging operation audits required for certification attainment.

Area Seven:
Participation in a Continuing Logger Education and Training Program

Performance Standard VII-A

Training standards adopted by the Minnesota Logger Education Program must be achieved and maintained.

Practices

1. Membership training requirements are maintained.

Area Eight:
Continuous MMLC Program Improvement

Performance Standard VIII-A

Minnesota Master Logger Certification (MMLC) practices are reviewed and updated annually to assure that they are adequate and relate to the goals and objectives of the Minnesota Master Logger Certification Program.

Practices

1. New or modified practices are approved by the Minnesota Master Logger Certification Board.
2. Minnesota Certified Master Loggers will implement new standards within one year after approval.

Appendix Items:

1. MMLC Certification Overview, Process and Auditor Qualifications
2. MMLC Audit Assessment/Decision Criteria
3. MMLC Certifying Board
4. Conflict of Interest Policy for Certifying Board members and auditors
5. Complaint Investigation and Review Process
6. OSHA Logging Standard
7. DNR monitoring metrics
8. DNR rutting guidelines



Minnesota Master Logger Certification (MMLC) Program Overview, Process and Auditor Qualifications

Why is Certification Needed?

Several mills in Minnesota and across the country have been asked to meet a target that more than 80% of the resource going into their product be certified. Minnesota has 15 million acres of timberland. Of that 15 million, 37% is controlled by family forest landowners and these family forests provide 45% of the timber harvested each year. Logger certification addresses this challenge by providing certified wood from family forestland to the market place. This means loggers and mills in Minnesota will be in a strong position to provide certified wood from family forestlands to customers like Time Inc.

Minnesota Master Logger Certification

Often, the only forest management advice a family forest owner receives is from a logger who approaches the landowner to procure wood. While many loggers are very experienced and have a professional approach to wood procurement, the Minnesota Logger Education Program (MLEP) believes that a well-trained and experienced logger with a broader vision of forestry can provide family forest landowners with sustainable forest management information. MLEP developed the Minnesota Master Logger Certification (MMLC) program to address the challenge of providing certified fiber from family forestlands to the marketplace.

Minnesota Master Logger Certification, administered through the MLEP, is a performance-based program for loggers that recognizes training, experience, and the application of sound business and sustainable logging practices. Logger certification has been recognized as a way to independently verify the harvest, safety and business practices of participant loggers against specific standards designed to ensure forest are managed and harvested responsibly. MMLC has been endorsed by Time Inc. as meeting the requirements of their Certified Sustainable Forestry program.

Many Minnesota loggers already meet the standards and criteria required for certification, but they do not have a way to authenticate that their customers. Loggers who become certified are able to provide certified wood to the market place. This means loggers and mills in Minnesota will be in a strong position to provide certified wood from family forestlands to customers like Time Inc. that require certified wood in the products they purchase.

A working group representing the broad forestry community was established in early 2005 to develop the MMLC program and its policies, as well as set-up the certifying board. The program is comprised of eight areas of responsibility such as “Protection of Water Quality and Soils”, “Adherence to Site Specific Harvest and Management Plans” and “Compliance with Regulations Applicable to Logging Operations.” Each responsibility area includes measurable performance standards and practices.

A logger participating in the program undergoes a third-party audit of his or her business practices and harvest sites. Independent auditors who have been trained on the MMLC standard conduct field audits on a sample of sites the applicant has harvested within the last 12 months. The logging business and harvest practices are evaluated against 138 practices in eight major areas of responsibility. Based on their findings, the auditors provide the certifying board a recommendation for or against certification. An eight member certifying board, which represents a broad range of forestry interests, reviews the audits and recommendations and makes the final determination on whether the applicant's business can be certified. To be certified, a logging business must pass all eight areas of the MMLC standard on all audited sites.

Once a logging business is certified, the certification status is good until the next recertification audit which will occur within five years. During any given year, the certified business may be randomly selected for recertification. As each year passes, the probability that the business will be selected for recertification increases. No Minnesota Certified Master Logger will go longer than five years without being recertified.

Auditor Qualifications

- A Bachelor of Science, Forestry degree, from a Society of American Foresters (SAF) accredited program
- Complete MMLC auditor training
- Maintain confidentiality
- Avoid conflicts of interest

MMLC Audit Assessment/Decision Criteria

APPROVED - October 1, 2010

The recommendation for or against certification in summarizing the audit findings shall be based on the following:

- 1) Failure to meet a *Performance Standard* occurs when:
 - a. there are 3 or More SNCs within a *Performance Standard*;
 - b. or there are 5 or more MNCs within the *Performance Standard*;
 - c. or failure to be in conformance with a majority of the *practices* within a *Performance Standard* (conformance would mean the program participant did not receive a SNC or MNC for a majority of the practices within a *Performance Standard*).
- 2) Failure to meet an *Area* occurs when:
 - a. there is failure to meet 2 or more *Performance Standards* within an *Area*;
 - b. or there is failure to be in conformance with a majority of the *Performance Standards* within an *Area*.
- 3) Applicant must meet all *Areas* on all audited sites.

*Items 1 and 2 apply independently to each site being audited.

Additional requirements “kill switches”:

- Performance Standard I-B cannot be met if Practice 3 or Practice 4 regarding roads, lands, and fuel maintenance in Riparian Management Zones receives an SNC.
- Performance Standard I-C cannot be met if Practice 1 regarding crossing permits receives an SNC.
- Performance Standard V-A cannot be met if Practice 1, 2, or 3 addressing harvest and management planning (whichever applies to the size of property) receives an SNC.
- Performance Standard V-B cannot be met if Practice 4 addressing legal ownership receives an SNC.

“Audit Summary Action Required” memo

The program participant will receive an “Audit Summary Action Required” memo that will include a list of any *Performance Standards* the program participant failed. The program participant must complete the memo demonstrably addressing how the failure(s) were addressed and return the completed memo within 3 months of issuance. The memo will include a list of those *Performance Standards* and *Practices*, a description of the non-conformance, and the required action. Space will be provided in the memo for program participants to note any documentation demonstrating conformance (copies of contracts, written declaration).

At the next scheduled meeting following the 3 month deadline, the MMLC Certifying Board will review the program participant’s response to the “Audit Summary Action Required” memo and make a decision regarding certification based on that analysis.



Minnesota Logger Education Program's Minnesota Master Logger Certification Program Certifying Board

The certifying board will be made up of eight members. Members will serve three year terms, except that, for the first board, up to one-third of those members shall serve on the board for a term of three years and up to one-third shall serve for a term of two years. In order to provide for a certifying board which broadly represents the forest community, the board shall include:

- A representative from an environmental or conservation organization
- An owner of nonindustrial, private forestland
- A representative from an association representing forest products within the state
- A representative from an organization representing the interest of management of game species
- A representative of a public agency involved in land management
- A representative of a post-secondary education institution
- An active or retired commercial logging contractor from another state in the lakes states region
- An at-large representative

A member of the Minnesota Logger Education Program's Board of Directors shall serve as an ex officio member of the certifying board. An ex officio member of the certifying board does not have the right to vote.



***Minnesota Logger Education Program’s
Minnesota Master Logger Certification Program
Conflict of Interest Policy for
Certifying Board Members and Auditors***

Certifying board members and auditors are required to sign a “confidentiality and conflict of interest” statement. Certifying board members and auditors shall disclose any real or potential conflicts of interest in association with his/her audit or assessment activities and excuse themselves from performing an audit or assessment when a conflict exists. A conflict may include working/consulting for or having worked/consulted for the logging business or landowner whose site is being audited.

Further, certifying board members and auditors must maintain complete confidentiality in terms of all documentation, interviews, conversations, and any information related to the certification assessment or audit process for the company/site being assessed. Certifying board members and auditors will keep confidential all conversations related to the assessment decision and will not make or distribute copies of any documents or reports, or discuss the contents of these reports, with any other parties.

Certifying board members and auditors shall disclose any personal interest which he or she may have in any matter pending before the certification board and shall refrain from participation in any decision on such matter.

Signature: _____

Printed name: _____ Date: _____

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located in or near the main door at the end of the passageway.

(b) Escape doors shall be of adequate height and width to accommodate an average size man.

(4) *Pits.* Pits shall be well ventilated, drained, and lighted, and shall be large enough to safely accommodate the kiln operator together with operating devices such as valves, dampers, damper rods, and traps.

(5) *Steam mains.* All high-pressure steam mains located in or adjacent to an operating pit shall be covered with heat-insulating material.

(6) *Ladders.* A fixed ladder, in accordance with the requirements of §1910.27 or other adequate means shall be provided to permit access to the roof. Where controls and machinery are mounted on the roof, a permanent stairway with standard handrail shall be installed in accordance with the requirements of §1910.24.

(7) *Chocks.* A means shall be provided for chocking or blocking cars.

(8) *Kiln tender room.* A warm room shall be provided for kiln employees to stay in during cold weather after leaving a hot kiln.

[39 FR 23502, June 27, 1974, as amended at 40 FR 23073, May 28, 1975; 43 FR 49751, Oct. 24, 1978; 43 FR 51760, Nov. 7, 1978; 53 FR 12123, Apr. 12, 1988; 55 FR 32015, Aug. 6, 1990; 61 FR 9241, Mar. 7, 1996; 63 FR 33467, June 18, 1998; 70 FR 53929, Sept. 13, 2005]

§ 1910.266 Logging operations.

(a) Table of contents.

This paragraph contains the list of paragraphs and appendices contained in this section.

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APPENDIX A—MINIMUM FIRST-AID SUPPLIES

APPENDIX B—MINIMUM FIRST-AID TRAINING

APPENDIX C—CORRESPONDING ISO AGREEMENTS

(b) *Scope and application.* (1) This standard establishes safety practices, means, methods and operations for all types of logging, regardless of the end use of the wood. These types of logging include, but are not limited to, pulpwood and timber harvesting and the logging of sawlogs, veneer bolts, poles, pilings and other forest products. This standard does not cover the construction or use of cable yarding systems.

(2) This standard applies to all logging operations as defined by this section.

(3) Hazards and working conditions not specifically addressed by this section are covered by other applicable sections of part 1910.

(c) *Definitions applicable to this section.*

Arch. An open-framed trailer or built-up framework used to suspend the leading ends of trees or logs when they are skidded.

Backcut (felling cut). The final cut in a felling operation.

Ballistic nylon. A nylon fabric of high tensile properties designed to provide protection from lacerations.

Buck. To cut a felled tree into logs.

Butt. The bottom of the felled part of a tree.

Cable yarding. The movement of felled trees or logs from the area where they are felled to the landing on a system composed of a cable suspended from spars and/or towers. The trees or logs may be either dragged across the

ground on the cable or carried while suspended from the cable.

Chock. A block, often wedge shaped, which is used to prevent movement; e.g., a log from rolling, a wheel from turning.

Choker. A sling used to encircle the end of a log for yarding. One end is passed around the load, then through a loop eye, end fitting or other device at the other end of the sling. The end that passed through the end fitting or other device is then hooked to the lifting or pulling machine.

Danger tree. A standing tree that presents a hazard to employees due to conditions such as, but not limited to, deterioration or physical damage to the root system, trunk, stem or limbs, and the direction and lean of the tree.

Debark. To remove bark from trees or logs.

Deck. A stack of trees or logs.

Designated person. An employee who has the requisite knowledge, training and experience to perform specific duties.

Domino felling. The partial cutting of multiple trees which are left standing and then pushed over with a pusher tree.

Fell (fall). To cut down trees.

Feller (faller). An employee who fells trees.

Grounded. The placement of a component of a machine on the ground or on a device where it is firmly supported.

Guarded. Covered, shielded, fenced, enclosed, or otherwise protected by means of suitable enclosures, covers, casings, shields, troughs, railings, screens, mats, or platforms, or by location, to prevent injury.

Health care provider. A health care practitioner operating within the scope of his/her license, certificate, registration or legally authorized practice.

Landing. Any place where logs are laid after being yarded, and before transport from the work site.

Limbing. To cut branches off felled trees.

Lodged tree (hung tree). A tree leaning against another tree or object which prevents it from falling to the ground.

Log. A segment sawed or split from a felled tree, such as, but not limited to, a section, bolt, or tree length.

Logging operations. Operations associated with felling and moving trees and logs from the stump to the point of delivery, such as, but not limited to, marking danger trees and trees/logs to be cut to length, felling, limbing, bucking, debarking, chipping, yarding, loading, unloading, storing, and transporting machines, equipment and personnel to, from and between logging sites.

Machine. A piece of stationary or mobile equipment having a self-contained powerplant, that is operated off-road and used for the movement of material. Machines include, but are not limited to, tractors, skidders, front-end loaders, scrapers, graders, bulldozers, swing yarders, log stackers, log loaders, and mechanical felling devices, such as tree shears and feller-bunchers. Machines do not include airplanes or aircraft (e.g., helicopters).

Rated capacity. The maximum load a system, vehicle, machine or piece of equipment was designed by the manufacturer to handle.

Root wad. The ball of a tree root and dirt that is pulled from the ground when a tree is uprooted.

Serviceable condition. A state or ability of a tool, machine, vehicle or other device to operate as it was intended by the manufacturer to operate.

Skidding. The yarding of trees or logs by pulling or towing them across the ground.

Slope (grade). The increase or decrease in altitude over a horizontal distance expressed as a percentage. For example, a change of altitude of 20 feet (6 m) over a horizontal distance of 100 feet (30 m) is expressed as a 20 percent slope.

Snag. Any standing dead tree or portion thereof.

Spring pole. A tree, segment of a tree, limb, or sapling which is under stress or tension due to the pressure or weight of another object.

Tie down. Chain, cable, steel strips or fiber webbing and binders attached to a truck, trailer or other conveyance as a means to secure loads and to prevent them from shifting or moving when they are being transported.

Undercut. A notch cut in a tree to guide the direction of the tree fall and to prevent splitting or kickback.

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Vehicle. A car, bus, truck, trailer or semi-trailer owned, leased or rented by the employer that is used for transportation of employees or movement of material.

Winching. The winding of cable or rope onto a spool or drum.

Yarding. The movement of logs from the place they are felled to a landing.

(d) *General requirements—(1) Personal protective equipment.* (i) The employer shall assure that personal protective equipment, including any personal protective equipment provided by an employee, is maintained in a serviceable condition.

(ii) The employer shall assure that personal protective equipment, including any personal protective equipment provided by an employee, is inspected before initial use during each workshift. Defects or damage shall be repaired or the unserviceable personal protective equipment shall be replaced before work is commenced.

(iii) The employer shall provide, at no cost to the employee, and assure that each employee handling wire rope wears, hand protection which provides adequate protection from puncture wounds, cuts and lacerations.

(iv) The employer shall provide, at no cost to the employee, and assure that each employee who operates a chain saw wears leg protection constructed with cut-resistant material, such as ballistic nylon. The leg protection shall cover the full length of the thigh to the top of the boot on each leg to protect against contact with a moving chain saw. *Exception:* This requirement does not apply when an employee is working as a climber if the employer demonstrates that a greater hazard is posed by wearing leg protection in the particular situation, or when an employee is working from a vehicular mounted elevating and rotating work platform meeting the requirements of 29 CFR 1910.68.

(v) The employer shall assure that each employee wears foot protection, such as heavy-duty logging boots that are waterproof or water repellent, cover and provide support to the ankle. The employer shall assure that each employee who operates a chain saw wears foot protection that is constructed with cut-resistant material

which will protect the employee against contact with a running chain saw. Sharp, calk-soled boots or other slip-resistant type boots may be worn where the employer demonstrates that they are necessary for the employee's job, the terrain, the timber type, and the weather conditions, provided that foot protection otherwise required by this paragraph is met.

(vi) The employer shall provide, at no cost to the employee, and assure that each employee who works in an area where there is potential for head injury from falling or flying objects wears head protection meeting the requirements of subpart I of part 1910.

(vii) The employer shall provide, at no cost to the employee, and assure that each employee wears the following:

(A) Eye protection meeting the requirements of subpart I of part 1910 where there is potential for eye injury due to falling or flying objects; and

(B) Face protection meeting the requirements of subpart I of part 1910 where there is potential for facial injury such as, but not limited to, operating a chipper. Logger-type mesh screens may be worn by employees performing chain-saw operations and yarding.

NOTE TO PARAGRAPH (d)(1)(vii): The employee does not have to wear a separate eye protection device where face protection covering both the eyes and face is worn.

(2) *First-aid kits.* (i) The employer shall provide first-aid kits at each work site where trees are being cut (e.g., felling, bucking, limbing), at each active landing, and on each employee transport vehicle. The number of first-aid kits and the content of each kit shall reflect the degree of isolation, the number of employees, and the hazards reasonably anticipated at the work site.

(ii) At a minimum, each first-aid kit shall contain the items listed in appendix A at all times.

(iii) The employer also may have the number and content of first-aid kits reviewed and approved annually by a health care provider.

(iv) The employer shall maintain the contents of each first-aid kit in a serviceable condition.

(3) *Seat belts.* For each vehicle or machine (equipped with ROPS/FOPS or overhead guards), including any vehicle or machine provided by an employee, the employer shall assure:

(i) That a seat belt is provided for each vehicle or machine operator;

(ii) That each employee uses the available seat belt while the vehicle or machine is being operated;

(iii) That each employee securely and tightly fastens the seat belt to restrain the employee within the vehicle or machine cab;

(iv) That each machine seat belt meets the requirements of the Society of Automotive Engineers Standard SAE J386, June 1985, "Operator Restraint Systems for Off-Road Work Machines", which is incorporated by reference as specified in §1910.6.

(v) That seat belts are not removed from any vehicle or machine. The employer shall replace each seat belt which has been removed from any vehicle or machine that was equipped with seat belts at the time of manufacture; and

(vi) That each seat belt is maintained in a serviceable condition.

(4) *Fire extinguishers.* The employer shall provide and maintain portable fire extinguishers on each machine and vehicle in accordance with the requirements of subpart L of part 1910.

(5) *Environmental conditions.* All work shall terminate and each employee shall move to a place of safety when environmental conditions, such as but not limited to, electrical storms, strong winds which may affect the fall of a tree, heavy rain or snow, extreme cold, dense fog, fires, mudslides, and darkness, create a hazard for the employee in the performance of the job.

(6) *Work areas.* (i) Employees shall be spaced and the duties of each employee shall be organized so the actions of one employee will not create a hazard for any other employee.

(ii) Work areas shall be assigned so that trees cannot fall into an adjacent occupied work area. The distance between adjacent occupied work areas shall be at least two tree lengths of the trees being felled. The distance between adjacent occupied work areas shall reflect the degree of slope, the density of the growth, the height of the

trees, the soil structure and other hazards reasonably anticipated at that work site. A distance of greater than two tree lengths shall be maintained between adjacent occupied work areas on any slope where rolling or sliding of trees or logs is reasonably foreseeable.

(iii) Each employee performing a logging operation at a logging work site shall work in a position or location that is within visual or audible contact with another employee.

(iv) The employer shall account for each employee at the end of each workshift.

(7) *Signaling and signal equipment.* (i) Hand signals or audible contact, such as but not limited to, whistles, horns, or radios, shall be utilized whenever noise, distance, restricted visibility, or other factors prevent clear understanding of normal voice communications between employees.

(ii) Engine noise, such as from a chain saw, is not an acceptable means of signaling. Other locally and regionally recognized signals may be used.

(iii) Only a designated person shall give signals, except in an emergency.

(8) *Overhead electric lines.* (i) Logging operations near overhead electric lines shall be done in accordance with the requirements of 29 CFR 1910.333(c)(3).

(ii) The employer shall notify the power company immediately if a felled tree makes contact with any power line. Each employee shall remain clear of the area until the power company advises that there are no electrical hazards.

(9) *Flammable and combustible liquids.*

(i) Flammable and combustible liquids shall be stored, handled, transported, and used in accordance with the requirements of subpart H of part 1910.

(ii) Flammable and combustible liquids shall not be transported in the driver compartment or in any passenger-occupied area of a machine or vehicle.

(iii) Each machine, vehicle, and portable powered tool shall be shut off during fueling. Diesel-powered machines and vehicles may be fueled while they are at idle, provided that continued operation is intended and that the employer follows safe fueling and operating procedures.

(iv) Flammable and combustible liquids, including chain-saw and diesel fuel, may be used to start a fire, provided the employer assures that in the particular situation its use does not create a hazard for an employee.

(10) *Explosives and blasting agents.* (i) Explosives and blasting agents shall be stored, handled, transported, and used in accordance with the requirements of subpart H of part 1910.

(ii) Only a designated person shall handle or use explosives and blasting agents.

(iii) Explosives and blasting agents shall not be transported in the driver compartment or in any passenger-occupied area of a machine or vehicle.

(e) *Hand and portable powered tools—*
(1) *General requirements.* (i) The employer shall assure that each hand and portable powered tool, including any tool provided by an employee, is maintained in serviceable condition.

(ii) The employer shall assure that each tool, including any tool provided by an employee, is inspected before initial use during each workshift. At a minimum, the inspection shall include the following:

(A) Handles and guards, to assure that they are sound, tight-fitting, properly shaped, free of splinters and sharp edges, and in place;

(B) Controls, to assure proper function;

(C) Chain-saw chains, to assure proper adjustment;

(D) Chain-saw mufflers, to assure that they are operational and in place;

(E) Chain brakes and nose shielding devices, to assure that they are in place and function properly;

(F) Heads of shock, impact-driven and driving tools, to assure that there is no mushrooming;

(G) Cutting edges, to assure that they are sharp and properly shaped; and

(H) All other safety devices, to assure that they are in place and function properly.

(iii) The employer shall assure that each tool is used only for purposes for which it has been designed.

(iv) When the head of any shock, impact-driven or driving tool begins to chip, it shall be repaired or removed from service.

(v) The cutting edge of each tool shall be sharpened in accordance with manufacturer's specifications whenever it becomes dull during the workshift.

(vi) Each tool shall be stored in the provided location when not being used at a work site.

(vii) Racks, boxes, holsters or other means shall be provided, arranged and used for the transportation of tools so that a hazard is not created for any vehicle operator or passenger.

(2) *Chain saws.* (i) Each chain saw placed into initial service after the effective date of this section shall be equipped with a chain brake and shall otherwise meet the requirements of the ANSI B175.1-1991 "Safety Requirements for Gasoline-Powered Chain Saws", which is incorporated by reference as specified in §1910.6. Each chain saw placed into service before the effective date of this section shall be equipped with a protective device that minimizes chain-saw kickback. No chain-saw kickback device shall be removed or otherwise disabled.

(ii) Each gasoline-powered chain saw shall be equipped with a continuous pressure throttle control system which will stop the chain when pressure on the throttle is released.

(iii) The chain saw shall be operated and adjusted in accordance with the manufacturer's instructions.

(iv) The chain saw shall be fueled at least 10 feet (3 m) from any open flame or other source of ignition.

(v) The chain saw shall be started at least 10 feet (3 m) from the fueling area.

(vi) The chain saw shall be started on the ground or where otherwise firmly supported. Drop starting a chain saw is prohibited.

(vii) The chain saw shall be started with the chain brake engaged.

(viii) The chain saw shall be held with the thumbs and fingers of both hands encircling the handles during operation unless the employer demonstrates that a greater hazard is posed by keeping both hands on the chain saw in that particular situation.

(ix) The chain-saw operator shall be certain of footing before starting to cut. The chain saw shall not be used in a position or at a distance that could

cause the operator to become off-balance, to have insecure footing, or to relinquish a firm grip on the saw.

(x) Prior to felling any tree, the chain-saw operator shall clear away brush or other potential obstacles which might interfere with cutting the tree or using the retreat path.

(xi) The chain saw shall not be used to cut directly overhead.

(xii) The chain saw shall be carried in a manner that will prevent operator contact with the cutting chain and muffler.

(xiii) The chain saw shall be shut off or the throttle released before the feller starts his retreat.

(xiv) The chain saw shall be shut down or the chain brake shall be engaged whenever a saw is carried further than 50 feet (15.2 m). The chain saw shall be shut down or the chain brake shall be engaged when a saw is carried less than 50 feet if conditions such as, but not limited to, the terrain, underbrush and slippery surfaces, may create a hazard for an employee.

(f) *Machines*—(1) *General requirements.*

(i) The employer shall assure that each machine, including any machine provided by an employee, is maintained in serviceable condition.

(ii) The employer shall assure that each machine, including any machine provided by an employee, is inspected before initial use during each workshift. Defects or damage shall be repaired or the unserviceable machine shall be replaced before work is commenced.

(iii) The employer shall assure that operating and maintenance instructions are available on the machine or in the area where the machine is being operated. Each machine operator and maintenance employee shall comply with the operating and maintenance instructions.

(2) *Machine operation.* (i) The machine shall be started and operated only by a designated person.

(ii) Stationary logging machines and their components shall be anchored or otherwise stabilized to prevent movement during operation.

(iii) The rated capacity of any machine shall not be exceeded.

(iv) To maintain stability, the machine must be operated within the lim-

itations imposed by the manufacturer as described in the operating and maintenance instructions for that machine.

(v) Before starting or moving any machine, the operator shall determine that no employee is in the path of the machine.

(vi) The machine shall be operated only from the operator's station or as otherwise recommended by the manufacturer.

(vii) The machine shall be operated at such a distance from employees and other machines such that operation will not create a hazard for an employee.

(viii) No employee other than the operator shall ride on any mobile machine unless seating, seat belts and other protection equivalent to that provided for the operator are provided.

(ix) No employee shall ride on any load.

(x) Before the operator leaves the operator's station of a machine, it shall be secured as follows:

(A) The parking brake or brake locks shall be applied;

(B) The transmission shall be placed in the manufacturer's specified park position; and

(C) Each moving element such as, but not limited to blades, buckets, saws and shears, shall be lowered to the ground or otherwise secured.

(xi) If a hydraulic or pneumatic storage device can move the moving elements such as, but not limited to, blades, buckets, saws and shears, after the machine is shut down, the pressure or stored energy from the element shall be discharged as specified by the manufacturer.

(xii) The rated capacity of any vehicle transporting a machine shall not be exceeded.

(xiii) The machine shall be loaded, secured and unloaded so that it will not create a hazard for any employee.

(3) *Protective structures.* (i) Each tractor, skidder, swing yarder, log stacker, log loader and mechanical felling device, such as tree shears or feller-buncher, placed into initial service after February 9, 1995, shall be equipped with falling object protective structure (FOPS) and/or rollover protective structure (ROPS). The employer shall replace FOPS or ROPS

which have been removed from any machine. *Exception:* This requirement does not apply to machines which are capable of 360 degree rotation.

(ii)(A) ROPS shall be tested, installed, and maintained in serviceable condition.

(B) Each machine manufactured after August 1, 1996, shall have ROPS tested, installed, and maintained in accordance with the Society of Automotive Engineers SAE J1040, April 1988, "Performance Criteria for Rollover Protective Structures (ROPS) for Construction, Earthmoving, Forestry, and Mining Machines", which is incorporated by reference as specified in § 1910.6.

(C) This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies may be obtained from the Society of Automotive Engineers, 400 Commonwealth Drive, Warrendale, PA 15096. Copies may be inspected at the Docket Office, Occupational Safety and Health Administration, U.S. Department of Labor, 200 Constitution Avenue NW., room N2625, Washington, DC 20210, or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030, or go to: http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html.

(iii) FOPS shall be installed, tested and maintained in accordance with the Society of Automotive Engineers SAE J231, January 1981, "Minimum Performance Criteria for Falling Object Protective Structures (FOPS)", which is incorporated by reference as specified in § 1910.6.

(iv) ROPS and FOPS shall meet the requirements of the Society of Automotive Engineers SAE J397, April 1988, "Deflection Limiting Volume-ROPS/FOPS Laboratory Evaluation", which is incorporated by reference as specified in § 1910.6.

(v) Each protective structure shall be of a size that does not impede the operator's normal movements.

(vi) The overhead covering of each cab shall be of solid material and shall extend over the entire canopy.

(vii) Each machine manufactured after August 1, 1996, shall have a cab that is fully enclosed with mesh material with openings no greater than 2 inches (5.08 cm) at its least dimension. The cab may be enclosed with other material(s) where the employer demonstrates such material(s) provides equivalent protection and visibility. *Exception:* Equivalent visibility is not required for the lower portion of the cab where there are control panels or similar obstructions in the cab, or where visibility is not necessary for safe operation of the machine.

(viii) Each machine manufactured on or before August 1, 1996 shall have a cab which meets the requirements specified in paragraph (f)(3)(vii) or a protective canopy for the operator which meets the following requirements:

(A) The protective canopy shall be constructed to protect the operator from injury due to falling trees, limbs, saplings or branches which might enter the compartment side areas and from snapping winch lines or other objects;

(B) The lower portion of the cab shall be fully enclosed with solid material, except at entrances, to prevent the operator from being injured from obstacles entering the cab;

(C) The upper rear portion of the cab shall be fully enclosed with open mesh material with openings of such size as to reject the entrance of an object larger than 2 inches in diameter. It shall provide maximum rearward visibility; and

(D) Open mesh shall be extended forward as far as possible from the rear corners of the cab sides so as to give the maximum protection against obstacles, branches, etc., entering the cab area.

(ix) The enclosure of the upper portion of each cab shall allow maximum visibility.

(x) When transparent material is used to enclose the upper portion of the cab, it shall be made of safety glass or other material that the employer demonstrates provides equivalent protection and visibility.

(xi) Transparent material shall be kept clean to assure operator visibility.

(xii) Transparent material that may create a hazard for the operator, such as but not limited to, cracked, broken or scratched safety glass, shall be replaced.

(xiii) Deflectors shall be installed in front of each cab to deflect whipping saplings and branches. Deflectors shall be located so as not to impede visibility and access to the cab.

(xiv) The height of each cab entrance shall be at least 52 inches (1.3 meters) from the floor of the cab.

(xv) Each machine operated near cable yarding operations shall be equipped with sheds or roofs of sufficient strength to provide protection from breaking lines.

(4) *Overhead guards.* Each forklift shall be equipped with an overhead guard meeting the requirements of the American Society of Mechanical Engineers, ASME B56.6-1992 (with addenda), "Safety Standard for Rough Terrain Forklift Trucks", which is incorporated by reference as specified in §1910.6.

(5) *Machine access.* (i) Machine access systems, meeting the specifications of the Society of Automotive Engineers, SAE J185, June 1988, "Recommended Practice for Access Systems for Off-Road Machines", which is incorporated by reference as specified in §1910.6, shall be provided for each machine where the operator or any other employee must climb onto the machine to enter the cab or to perform maintenance.

(ii) Each machine cab shall have a second means of egress.

(iii) Walking and working surfaces of each machine and machine work station shall have a slip resistant surface to assure safe footing.

(iv) The walking and working surface of each machine shall be kept free of waste, debris and any other material which might result in fire, slipping, or falling.

(6) *Exhaust systems.* (i) The exhaust pipes on each machine shall be located so exhaust gases are directed away from the operator.

(ii) The exhaust pipes on each machine shall be mounted or guarded to protect each employee from accidental contact.

(iii) The exhaust pipes shall be equipped with spark arresters. Engines equipped with turbochargers do not require spark arresters.

(iv) Each machine muffler provided by the manufacturer, or their equivalent, shall be in place at all times the machine is in operation.

(7) *Brakes.* (i) Service brakes shall be sufficient to stop and hold each machine and its rated load capacity on the slopes over which it is being operated.

(ii) Each machine placed into initial service on or after September 8, 1995 shall also be equipped with: back-up or secondary brakes that are capable of stopping the machine regardless of the direction of travel or whether the engine is running; and parking brakes that are capable of continuously holding a stopped machine stationary.

(8) *Guarding.* (i) Each machine shall be equipped with guarding to protect employees from exposed moving elements, such as but not limited to, shafts, pulleys, belts on conveyors, and gears, in accordance with the requirements of subpart O of part 1910.

(ii) Each machine used for debarking, limbing and chipping shall be equipped with guarding to protect employees from flying wood chunks, logs, chips, bark, limbs and other material in accordance with the requirements of subpart O of part 1910.

(iii) The guarding on each machine shall be in place at all times the machine is in operation.

(g) *Vehicles.* (1) The employer shall assure that each vehicle used to perform any logging operation is maintained in serviceable condition.

(2) The employer shall assure that each vehicle used to perform any logging operation is inspected before initial use during each workshift. Defects or damage shall be repaired or the un-serviceable vehicle shall be replaced before work is commenced.

(3) The employer shall assure that operating and maintenance instructions are available in each vehicle. Each vehicle operator and maintenance employee shall comply with the operating and maintenance instructions.

(4) The employer shall assure that each vehicle operator has a valid operator's license for the class of vehicle being operated.

(5) Mounting steps and handholds shall be provided for each vehicle wherever it is necessary to prevent an employee from being injured when entering or leaving the vehicle.

(6) The seats of each vehicle shall be securely fastened.

(7) The requirements of paragraphs (f)(2)(iii), (f)(2)(v), (f)(2)(vii), (f)(2)(x), (f)(2)(xiii), and (f)(7) of this section shall also apply to each vehicle used to transport any employee off public roads or to perform any logging operation, including any vehicle provided by an employee.

(h) *Tree harvesting*—(1) *General requirements.* (i) Trees shall not be felled in a manner that may create a hazard for an employee, such as but not limited to, striking a rope, cable, power line, or machine.

(ii) The immediate supervisor shall be consulted when unfamiliar or unusually hazardous conditions necessitate the supervisor's approval before cutting is commenced.

(iii) While manual felling is in progress, no yarding machine shall be operated within two tree lengths of trees being manually felled. Exception: This provision does not apply to yarding machines performing tree pulling operations.

(iv) No employee shall approach a feller closer than two tree lengths of trees being felled until the feller has acknowledged that it is safe to do so, unless the employer demonstrates that a team of employees is necessary to manually fell a particular tree.

(v) No employee shall approach a mechanical felling operation closer than two tree lengths of the trees being felled until the machine operator has acknowledged that it is safe to do so.

(vi) Each danger tree shall be felled, removed or avoided. Each danger tree, including lodged trees and snags, shall be felled or removed using mechanical or other techniques that minimize employee exposure before work is commenced in the area of the danger tree. If the danger tree is not felled or removed, it shall be marked and no work shall be conducted within two tree

lengths of the danger tree unless the employer demonstrates that a shorter distance will not create a hazard for an employee.

(vii) Each danger tree shall be carefully checked for signs of loose bark, broken branches and limbs or other damage before they are felled or removed. Accessible loose bark and other damage that may create a hazard for an employee shall be removed or held in place before felling or removing the tree.

(viii) Felling on any slope where rolling or sliding of trees or logs is reasonably foreseeable shall be done uphill from, or on the same level as, previously felled trees.

(ix) Domino felling of trees is prohibited.

NOTE TO PARAGRAPH (h)(1)(ix): The definition of domino felling does not include the felling of a single danger tree by felling another single tree into it.

(2) *Manual felling.* (i) Before felling is started, the feller shall plan and clear a retreat path. The retreat path shall extend diagonally away from the expected felling line unless the employer demonstrates that such a retreat path poses a greater hazard than an alternate path. Once the backcut has been made the feller shall immediately move a safe distance away from the tree on the retreat path.

(ii) Before each tree is felled, conditions such as, but not limited to, snow and ice accumulation, the wind, the lean of tree, dead limbs, and the location of other trees, shall be evaluated by the feller and precautions taken so a hazard is not created for an employee.

(iii) Each tree shall be checked for accumulations of snow and ice. Accumulations of snow and ice that may create a hazard for an employee shall be removed before felling is commenced in the area or the area shall be avoided.

(iv) When a spring pole or other tree under stress is cut, no employee other than the feller shall be closer than two trees lengths when the stress is released.

(v) An undercut shall be made in each tree being felled unless the employer demonstrates that felling the particular tree without an undercut will

not create a hazard for an employee. The undercut shall be of a size so the tree will not split and will fall in the intended direction.

(vi) A backcut shall be made in each tree being felled. The backcut shall leave sufficient hinge wood to hold the tree to the stump during most of its fall so that the hinge is able to guide the tree's fall in the intended direction.

(vii) The backcut shall be above the level of the horizontal facecut in order to provide an adequate platform to prevent kickback. Exception: The backcut may be at or below the horizontal facecut in tree pulling operations.

NOTE TO PARAGRAPH (h)(2)(vii): This requirement does not apply to open face felling where two angled facecuts rather than a horizontal facecut are used.

(3) *Limbing and bucking.* (i) Limbing and bucking on any slope where rolling or sliding of trees or logs is reasonably foreseeable shall be done on the uphill side of each tree or log.

(ii) Before bucking or limbing wind-thrown trees, precautions shall be taken to prevent the root wad, butt or logs from striking an employee. These precautions include, but are not limited to, chocking or moving the tree to a stable position.

(4) *Chipping (in-woods locations).* (i) Chipper access covers or doors shall not be opened until the drum or disc is at a complete stop.

(ii) Infeed and discharge ports shall be guarded to prevent contact with the disc, knives, or blower blades.

(iii) The chipper shall be shut down and locked out in accordance with the requirements of 29 CFR 1910.147 when an employee performs any servicing or maintenance.

(iv) Detached trailer chippers shall be chocked during usage on any slope where rolling or sliding of the chipper is reasonably foreseeable.

(5) *Yarding.* (i) No log shall be moved until each employee is in the clear.

(ii) Each choker shall be hooked and unhooked from the uphill side or end of the log, unless the employer demonstrates that it is not feasible in the particular situation to hook or unhook the choker from the uphill side. Where the choker is hooked or unhooked from the downhill side or end of the log, the

log shall be securely chocked to prevent rolling, sliding or swinging.

(iii) Each choker shall be positioned near the end of the log or tree length.

(iv) Each machine shall be positioned during winching so the machine and winch are operated within their design limits.

(v) No yarding line shall be moved unless the yarding machine operator has clearly received and understood the signal to do so. When in doubt, the yarding machine operator shall repeat the signal and wait for a confirming signal before moving any line.

(vi) No load shall exceed the rated capacity of the pallet, trailer, or other carrier.

(vii) Towed equipment, such as but not limited to, skid pans, pallets, arches, and trailers, shall be attached to each machine or vehicle in such a manner as to allow a full 90 degree turn; to prevent overrunning of the towing machine or vehicle; and to assure that the operator is always in control of the towed equipment.

(viii) The yarding machine or vehicle, including its load, shall be operated with safe clearance from all obstructions that may create a hazard for an employee.

(ix) Each yarded tree shall be placed in a location that does not create a hazard for an employee and an orderly manner so that the trees are stable before bucking or limbing is commenced.

(6) *Loading and unloading.* (i) The transport vehicle shall be positioned to provide working clearance between the vehicle and the deck.

(ii) Only the loading or unloading machine operator and other personnel the employer demonstrates are essential shall be in the loading or unloading work area during this operation.

(iii) No transport vehicle operator shall remain in the cab during loading and unloading if the logs are carried or moved over the truck cab, unless the employer demonstrates that it is necessary for the operator to do so. Where the transport vehicle operator remains in the cab, the employer shall provide operator protection, such as but not limited to, reinforcement of the cab.

(iv) Each log shall be placed on a transport vehicle in an orderly manner and tightly secured.

(v) The load shall be positioned to prevent slippage or loss during handling and transport.

(vi) Each stake and chock which is used to trip loads shall be so constructed that the tripping mechanism is activated on the side opposite the release of the load.

(vii) Each tie down shall be left in place over the peak log to secure all logs until the unloading lines or other protection the employer demonstrates is equivalent has been put in place. A stake of sufficient strength to withstand the forces of shifting or moving logs, shall be considered equivalent protection provided that the logs are not loaded higher than the stake.

(viii) Each tie down shall be released only from the side on which the unloading machine operates, except as follows:

(A) When the tie down is released by a remote control device; and

(B) When the employee making the release is protected by racks, stanchions or other protection the employer demonstrates is capable of withstanding the force of the logs.

(7) *Transport.* The transport vehicle operator shall assure that each tie down is tight before transporting the load. While enroute, the operator shall check and tighten the tie downs whenever there is reason to believe that the tie downs have loosened or the load has shifted.

(8) *Storage.* Each deck shall be constructed and located so it is stable and provides each employee with enough room to safely move and work in the area.

(i) *Training.* (1) The employer shall provide training for each employee, including supervisors, at no cost to the employee.

(2) *Frequency.* Training shall be provided as follows:

(i) As soon as possible but not later than the effective date of this section for initial training for each current and new employee;

(ii) Prior to initial assignment for each new employee;

(iii) Whenever the employee is assigned new work tasks, tools, equipment, machines or vehicles; and

(iv) Whenever an employee demonstrates unsafe job performance.

(3) *Content.* At a minimum, training shall consist of the following elements:

(i) Safe performance of assigned work tasks;

(ii) Safe use, operation and maintenance of tools, machines and vehicles the employee uses or operates, including emphasis on understanding and following the manufacturer's operating and maintenance instructions, warnings and precautions;

(iii) Recognition of safety and health hazards associated with the employee's specific work tasks, including the use of measures and work practices to prevent or control those hazards;

(iv) Recognition, prevention and control of other safety and health hazards in the logging industry;

(v) Procedures, practices and requirements of the employer's work site; and

(vi) The requirements of this standard.

(4) Training of an employee due to unsafe job performance, or assignment of new work tasks, tools, equipment, machines, or vehicles; may be limited to those elements in paragraph (i)(3) of this section which are relevant to the circumstances giving rise to the need for training.

(5) *Portability of training.* (i) Each current employee who has received training in the particular elements specified in paragraph (i)(3) of this section shall not be required to be retrained in those elements.

(ii) Each new employee who has received training in the particular elements specified in paragraph (i)(3) of this section shall not be required to be retrained in those elements prior to initial assignment.

(iii) The employer shall train each current and new employee in those elements for which the employee has not received training.

(iv) The employer is responsible for ensuring that each current and new employee can properly and safely perform the work tasks and operate the tools, equipment, machines, and vehicles used in their job.

(6) Each new employee and each employee who is required to be trained as specified in paragraph (i)(2) of this section, shall work under the close supervision of a designated person until the

employee demonstrates to the employer the ability to safely perform their new duties independently.

(7) *First-aid training.* (i) The employer shall assure that each employee, including supervisors, receives or has received first-aid and CPR training meeting at least the requirements specified in appendix B.

(ii) The employer shall assure that each employee's first-aid and CPR training and/or certificate of training remain current.

(8) All training shall be conducted by a designated person.

(9) The employer shall assure that all training required by this section is presented in a manner that the employee is able to understand. The employer shall assure that all training materials used are appropriate in content and vocabulary to the educational level, literacy, and language skills of the employees being trained.

(10) *Certification of training.* (i) The employer shall verify compliance with paragraph (i) of this section by preparing a written certification record. The written certification record shall contain the name or other identity of the employee trained, the date(s) of the training, and the signature of the person who conducted the training or the signature of the employer. If the employer relies on training conducted prior to the employee's hiring or completed prior to the effective date of this section, the certification record shall indicate the date the employer determined the prior training was adequate.

(ii) The most recent training certification shall be maintained.

(11) *Safety and health meetings.* The employer shall hold safety and health meetings as necessary and at least each month for each employee. Safety and health meetings may be conducted individually, in crew meetings, in larger groups, or as part of other staff meetings.

(j) *Appendices.* Appendices A and B of this section are mandatory. The information contained in appendix C of this section is informational and is not intended to create any additional obligations not otherwise imposed or to detract from existing regulations.

NOTE: In the FEDERAL REGISTER of August 9, 1995, OSHA extended the stay of the fol-

lowing paragraphs of §1910.266 until September 8, 1995. The remaining requirements of §1910.266, which became effective on February 9, 1995, are unaffected by the extension of the partial stay:

1. (d)(1)(v)—insofar as it requires foot protection to be chain-saw resistant.

2. (d)(1)(vii)—insofar as it required face protection.

3. (d)(2)(iii).

4. (f)(2)(iv).

5. (f)(2)(xi).

6. (f)(3)(ii).

7. (f)(3)(vii).

8. (f)(3)(viii).

9. (f)(7)(ii)—insofar as it requires parking brakes to be able to stop a moving machine.

10. (g)(1) and (g)(2) insofar as they require inspection and maintenance of employee-owned vehicles.

11. (h)(2)(vii)—insofar as it precludes backcuts at the level of the horizontal cut of the undercut when the Humboldt cutting method is used.

APPENDIX A TO § 1910.266—FIRST-AID KITS (MANDATORY)

The following list sets forth the minimally acceptable number and type of first-aid supplies for first-aid kits required under paragraph (d)(2) of the logging standard. The contents of the first-aid kit listed should be adequate for small work sites, consisting of approximately two to three employees. When larger operations or multiple operations are being conducted at the same location, additional first-aid kits should be provided at the work site or additional quantities of supplies should be included in the first-aid kits:

1. Gauze pads (at least 4×4 inches).
2. Two large gauze pads (at least 8×10 inches).
3. Box adhesive bandages (band-aids).
4. One package gauze roller bandage at least 2 inches wide.
5. Two triangular bandages.
6. Wound cleaning agent such as sealed moistened towelettes.
7. Scissors.
8. At least one blanket.
9. Tweezers.
10. Adhesive tape.
11. Latex gloves.
12. Resuscitation equipment such as resuscitation bag, airway, or pocket mask.
13. Two elastic wraps.
14. Splint.
15. Directions for requesting emergency assistance.

APPENDIX B TO § 1910.266—FIRST-AID AND CPR TRAINING (MANDATORY)

The following is deemed to be the minimal acceptable first-aid and CPR training program for employees engaged in logging activities.

§ 1910.268

29 CFR Ch. XVII (7–1–07 Edition)

First-aid and CPR training shall be conducted using the conventional methods of training such as lecture, demonstration, practical exercise and examination (both written and practical). The length of training must be sufficient to assure that trainees understand the concepts of first aid and can demonstrate their ability to perform the various procedures contained in the outline below.

At a minimum, first-aid and CPR training shall consist of the following:

1. The definition of first aid.
2. Legal issues of applying first aid (Good Samaritan Laws).
3. Basic anatomy.
4. Patient assessment and first aid for the following:
 - a. Respiratory arrest.
 - b. Cardiac arrest.
 - c. Hemorrhage.
 - d. Lacerations/abrasions.
 - e. Amputations.
 - f. Musculoskeletal injuries.
 - g. Shock.
 - h. Eye injuries.
 - i. Burns.
 - j. Loss of consciousness.

- k. Extreme temperature exposure (hypothermia/hyperthermia)
 - l. Paralysis
 - m. Poisoning.
 - n. Loss of mental functioning (psychosis/hallucinations, etc.). Artificial ventilation.
 - o. Drug overdose.
5. CPR.
6. Application of dressings and slings.
7. Treatment of strains, sprains, and fractures.
8. Immobilization of injured persons.
9. Handling and transporting injured persons.
10. Treatment of bites, stings, or contact with poisonous plants or animals.

APPENDIX C TO §1910.266—COMPARABLE ISO STANDARDS (NON-MANDATORY)

The following International Labor Organization (ISO) standards are comparable to the corresponding Society of Automotive Engineers (Standards that are referenced in this standard.)

Utilization of the ISO standards in lieu of the corresponding SAE standards should result in a machine that meets the OSHA standard.

SAE standard	ISO standard	Subject
SAE J1040	ISO 3471-1	Performance Criteria for Rollover Protective Structures (ROPS) for Construction, Earthmoving, Forestry and Mining Machines.
SAE J397	ISO 3164	Deflection Limiting Volume—ROPS/FOPS Laboratory Evaluation.
SAE J231	ISO 3449	Minimum Performance Criteria for Falling Object Protective Structures (FOPS).
SAE J386	ISO 6683	Operator Restraint Systems for Off-Road Work Machines.
SAE J185	ISO 2897	Access Systems for Off-Road Machines.

[59 FR 51741, Oct. 12, 1994, as amended at 60 FR 7449, Feb. 8, 1995; 60 FR 40458, Aug. 9, 1996; 60 FR 47035-47037, Sept. 8, 1995; 61 FR 9241, 9242, Mar. 7, 1996; 69 FR 18803, Apr. 9, 2004; 71 FR 16673, Apr. 3, 2006]

§ 1910.268 Telecommunications.

(a) *Application.* (1) This section sets forth safety and health standards that apply to the work conditions, practices, means, methods, operations, installations and processes performed at telecommunications centers and at telecommunications field installations, which are located outdoors or in building spaces used for such field installations. *Center* work includes the installation, operation, maintenance, rearrangement, and removal of communications equipment and other associated equipment in telecommunications switching centers. *Field* work includes the installation, operation, maintenance, rearrangement, and removal of conductors and other equipment used for signal or communication service,

and of their supporting or containing structures, overhead or underground, on public or private rights of way, including buildings or other structures.

(2) These standards do not apply: (i) To construction work, as defined in §1910.12, nor (ii) to installations under the exclusive control of electric utilities used for the purpose of communications or metering, or for generation, control, transformation, transmission, and distribution of electric energy, which are located in buildings used exclusively by the electric utilities for such purposes, or located outdoors on property owned or leased by the electric utilities or on public highways, streets, roads, etc., or outdoors by established rights on private property.

FOREST MANAGEMENT GUIDELINES - ON-SITE MONITORING FORMS

Site ID:

Answer all visual quality questions from the travel route(s) or recreation facilities identified as visually sensitive. There may be more than one visually sensitive feature affected by forest management activities on the site. Complete a separate form for each visually sensitive feature. Indicate which feature each form refers to on the form, and identify the location used for that observation on the photo.

Visual Quality

1) Vista# _____

2) Visual Quality Sensitivity None Most Moderate Less

Forest Roads (complete questions 3, 4, and 5 for Most and Moderate vistas only)

3) Can the logging site be seen at the point where the access road joins the main road or trail used by the public? _____ Yes No N/A

a) If no, is this due to a curve in the access road? _____ Yes No

4) Was all merchantable timber utilized within the road clearing? _____ Yes No N/A

5) Is road clearing debris visible along travel routes or recreation areas? _____ Yes No N/A

Excavation (complete questions 6 and 7 for all vistas)

6) Was a borrow pit(s) created or reused on this site as part of the construction or maintenance activity? _____ Yes No Unknown

a) If yes, is the borrow pit(s) visible from the travel route or recreation areas? _____ Yes No

i) If no, how were gravel pits and crushing operations kept from public view?

Located out of visible corridor

Screened from view with vegetation or landscape berms

b) If yes, has the pit(s) been closed? _____ Yes No Unknown

i) If yes, which soil stabilization practices were used:

None Shaping

Natural vegetation

Seeding

Mulching

Slash

Other (list):

Timber Harvest (complete questions 8 and 9 for Most and Moderate vistas only)

7) What is the apparent harvest size? _____ <5 acres 5-10 acres >10 acres

8) Which of the following techniques were used to limit apparent harvest size:

Left patches of trees to break up harvest area

Left buffer strip of trees between travel route and harvest area

Created Narrow openings into the harvest area

Utilized Natural terrain

Shaped clearcuts to look more like Natural openings

Adjusted contiguous linear feet of harvest frontage along travel routes relative to travel speeds

Applied multiple-stage cuts or other management methods

Other (list):

None of the above

Copy this page as needed for additional Vistas

Continue on the next page.

Visual Quality– Continued

Site ID:

9) Vista# _____

Managing Slash (complete questions 11 and 12 for all vistas)

- 10) Are there slash piles on the site? _____ Yes No
a) If yes, are the slash piles visible from the travel route or recreation area? _____ Yes No
i) If yes, are the slash piles conspicuous? _____ Yes No
11) Are windrows present on the site? _____ Yes No
a) If yes, are windrows visible from the travel route or recreation area? _____ Yes No

Answer 13 and 14 for vistas with a rating of Most only

- 12) Is scattered slash visible within 50 feet of the travel route or recreation area? _____ Yes No
13) Is scattered slash visible beyond 50 feet of the travel route or recreation area? _____ Yes No
a) If yes, what is the average height of the slash? _____ feet

Answer 15 for vistas with a rating of Moderate only

- 14) Is scattered slash visible from of the travel route or recreation area? _____ Yes No
a) If yes, what is the average height of the slash? _____ feet

Snags (complete question 16 for all vistas)

- 15) Can snags be seen in the foreground of the timber harvest? _____ Yes No

**Copy this page as needed for additional Vistas
Continue on the next page.**

Visual Quality– Continued

Site ID:

16) Vista# _____

Landings (complete questions 18, 19, 20 and 21 for all vistas)

17) Landing # _____

18) Is landing visible from travel routes or recreation areas? _____ Yes No

19) Is landing located in the travel route right-of-way? _____ Yes No

20) Are grubbed stumps and trees visible from travel routes or recreation areas? _____ Yes No

Copy this page as needed for additional landings.

Cultural Resources

Site ID:

21) Are there cultural or historic resources on or adjoining the site? _____ Yes No Unknown

If no or unknown, go to next page.

a) If yes, were measures taken to protect these resources? _____ Yes No Unknown

i) If yes, which techniques were used to protect the cultural resources (check all that apply):

- Excluded the cultural resources from the operational area of the project
- Located roads away from the cultural resource
- Located skid trails away from the cultural resource
- Located landings away from the cultural resource
- Located fueling and maintenance areas away from the cultural resource
- Avoided felling trees onto historic buildings, structures or surfaces
- Revegetated archaeological sites to prevent erosion

22) Was protective cover placed over the cultural resource for temporary protection? _____ Yes No Not needed N/A Unknown

a) If yes, what materials were used?

- Fill over slash Fill over corduroy Fill over geotextile
- Slash or corduroy with no fill Wood or tire mats
- Unknown Other (list):

b) If yes, was the protective cover left in place when timber harvesting operations were completed? _____ Yes No N/A Unknown

23) Was timber harvested in the cultural resource area? _____ Yes No

a) If yes, did felling equipment operate in the cultural resource area? _____ Yes No Unknown

24) Did repeated rutting greater than 6" deep occur in the cultural resource area? _____ Yes No

a) If yes, what was the category of rutting:

- | <u>General Area of Cultural Resource</u> | <u>Roads, Skid Trails, or Landing</u> |
|--|--|
| <input type="checkbox"/> Less than 2% | <input type="checkbox"/> Less than 2% |
| <input type="checkbox"/> 2% to 5% | <input type="checkbox"/> 2% to 5% |
| <input type="checkbox"/> Greater than 5% to 10% | <input type="checkbox"/> Greater than 5% to 10% |
| <input type="checkbox"/> Greater than 10% to 25% | <input type="checkbox"/> Greater than 10% to 25% |
| <input type="checkbox"/> Greater than 25% | <input type="checkbox"/> Greater than 25% |

b) How is the rutting distributed?

- i) Cultural Resource area: _____ Dispersed Concentrated
- ii) Roads, Skid Trails, or Landing _____ Dispersed Concentrated

c) Was rutting caused primarily from timber harvesting activity?

- i) Cultural Resource areas _____ Yes No Unknown
- ii) Roads, Skid Trails, or Landing _____ Yes No Unknown

(1) If no, what was the cause? (list)

25) Is there erosion in the cultural resource area (excluding roads, skid trails, and landings)? _____ Yes No

26) Is there slash present in cultural resource areas? _____ Yes No

a) If yes, how was the slash treated?

- Left scattered over the area Piled
- To be broadcast burned Piled and burned

Continue on the next page.

Steep Slopes - Equipment Operation

Site ID:

27) Are there slopes greater than 50% and longer than 40 feet on the site? _____ Yes No

If No, go to next page.

a) If yes, was harvesting conducted on steep slopes (>50%)? _____ Yes No

i) If yes, is there evidence of equipment operation on steep slopes? _____ Yes No

ii) If yes, identify the harvest techniques used for harvesting on steep slopes (check all that apply):

Unknown Cable yarding system Cable skidder Forwarder

Boom mounted feller heads Directional felling

Other (list):

28) Are there roads constructed on steep slopes? _____ Yes No

29) Are there skid trails constructed on steep slopes? _____ Yes No

30) Is there evidence of erosion on steep slopes associated with that equipment operation? _____ Yes No

31) Did repeated rutting greater than 6" deep occur on steep slopes (excluding roads or skid trails)? _____ Yes No

a) If yes, what was the category of rutting:

Less than 2%

2% to 5%

Greater than 5% to 10%

Greater than 10% to 25%

Greater than 25%

b) How is the rutting distributed? _____ Dispersed Concentrated

c) Was rutting caused primarily from timber harvesting activity? _____ Yes No Unknown

i) If no, what was the cause? (list)

Continue on the next page.

WATER QUALITY

Site ID:

Fill out a separate copy of this page for each wetland and/or water body.

32) Wetland or water body # _____

33) On site Adjacent to site Off site

34) Wetland or water body type:

a) Requires just a filter strip:

- i) Non-open water wetland
 - (1) <1/4 acre 1/4 to 1 acre 1 to 10 acres >10 acres
- ii) Seasonal pond
 - (1) <1/4 acre 1/4 to 1 acre >1 acre
- iii) Seep or Spring
- iv) Sinkholes
- v) Intermittent stream <3ft. (**Non-trout water**)
- vi) Beaver pond

b) Requires both a filter strip and a RMZ:

- i) Stream: Intermittent Perennial
 - (1) Non-trout water Designated trout water or tributary
 - (2) <3ft. 3-10ft. >10ft.
- ii) Lake: Non-trout water Designated trout water
 - (1) <10 acres >10 acres
- iii) Open water wetland: <10 acres >10 acres

35) Is there slash or logging debris present in the wetland or water body that originated from outside the wetland or water body? _____ Yes No

36) Do any roads or skid trails enter or cross the wetland or water body? _____ Yes No Not evident

37) Did repeated rutting greater than 6" deep occur in the wetland or waterbody (**excluding roads, skid trails, or landings**)? _____ Yes No

a) If yes, what was the category of rutting:

- Less than 2%
- 2% to 5%
- Greater than 5% to 10%
- Greater than 10% to 25%
- Greater than 25%

b) Was rutting caused primarily from timber harvesting activity? _____ Yes No Unknown

i) If no, what was the cause? (list)

c) How is the rutting distributed? _____ Dispersed Concentrated

38) Was the normal water flow in the wetland or water body disrupted? _____ Yes No N/A Unknown

39) Was the wetland drained? _____ Yes No N/A Unknown

Copy this page as needed for additional wetlands and water bodies.

Continue on the next page.

WATER QUALITY

Site ID: _____

Filter Strip Disturbance: Fill out a separate copy of this page for each filter strip, even when part of an RMZ. Some water bodies, such as a stream or a wetland that extends completely across a harvest site, will need a separate filter strip recorded for each side of the water body. In other cases the same water body may contact a site at several separate locations. Complete this page for each separate location.

- 40) Water Body # _____
- 41) Filter Strip # _____
- 42) What is the average slope of the filter strip? _____ %
- 43) What is the recommended filter strip width? _____ feet
- 44) Do any roads or skid trails enter the filter strip that do not enter the wetland or water body? _____ Yes No Not evident
- a) If yes, were water diversion and erosion control structures installed to divert water off this road or skid trail before it entered the filter strip? _____ Yes No Not Needed
- b) Were water diversion and erosion structures installed to divert water off this road or skid trail within the filter strip? _____ Yes No Not Needed
- 45) Did repeated rutting greater than 6" deep occur in the filter strip? _____ Yes No
- a) Location (check all that apply):
General Filter Strip Roads Skid Trails Landings
- i) Road # _____
- ii) Landing # _____
- b) If yes, what was the category of rutting:
- | | |
|--|---|
| <u>General Filter Strip</u> | <u>Roads, Trails, or Landings</u>
(excluding approaches and segments) |
| <input type="checkbox"/> Less than 2% | <input type="checkbox"/> Less than 2% |
| <input type="checkbox"/> 2% to 5% | <input type="checkbox"/> 2% to 5% |
| <input type="checkbox"/> Greater than 5% to 10% | <input type="checkbox"/> Greater than 5% to 10% |
| <input type="checkbox"/> Greater than 10% to 25% | <input type="checkbox"/> Greater than 10% to 25% |
| <input type="checkbox"/> Greater than 25% | <input type="checkbox"/> Greater than 25% |
- c) How is the rutting distributed?
- i) General Filter Strip: _____ Dispersed Concentrated
- ii) Roads, Skid Trails, or Landing _____ Dispersed Concentrated
- d) Was rutting caused primarily from timber harvesting activity?
- i) General Filter Strip _____ Yes No Unknown
- ii) Roads, Skid Trails, or Landing _____ Yes No Unknown
- iii) If no, what was the cause? (list)
- 46) **Other than on roads, trails or landings**, is mineral soil exposed in the filter strip? _____ Yes No
- a) If yes, what percentage of the surface area is exposed? _____ Less than 5% 5% to 15% 15% to 30% Greater than 30%
- b) How is this disturbance distributed? _____ Dispersed Concentrated
- c) Were stabilization measures used to prevent erosion resulting from disturbance? _____ Yes No Not Needed
- i) If yes, which stabilization measures were used?
- | | | |
|--|---|---|
| <input type="checkbox"/> Earth berm water bars | <input type="checkbox"/> Slash water bars | <input type="checkbox"/> Log water bars |
| <input type="checkbox"/> Scattered slash | <input type="checkbox"/> Mulch | <input type="checkbox"/> Hay bales |
| <input type="checkbox"/> Silt fencing | <input type="checkbox"/> Erosion blankets | <input type="checkbox"/> Seeding |
| <input type="checkbox"/> Other (list): _____ | | |
- 47) **Other than on roads, trails or landings**, is erosion occurring in this filter strip? _____ Yes No
- a) If yes, is sediment reaching the waterbody or wetland? _____ Yes No
- Copy this page as needed for additional filter strips.**

WATER QUALITY

Site ID:

RMZs - Excluding Landings, Skid Trails and Roads

Fill out a separate copy of this page for each RMZ on-site or adjacent to the harvest area. Do not complete this page for off-site RMZs. Some water bodies, such as a stream or an open water wetland that extends completely across a harvest site will need a separate RMZ recorded for each side of the water body. In other cases the same water body may contact a site at several separate locations. Complete this page for each separate location.

- 48) Water Body # _____
- 49) Filter Strip # _____
- 50) RMZ # _____
- 51) What is the recommended RMZ width? _____ feet
- 52) Does the top of the adjacent slope occur within the recommended RMZ? Yes No
 - a) If yes, is the forest maintained to the top of the adjacent slope (>25BA)? Yes No
- 53) What is the management strategy for the RMZ:
 - Even aged Uneven aged No harvest (reserve) Unknown
- 54) Indicate the typical composition of the recommended RMZ:
 - (a) _____ feet non-forested (sedge, brush or scattered trees with no harvesting, but less than 25 BA)
 - (b) _____ feet forested (no harvesting) BA _____ (sq.ft./ac.)
 - (c) _____ feet partial cut (any cutting down to 25 BA) BA _____ (sq.ft./ac.)
 - (d) _____ feet clearcut (below 25 BA) BA _____ (sq.ft./ac.)
- 55) What is the distribution pattern of the residual trees in the RMZ?
 - Relatively evenly distributed Gaps or clumps No trees
 - Other (list):
- 56) Number of leave logs (CWD) greater than 6" diameter (at the small end) within the RMZ (**Harvested area of RMZ only**): _____ <4 per acre ≥4 per acre N/A

RMZ Residual Trees

- 57) Check the 5 most common species of residual trees located in the RMZ:

" Trembling aspen	" Balm of Gilead	" Bigtooth aspen	" Paper birch
" Yellow birch	" Sugar maple	" Red maple	" Silver maple
" Box elder	" Northern red oak	" Bur oak	" North pin oak
" White oak	" Basswood	" Black ash	" Green ash
" Butternut	" Walnut	" Cherry	" Cottonwood
" Jack pine	" Red pine	" White pine	" Balsam fir
" Black spruce	" White spruce	" Tamarack	" White cedar
" Other (list):			

RMZ Super Canopy Trees (Trees 25% taller than the surrounding mature tree canopy)

- 58) Are there Super Canopy trees in the RMZ? _____ Yes No
 - a) If yes, identify the number of super canopy **trees by species** in the RMZ:

# _____ Species _____	# _____ Species _____
# _____ Species _____	# _____ Species _____

Copy this page as needed for additional RMZs.

WATER QUALITY Continued

Site ID:

Skid Trail and Forest Road Crossings

Crossing Approaches

Fill out information for every approach of a skid trail or road entering or crossing a wetland or water body. Measure each approach from the edge of the wetland or water body to the end of the filter strip or RMZ, or to the point beyond that where the road or trail no longer slopes toward the wetland or waterbody, which ever is furthest.

59) Water Body# _____

60) Crossing # _____

61) Approach # _____

i) Forest road Skid trail

(1) Road # _____

ii) Percent grade _____%

iii) Length of approach _____ feet

62) Is there rutting greater than 6" deep on the approach. _____ Yes No

a) If yes, what was the category of rutting:

- Less than 2%
- 2% to 5%
- Greater than 5% to 10%
- Greater than 10% to 25%
- Greater than 25%

b) Was rutting caused primarily from timber harvesting activity? _____ Yes No Unknown

c) If no, what was the cause? (list)

d) Did the rutting result in the widening of the approach? _____ Yes No

63) Is the approach more than 50% vegetated? _____ Yes No

64) Is erosion evident? _____ Yes No

a) If yes, is sediment reaching the water body? _____ Yes No

65) Were water diversion structures installed to divert water off this approach

before the road or skid trail enters the wetland or water body? _____ Yes No Not Needed

a) If yes, indicate the types of water diversion structures and erosion control practices used (check all that apply):

- Earth berm water bars **Go to page 20**
- Slash water bars **Go to page 21**
- Log water bars **Go to page 21**
- Scattered slash **Go to page 22**
- Broad-based dips **Go to page 23**
- Road profile **Go to page 25**
- Cross drain culverts **Go to page 17**
- Open top culverts **Go to page 24**
- Lead of ditch **Go to page 26**
- Hay bales **Go to page 26**
- Mulch Silt fencing Erosion blankets Seeding
- Other, such as natural breaks (list): **Go to page 26**

Copy this page as needed for additional wetland or water body approaches.

If the skid trail or road crosses a:

Stream, go to page 10. Lake or open water wetland, go to page 11.

Mineral soil or shallow peat wetland, go to page 12.

Deep peat wetland, go to page 13.

WATER QUALITY

Skid Trail and Forest Road Crossings Continued

Site ID:

Stream Crossings

Fill out a separate copy of page for each stream crossing.

- 66) Water body # _____
- 67) Crossing # _____
- a) Forest road Skid trail
- i) Road # _____
- b) Where is the crossing located? _____ On site Off site
- 68) What is the bank-full width of the stream (**in a straight section of the stream**)? _____ feet
- 69) What is the angle of the crossing to stream direction? _____ degrees
- 70) Did the approaches to stream banks have low-percent slopes and short slope lengths? _____ Yes No
- 71) Was there a location with shorter lengths and lower percent slopes? _____ Yes No
- 72) Was stream cross sectional area changed? _____ Yes No
- a) If yes, did construction disrupt a minimum amount of the natural stream channel? _____ Yes No Unknown
- 73) Does crossing impede fish migration? _____ Yes No Unknown
- 74) Type of crossing structure (check all that apply):
- Unknown • Bridge Culvert Ice bridge Low water ford
- Other (list)
- 75) Type of crossing: _____ Permanent Temporary
- a) If temporary,
- i) Has the crossing structure been removed? _____ Yes No N/A
- ii) Was fill removed? _____ Yes No N/A Unknown
- iii) Was structure anchored at one end? _____ Yes No N/A Unknown
- 76) Was the stream crossing stabilized? _____ Yes No N/A
- 77) Was the stream crossing reshaped to approximate original contour? _____ Yes No N/A
- 78) Types of materials placed in the stream channel for this structure:
- None Compacted clean fill Compacted sand and gravel
- Riprap Concrete Dry treated timber
- 79) **Bridge only:** _____ Length of open span: _____ feet
- 80) **Low-water ford only:** Was the ford constructed? _____ Yes No Unknown
- a) If yes, what materials were used?
- Native soil • Sand and gravel Coarse rock
- Riprap Concrete Gabions
- Other (list):
- 81) **Culverts (Crossings only):** Is the culvert still in place? _____ Yes No
- a) If yes,
- i) What is the culvert diameter? _____ inches
- ii) Depth of fill over culvert: _____ inches
- iii) Culvert shape: _____ Round Oval Arch
- iv) Percent of culvert diameter buried below the streambed (round culverts only): _____ %
- v) Was the culvert installed with gradient of stream? _____ Yes No Unknown

Copy this page as needed for additional stream crossings.

WATER QUALITY

Skid Trail and Forest Road Crossings Continued

Site ID:

Lake or Open Water Wetland Crossing

Fill out a separate copy of page for each lake or open water wetland crossing.

82) Water body # _____

83) Crossing # _____

a) Forest road Skid trail

i) Road # _____

b) Where is the crossing located? _____ On site Off site

c) Water body type: _____ Lake Open water wetland

84) Did the approaches to crossing have low-percent slopes and short slope lengths? _____ Yes No

85) Was there a location with shorter lengths and lower percent slopes? _____ Yes No

86) Was the cross sectional area of the waterbody changed? _____ Yes No

87) Does crossing impede fish migration? _____ Yes No Unknown

88) Type of crossing structure (check all that apply):

Unknown • Bridge Culvert Ice bridge Low water ford

Other (list)

89) Type of crossing: _____ Permanent Temporary

a) If temporary,

i) Has the crossing structure been removed? _____ Yes No N/A

ii) Was fill removed? _____ Yes No N/A Unknown

iii) Was structure anchored at one end? _____ Yes No N/A Unknown

90) **Bridge only:** _____ Length of open span: _____ feet

91) **Low-water ford only:** Was the ford constructed? _____ Yes No Unknown

a) If yes, what materials were used?

Native soil • Sand and gravel Coarse rock

Riprap Concrete Gabions

Other (list):

92) **Culverts (Crossings only):** Is the culvert still in place? _____ Yes No

a) If yes,

i) What is the culvert diameter? _____ inches

ii) Depth of fill over culvert: _____ inches

iii) Culvert shape: _____ Round Oval Arch Other (list):

iv) Percent of culvert diameter buried below the streambed (round culverts only): _____ %

Copy this page as needed for additional lake or open water wetland crossings.

WATER QUALITY

Skid Trail and Forest Road Crossings Continued

Site ID:

Mineral Soil or Shallow Peat Wetland, Seep or Spring Crossing

Fill out a separate copy of page for each mineral soil or shallow peat wetland crossed.

93) Water body # _____

94) Crossing # _____

a) Forest road Skid trail

i) Road # _____

b) Type of wetland: Mineral soil wetland Shallow peat wetland Seep or Spring

c) Where is the crossing located? _____ On site Off site

d) Length of crossing: _____ feet

95) Type of crossing structure (check all that apply):

- Unknown
- Culvert
- Corduroy or slash mat
- Wood mats
- Native soil fill
- Sand and gravel
- Frozen ground
- Ground not frozen
- Other (list): _____

96) Type of crossing: _____ Permanent Temporary

a) If temporary,

i) Has the crossing structure been removed? _____ Yes No N/A

ii) Was fill removed? _____ Yes No N/A Unknown

97) Was the crossing rehabilitated? _____ Yes No Unknown

a) If yes, what techniques were used to rehabilitate roads (check all that apply):

- Grading
- Seeding
- Fertilization
- Mulch
- Silt fencing
- Other (list): _____

98) Is the water level higher on one side of the crossing than the other? _____ Yes No N/A Unknown

99) Is there rutting greater than 6" deep in the crossing? _____ Yes No

a) If yes, what was the category of rutting:

- Less than 2%
- 2% to 5%
- Greater than 5% to 10%
- Greater than 10% to 25%
- Greater than 25%

b) Was rutting caused primarily from timber harvesting activity? _____ Yes No Unknown

i) If no, what was the cause? (list) _____

c) Did the rutting result in a widening of the road or skid trails? _____ Yes No

d) Is there rutting deeper than 6 inches that bisects the wetland, or is continuous for a distance of 300 feet or more? _____ Yes No

100) **Culverts (Crossings only):** Is the culvert(s) still in place? _____ Yes No

a) If yes,

- i) Number of culverts: _____
- ii) Average distance between culverts: _____ feet
- iii) What is the (average) culvert diameter? _____ inches
- iv) What is the (average) depth of fill over culvert: _____ inches
- v) Percent of culvert diameter buried below the surface of the wetland: _____ %

101) **Ditches (Crossings only):** Are ditches present? _____ Yes No

a) On the approaches to the crossing? _____ Yes No

b) Along side the crossing in the wetland? _____ Yes No

i) If yes, were they constructed immediately adjacent to the toe of the fill slope? _____ Yes No

Copy this page as needed for additional mineral soil or shallow peat wetlands.

WATER QUALITY

Skid Trail and Forest Road Crossings Continued

Site ID:

Deep Peat Wetland Crossing

Fill out a separate copy of page for each deep peat wetland crossed.

- 102) Water body # _____
- 103) Crossing # _____
- a) Forest road Skid trail
- i) Road # _____
- b) Where is the crossing located? _____ On site Off site
- c) Length of crossing: _____ feet
- 104) Type of crossing structure (check all that apply):
- Unknown • Culvert Corduroy or slash mat Wood mats
- Native soil fill Sand and gravel Frozen ground Ground not frozen
- Other (list): _____
- 105) Type of crossing: _____ Permanent Temporary
- a) If temporary,
- i) Has the crossing structure been removed? _____ Yes No N/A
- ii) Was fill removed? _____ Yes No N/A Unknown
- 106) Was the crossing rehabilitated? _____ Yes No Unknown
- a) If yes, what techniques were used to rehabilitate roads (check all that apply):
- (a) Grading Seeding Fertilization Natural regeneration
- (b) Mulch • Silt fencing Other (list): _____
- 107) Is the water level higher on one side of the crossing than the other? _____ Yes No N/A Unknown
- 108) Is there rutting greater than 6" deep in the crossing? _____ Yes No
- a) If yes, what was the category of rutting:
- Less than 2%
- 2% to 5%
- Greater than 5% to 10%
- Greater than 10% to 25%
- Greater than 25%
- b) Was rutting caused primarily from timber harvesting activity? _____ Yes No Unknown
- i) If no, what was the cause? (list) _____
- c) Did the rutting result in a widening of the road or skid trails? _____ Yes No
- d) Is there rutting deeper than 6 inches that bisects the wetland, or is continuous for a distance of 300 feet or more? _____ Yes No
- 109) **Culverts (Crossings only):** Is the culvert(s) still in place? _____ Yes No N/A
- a) If yes,
- i) Number of culverts: _____
- ii) Average distance between culverts: _____ feet
- iii) What is the (average) culvert diameter? _____ inches
- iv) What is the (average) depth of fill over culvert: _____ inches
- v) Percent of culvert diameter buried below the surface of the wetland: _____ %
- 110) **Ditches (Crossings only):** Are ditches present? _____ Yes No
- a) If yes,
- i) Were ditches constructed parallel to the travel surface 1.5 times or more the depth of the peat away from the toe of the fill slope? _____ Yes No
- ii) Were ditches constructed leading from the parallel ditches to each cross-drainage culvert? _____ Yes No
- iii) Were unditched breaks left in the parallel ditches midway between the lead in ditches? _____ Yes No

Copy this page as needed for additional mineral soil or shallow peat wetlands.

FOREST ROADS & SKID TRAILS

Site ID: _____

Answer the questions on this page for skid trails in general

Post Operations for Skid Trails

- 111) Were skid trails rehabilitated? _____ Yes No Unknown
 - a) If yes, what techniques were used to rehabilitate skid trails (check all that apply):
 - Grading Seeding Fertilization Mulch Silt fencing
 - Other (list): _____
- 112) Is there rutting greater than 6" deep in the skid trail (excluding segments, approaches, and crossings)? _____ Yes No
 - a) If yes, what was the category of rutting:
 - Less than 2%
 - 2% to 5%
 - Greater than 5% to 10%
 - Greater than 10% to 25%
 - Greater than 25%
 - b) Was rutting caused primarily from timber harvesting activity? ___ Yes No Unknown
 - i) If no, what was the cause? (list) _____
 - c) Did the rutting result in a widening of the skid trails? _____ Yes No
- 113) Are the skid trail more than 50% vegetated? _____ Yes No
- 114) Is erosion evident? _____ Yes No
 - i) If yes, is sediment reaching a wetland or water body? _____ Yes No
 - (1) If yes, which wetland or water body is affected?
 - Water Body # _____ Water Body # _____ Water Body # _____
- 115) Have fills and structures that would require continued maintenance been removed? _____ Yes No N/A
- 116) Was temporary fill removed? _____ Yes No N/A
- 117) Were temporary structures removed? _____ Yes No N/A
- 118) Have erosion and water diversion devices been installed and/or maintained on skid trails? _____ Yes No Not Needed

Upland Skid Trails – Cut & Fill Construction

- 119) Was cut and fill construction used (new or old) on the skid trail? _____ Yes No N/A
 - a) If yes, what is the total length and average height for all cut and fill?
 - Length _____ feet X Height _____ feet
 - b) Indicate if cut and fill was pre-existing or new construction.
 - New Pre-existing
 - c) Which of the following best describes the average inslope and backslope ratios?
 - < 1:1 1:1 1.5:1 2:1 > 2:1

Upland Skid Trails - Clearing, Excavation, & Maintenance for new or reconstructed only

- 120) Was material cleared or excavated for skid trail construction, or maintenance? _____ Yes No N/A
 - a) If yes, is the location of the clearing debris and excess material evident? _____ Yes No
 - i) If yes, is clearing debris and excess material deposited outside of filter strips? _____ Yes No
 - (1) If no, which wetland(s) or water body(s) is affected?
 - a. Water Body # _____ Water Body # _____ Water Body # _____

Continue on the next page.

FOREST ROADS & SKID TRAILS

Site ID:

Forest Roads – Pre-existing or New Construction

- 121) Road #_____
 - a) On site Off site
- 122) List the length of new and/or pre-existing On-site road.
 - a) Distance (new)_____feet
 - b) Distance (old) _____feet
 - c) If On-site, record average width of road: _____feet
 - i) Calculate acreage occupied by road: _____acres

Upland Forest Roads – Cut & Fill Construction

- 123) Was cut and fill construction used (new or old) on the road?_____ Yes No N/A
 - a) If yes, what is the total length and average height for all cut and fill?
 - Length_____feet X Height_____feet
 - b) Indicate if cut and fill was pre-existing or new construction.
 - New Pre-existing
 - c) Which of the following best describes the average inslope and backslope ratios?
 - < 1:1 1:1 1.5:1 2:1 > 2:1

Upland Forest Roads - Clearing, Excavation, & Maintenance for new or reconstructed only

- 124) Was material cleared or excavated for construction, or maintenance of the forest road?_____ Yes No N/A
 - a) If yes, is the location of the clearing debris and excess material evident?_____ Yes No
 - i) If yes, is clearing debris and excess material deposited outside of filter strips?_____ Yes No
 - (1) If no, which wetland(s) or water body(s) is affected?
 - Water Body #_____ Water Body #_____ Water Body #_____

**Copy this page as needed for additional roads.
Continue to next page.**

FOREST ROADS & SKID TRAILS - Continued

Site ID:

Maintaining Roads

- 125) Road # _____
- 126) Road status: Unknown• Active
 Temporarily closed Permanently closed
- 127) Is the road being regularly maintained? _____ Yes No Unknown
 a) Are there berms along edge of the road? _____ Yes No
 i) If yes, are there breaks in the berms to allow water to be diverted off of the road? _____ Yes No
- 128) Is access to the site controlled? _____ Yes No Unknown
 a) If yes, what type of barriers were used to control access?
 Gate Berm Rock Other (list):
 b) If yes, was access posted with "road closed" signs at the beginning of the road? _____ Yes No
 c) If yes, is unauthorized traffic utilizing the road? _____ Yes No Unknown
- 129) Was the road rehabilitated? _____ Yes No Unknown
 a) If yes, what techniques were used to rehabilitate roads (check all that apply):
 Grading Seeding Fertilization Mulch Silt fencing
 Other (list):
- 130) Is there rutting greater than 6" deep in the road (excluding segments, approaches, and crossings)? _____ Yes No
 a) If yes, what was the category of rutting:
 Less than 2%
 2% to 5%
 Greater than 5% to 10%
 Greater than 10% to 25%
 Greater than 25%
 b) Was rutting caused primarily from timber harvesting activity? _____ Yes No Unknown
 c) If no, what was the cause? (list)
 d) Did the rutting result in a widening of the road? _____ Yes No
- 131) Is the road more than 50% vegetated? _____ Yes No
- 132) Is erosion evident? _____ Yes No
 a) If yes, is sediment reaching a wetland or water body? _____ Yes No
 i) If yes, which wetland or water body is affected?
 Water Body # _____ Water Body # _____ Water Body # _____
- 133) Were permanent fills and structures removed that would require continued maintenance? _____ Yes No N/A
- 134) Were temporary fills removed? _____ Yes No N/A
- 135) Were temporary structures removed? _____ Yes No N/A
- 136) Have erosion and water diversion devices been installed and/or maintained on roads? _____ Yes No N/A Not Needed

Copy this page as needed for additional roads.

FOREST ROADS & SKID TRAILS - Continued

Site ID:

Ditches & Cross-drainage in Upland Areas

- 137) Are road or trailside ditches present? _____ Yes No N/A
- 138) Are leadoff ditches present? _____ Yes No N/A
- 139) Were cross drain structures present? _____ Yes No N/A

If yes, complete the following for each cross drain structure observed:

- 140) Cross drain # _____
 - a) Forest road Skid trail
 - i) Road # _____
 - b) Where is the cross drain located? _____ On site Off site
 - c) Type of cross drain structure:
 - Open-top culvert Pipe culvert Broad based dip Outsloping
 - Other (list): _____
- 141) Has the cross drain been removed? _____ Yes No
- 142) Length of the cross drain structure from the upper end to the outlet? _____ Unknown _____feet
- 143) Drop across the length of the cross drain structure from the upper end to the outlet? _____ Unknown _____inches in _____feet
- 144) Angle of cross drain to the direction of water flow? _____ degrees
- 145) Did erosion occur at outlet of cross drain? _____ Yes No Unknown
 - a) Did sedimentation occur at outlet of cross drain? _____ Yes No Unknown
- 146) Did erosion occur at inlet of cross drain? _____ Yes No Unknown
 - a) Did sedimentation occur at inlet of cross drain? _____ Yes No Unknown

Culverts only: If the culvert has not been removed, answer the following;

- 147) Culvert diameter: _____inches
- 148) Depth of fill over culvert: _____inches
- 149) Does culvert length reach the toe of the fill without changing the sideslope of the fill? _____ Yes No Unknown
- 150) Was a ditch block installed at the inlet of cross drain? _____ Yes No Unknown
- 151) Was the cross drain outlet unobstructed? _____ Yes No Unknown
- 152) Was an outlet or leadoff ditch installed for this cross drain? _____ Yes No
- 153) Was cross drain armored? _____ Yes No
 - a) Where? _____ Inlet Outlet Both inlet and outlet

**Copy this page as needed for additional cross-drain structures.
Continue on the next page.**

FOREST ROADS & SKID TRAILS - Continued

Site ID:

Upland Forest Roads & Skid Trails

154) Were long straight stretches of roads and skid trails restricted to level terrain? _____ Yes No N/A

155) Were there segments of roads or skid trails, **excluding approaches to crossings**, with grades greater than 2% and longer than the minimum distance for water diversions for the slope category? _____ Yes No Not evident

If yes, answer the following for each segment:

156) Segment # _____

a) Skid trail Forest road

i) Road # _____

b) Where is the segment located? _____ On site Off site

c) Percent grade _____%

d) Length of segment _____ feet

157) Were water diversion structures installed to divert water off this segment? _____ Yes No Not Needed

a) If yes, indicate the types of water diversion structures and erosion control practices used (check all that apply):

Earth berm water bars **Go to page 20** Slash water bars **Go to page 21**

Log water bars **Go to page 21** Scattered slash **Go to page 22**

Broad-based dips **Go to page 23** Road profile **Go to page 25**

Cross drain culverts **Go to page 17** Open top culverts **Go to page 24**

Lead of ditch **Go to page 26** Hay bales **Go to page 26**

Mulch Silt fencing Erosion blankets Seeding

Other, such as natural breaks (list): **Go to page 26**

158) Is there rutting greater than 6" deep? _____ Yes No

a) If yes, what was the category of rutting:

Less than 2%

2% to 5%

Greater than 5% to 10%

Greater than 10% to 25%

Greater than 25%

b) Was rutting caused primarily from timber harvesting activity? _____ Yes No Unknown

i) If no, what was the cause? (list)

c) Did the rutting result in a widening of the road or trail? _____ Yes No

159) Is the segment more than 50% vegetated? _____ Yes No

160) Is erosion evident? _____ Yes No

a) If yes, is sediment reaching a wetland or water body? _____ Yes No Unknown

i) If yes, which wetland or water body is affected?

Water Body # _____ Water Body # _____ Water Body # _____

Copy this page as needed for additional segments.

Continue on the next page.

Borrow Pits

Site ID:

161) Is a borrow pit(s) present that was used in association with this project? _____ Yes No
If no, continue to next page.

162) Is the borrow pit located outside filter strips and RMZs? _____ Yes No

a) If no, which wetland or water body is affected?
Water Body #____ Water Body #____ Water Body #____

163) What is the current status of the borrow pit?
Unknown Active Temporarily closed
Permanently closed at the end of the project monitored
Inactive since prior to start of the project being monitored

164) Has material been cleared to open or expand this borrow pit? _____ Yes No

a) If yes, is the location of the clearing debris and excess material evident? _____ Yes No

i) If yes, is clearing debris and excess material deposited outside filter strips? Yes No

(1) If no, which wetland or water body is affected?
Water Body #____ Water Body #____ Water Body #____

165) Which of the following best describes the average inslope and backslope ratios of the borrow pit or excavated area?
 < 1:1 1:1 1.5:1 2:1 > 2:1

166) Were soil stabilization practices used? _____ Yes No Not Needed

a) If yes, which stabilization measures were used (check all that apply):
Earth berm water bars Slash water bars Broad based dips
Mulch Hay bales Shaping slopes
Silt-fencing Erosion blankets Seeding
Other (list):

167) Is erosion evident? _____ Yes No

a) If yes, has sedimentation occurred to a water body? _____ Yes No Unknown

i) If yes, which wetland or water body is affected?
Water Body #____ Water Body #____ Water Body #____

Continue on the next page.

FOREST ROADS & SKID TRAILS – Continued
Water Diversion Structures

Site ID:

Earth Berm Water Bars

168) Segment # ____ or Waterbody # ____, Crossing # ____, Approach # ____

169) Number of water bars: _____

Answer the following questions on this page for cumulative conditions observed at this location.

170) Water bars constructed so that the top of the berm is at least 12 inches higher than the bottom of the trench? _____ Yes No

171) Average drop from upper end of water bar to the outlet: _____ inches over _____ feet

172) Are water bars installed at approximately a 30 to 45 degree angle from perpendicular to the road or skid trail? _____ Yes No

173) Are water bars installed so that water cannot bypass uphill end? _____ Yes No

174) Are water bars installed so that the outlet is open and empties into a ditch or vegetated area? _____ Yes No

175) Are water bars maintained and in good working order? _____ Yes No

Copy this page as needed for additional segments or approaches with earth berm water bars.

FOREST ROADS & SKID TRAILS – Continued
Water Diversion Structures

Site ID:

Log & Slash Water Bars

176) Segment # ____ or Waterbody # ____, Crossing # ____, Approach # ____

177) Number of log or slash water bars: ____

Answer the following questions on this page for cumulative conditions observed at this location.

- 178) Water bars installed at approximately a 30 to 45 degree angle from perpendicular to the road or skid trail? _____ Yes No
- 179) Water bars installed so that water cannot bypass uphill end? _____ Yes No
- 180) Water bars installed so that the outlet is open and empties into a ditch or vegetated area? _____ Yes No
- 181) Is there evidence (e.g., erosion) that water is moving under the water bar? _____ Yes No
- 182) Water bar in contact with ground across entire trailway or roadway? _____ Yes No
- i) If yes, was slash or other material used to plug gaps under the water bar? _____ Yes No
- 183) Water bars have been maintained and are in good working order? _____ Yes No

Copy this page as needed for additional segments or approaches with log or slash water bars.

FOREST ROADS & SKID TRAILS – Continued
Water Diversion Structures

Site ID:

Scattered Slash Imbedded In Or In Contact With The Traffic Surface

- 184) Segment # ____ or Waterbody # ____, Crossing # ____, Approach # ____
- 185) Slash is scattered over the entire road or trail segment, covering more than 25% of the surface area to divert and slow surface water flow? _____ Yes No
- 186) Slash is imbedded in or in contact with the traffic surface to assist diversion of water? _____ Yes No
- 187) Is there evidence of erosion despite the placement of the slash? _____ Yes No

Copy this page as needed for additional segments or approaches with scattered slash.

FOREST ROADS & SKID TRAILS – Continued
Water Diversion Structures

Site ID:

Broad Based Dip

188) Segment # ____ or Waterbody # ____, Crossing # ____, Approach # ____

189) Number of dips: ____

Answer the following questions on this page for cumulative conditions observed at this location.

190) Dip constructed so that the top of the berm is at least 12 inches higher than the bottom of the trench? _____ Yes No

191) Dip installed at approximately a 30 to 45 degree angle from perpendicular to the road or skid trail? _____ Yes No

192) Drop from the upper end to the outlet of the dip: _____ inches over _____ feet

193) Dips installed so that water cannot bypass uphill end? _____ Yes No

194) Dips installed so that the outlet is open and empties into a ditch or vegetated area? _____ Yes No

195) Dips have been maintained and are in good working order? _____ Yes No

Copy this page as needed for additional segments or approaches with broad based dips.

FOREST ROADS & SKID TRAILS – Continued
Water Diversion Structures

Site ID:

Open Top Culverts

196) Segment # ____ or Waterbody # ____, Crossing # ____, Approach # ____

197) Number of open top culverts: ____

Answer the following questions on this page for cumulative conditions observed at this location.

198) Open top culverts installed at approximately a 30 to 45 degree angle from perpendicular to the road or skid trail? _____ Yes No

199) Drop from the upper end to the outlet of the open top culverts: _____ inches over _____ feet

200) Open top culverts installed so that water cannot bypass uphill end? _____ Yes No

201) Open top culverts installed so that the outlet is open and empties into a ditch or vegetated area? _____ Yes No

202) Open top culverts have been maintained and are in good working order? _____ Yes No

Copy this page as needed for additional segments or approaches with open top culverts.

FOREST ROADS & SKID TRAILS – Continued
Water Diversion Structures

Site ID:

Forest Road or Skid Trail Profile

203) Segment # ____ or Waterbody # ____, Crossing # ____, Approach # ____

204) Which of the following trail or road profile shapes were used?

Crowned fill section Inslope section Outslope section

205) Drop from high side or center of the trail or road to the low side: ____in. over _____feet

206) Were roadside or trailside ditches used? _____ Yes No

207) Skid trail or road profile has been maintained and is in good working order? _____ Yes No

Copy this page as needed for additional segments or approaches where profile shaping was used.

FOREST ROADS & SKID TRAILS – Continued
Water Diversion Structures

Site ID:

Other Water Diversion Structures

208) Segment # ____ or Waterbody # ____, Crossing # ____, Approach # ____

209) Were leadoff ditches used? _____ Yes No

a) If yes, were ditch blocks used? _____ Yes No

210) Were other water diversion structures used? _____ Yes No

i) List:

211) Have these structures or practices been maintained in good working order? _____ Yes No

Copy this page as needed for additional segments or approaches where other water diversion structures were used.

GENERAL SITE QUESTIONS

Site ID:

Landings

- 212) Landing # _____
- 213) Is the landing: New Pre-existing No landing or location unknown
- a) On-site Off-site
- b) Landing location (check all that apply for each landing)
- Upland Wetland
- Within filter strip Within RMZ
- Atop cultural resource
- i) If located in a wetland, were upland areas available? _____ Yes No
- ii) If located in a wetland, filter strip, or RMZ, which wetland or water body is affected?
- Water Body # _____ Water Body # _____ Water Body # _____
- 214) Landing size {calculate from a) or b)}: _____ acres (for on-site landings only)
- a) If rectangular or square: _____ ft. X _____ ft
- b) If circular: radius: _____ ft.
- 215) Has material been cleared or excavated for this landing? _____ Yes No Unknown
- a) If yes, is clearing debris and excess material deposited in stable locations outside of filter strips of lakes, streams, wetlands and seasonal ponds? _____ Yes No Unknown
- i) If no, which wetland or water body is affected?
- Water Body # _____ Water Body # _____ Water Body # _____
- 216) Has the landing been rehabilitated (water diversion and erosion control)? _____ Yes No
- a) If yes, what practices were implemented? (check all that apply)
- Hay bales Mulch Silt fencing Erosion blankets
- Seeding Grading Other (list): _____
- 217) Is the landing more than 50% vegetated? _____ Yes No
- 218) Is there rutting greater than 6" deep? _____ Yes No
- a) If yes, what was the category of rutting?
- Less than 2%
- 2% to 5%
- Greater than 5% to 10%
- Greater than 10% to 25%
- Greater than 25%
- b) If yes, was rutting caused primarily from timber harvesting activity? _____ Yes No Unknown
- i) If no, what was the cause? (list) _____
- 219) Is erosion evident? _____ Yes No
- a) If yes, is sediment reaching a wetland or water body? _____ Yes No Unknown
- 220) Is logging trash present on the landing? _____ Yes No
- 221) Is there other trash present on the landing? _____ Yes No
- a) If yes, what appears to be the source of the trash? _____ List: _____

**Copy this page as needed for additional landings.
Continue on the next page.**

GENERAL SITE QUESTIONS – Continued

Site ID:

Managing Equipment, Fuel & Lubricants

- 222) Where were the fueling and maintenance areas located?
 Upland areas Wetland areas Location unknown
 Filter strip Other (list):
- 223) Is there evidence of fueling and maintenance activities or spills on any of the landings? _____ Yes No Unknown
- a) If yes, which landings (list landing numbers):

Skidding Patterns

- 224) Identify the skidding equipment used on this site (check all that apply):
 Unknown Grapple skidder Cable skidder Forwarder
 Horse logging Other (list):
- 225) Identify the skidding method used on this site (check all that apply):
 Unknown Full tree Tree length Forwarder Shortwood
 Other (list):
- 226) Identify which skidding pattern below best describes the skidding pattern evident on the site:
a) Skidding focused on skid trails
b) Skidding randomly distributed over most of the site
c) Skidding pattern is not evident

Rutting in the General Harvest Area

- 227) Is there repeated rutting greater than 6" deep in the general harvest area?
a) Upland harvest area _____ Yes No N/A
b) Wetland harvest area _____ Yes No N/A
i) If yes, what was the category of rutting:

<u>Upland harvest areas</u>	<u>Wetland harvest areas</u>
<input type="checkbox"/> Less than 2%	<input type="checkbox"/> Less than 2%
<input type="checkbox"/> 2% to 5%	<input type="checkbox"/> 2% to 5%
<input type="checkbox"/> Greater than 5% to 10%	<input type="checkbox"/> Greater than 5% to 10%
<input type="checkbox"/> Greater than 10% to 25%	<input type="checkbox"/> Greater than 10% to 25%
<input type="checkbox"/> Greater than 25%	<input type="checkbox"/> Greater than 25%

c) If yes, was rutting caused primarily from timber harvesting activity?
i) Upland harvest areas _____ Yes No Unknown N/A
ii) Wetland harvest areas _____ Yes No Unknown N/A
d) How is the rutting distributed?
i) Upland harvest area: _____ Dispersed Concentrated N/A
ii) Wetland harvest area: _____ Dispersed Concentrated N/A

Continue on the next page.

GENERAL SITE QUESTIONS – Continued

Site ID:

Slash Management

- 228) Select no more than two of the following that best represent the slash disposal method(s) used on this site:
- Slash retained at the stump (such as in lop & scatter)
 - Slash redistributed back onto the site
 - Slash piled at the landing
 - Slash piled and burned at the landing
 - Slash piled or windrowed across the site
 - Slash piled or windrowed and burned across site
 - Slash broadcast burned
 - Site full tree skidded and tops utilized for product or fuel off site
 - Slash used as slash mat on skid trails

Coarse Woody Debris (General harvest area)

- 229) Which of the following describes the number of down logs per acre greater than 6" diameter and at least 6 feet long? _____ <2 per acre 2-5 per acre >5 per acre

Maintaining & Perpetuating Oak

- 230) Are there standing oaks on the harvest site? _____ Yes No
- 231) Are there oaks present in the adjacent stands? _____ Yes No

Conifer Regeneration

- 232) Was the pre-harvest stand mixed deciduous/coniferous? _____ Yes No
- a) If yes, does conifer regeneration (≤ 4 inches dbh) remain in the harvest area? _____ Yes No

Snags

- 233) How many snags 6" DBH and ≥ 8 feet tall were retained on the site:
- None <1 per acre 1-2 per acre >2 per acre

Leave Trees (Even-age management only)

- 234) Which best describes the distribution of leave trees on the site?
- None
 - Clumps
 - Scattered individual trees ≥ 6 inches in diameter
 - Both clumps and scattered individual trees

Scattered Leave Trees

- 235) Indicate the number of scattered leave trees retained within the harvest site:
- <1 per acre 1-5 per acre 6-12 per acres >12 per acre

- 236) Check the 5 most common species retained as scattered leave trees:

- | | | | |
|-------------------|--------------------|------------------|-----------------|
| " Trembling aspen | " Balm of Gilead | " Bigtooth aspen | " Paper birch |
| " Yellow birch | " Sugar maple | " Red maple | " Silver maple |
| " Box elder | " Northern red oak | " Bur oak | " North pin oak |
| " White oak | " Basswood | " Black ash | " Green ash |
| " Butternut | " Walnut | " Cherry | " Cottonwood |
| " Jack pine | " Red pine | " White pine | " Balsam fir |
| " Black spruce | " White spruce | " Tamarack | " White cedar |
| " Other (list): | | | |

Continue on the next page.

GENERAL SITE QUESTIONS – Continued

Site ID:

Leave Tree Clumps

If leave trees are left in clumps inside the harvest area, fill out the following:

237) Leave tree clump # _____

a) Leave tree clump size {calculate from i) or ii}): _____ acres

i) If rectangular or square: _____ ft. X _____ ft

ii) If circular: radius: _____ ft.

b) Clump location:

- General harvest area • Adjacent to RMZs
- Around seasonal ponds • Around non-open water wetlands
- Around cultural resources VQ buffers
- Adjacent to General harvest area

238) Check the 5 most common species left in the leave tree clump.

- | | | | |
|-------------------|--------------------|------------------|-----------------|
| " Trembling aspen | " Balm of Gilead | " Bigtooth aspen | " Paper birch |
| " Yellow birch | " Sugar maple | " Red maple | " Silver maple |
| " Box elder | " Northern red oak | " Bur oak | " North pin oak |
| " White oak | " Basswood | " Black ash | " Green ash |
| " Butternut | " Walnut | " Cherry | " Cottonwood |
| " Jack pine | " Red pine | " White pine | " Balsam fir |
| " Black spruce | " White spruce | " Tamarack | " White cedar |
| " Other (list): | | | |

239) Indicate the amount of blowdown, if any, within the clump.

- None <5% 5-20% 20-40% 40-60% >60%

a) If blowdown is observed, indicate the major species (up to 3 species) that suffered blowdown:

species 1 _____ species 2 _____ species 3 _____

Copy this page as needed for additional leave tree clumps.

Calculation Work Sheet: Scattered Leave Trees and Snags

Site ID:

Determining scattered leave trees and snags per acre will be accomplished using 1.5 acre circular plots or by a complete count of all the leave trees and snags on the site. The 1.5 acre circular plot will have a 48 yard radius. The following table identifies the number of plots to take per site based on site acreage.

<u>Harvest acres</u>	<u>Minimum Number of Plots Required</u>
< 10	2
\$ 10	1 additional plot for each 10 acre increment or fraction thereof to a maximum of 5 total plots.

Plot #	Scattered Leave Trees/Plot	Snags/Plot
1		
2		
3		
4		
5		
Total		
Average/Acre		

Plot size = 1.5 acre/plot

Scattered leave trees or snags/acre = (# trees/plot)/1.5

Scattered leave trees or snags/acre/site =(Scattered leave trees/acre)/ # of plots

The plot locations will be identified and marked on the aerial photo by the contractor. Each plot location will be identified with an X and the plot number. To the extent feasible, the circular plots should not overlap roads, landings, or water bodies. Plot locations should be representative of leave tree conditions on the site.

Copy this page as needed for additional plots.

Acres of Roads, Landings, and Leave Tree Clumps

Site ID:

For office use only

I. Total Roads: _____ acres

II. Total Landings: _____ acres

III. Leave Tree Clumps:

A. Leave Tree Clumps Adjacent to RMZs:

1. On-site (Inside the blue line) _____ acres

2. Adjacent to Site (Outside the blue line) _____ acres

3. Total LT Clumps Adjacent to RMZs: _____ acres

B. Leave Tree Clumps Adjacent to Site: _____ acres

(Outside the blue line, and not Adjacent to RMZs)

C. LT Clumps On-site not Adjacent to RMZs: _____ acres

D. Total Harvest Area LT Clumps: _____ acres

(A.1 + C.=D.)

E. Total LT Clumps Adjacent to Site: _____ acres

(A.2. + B.=E.) Unknown

F. Total Site LT Clumps: _____ acres

(D. + E.=F.)

IV. RMZ Acres:

A. On-site RMZ Acres: _____ acres

B. Adjacent RMZ Acres: _____ acres

C. Total RMZ Acres: _____ acres

V. Harvest Area Acres: _____ acres (Inside the blue line)

VI. Total Site Acres: _____ acres

(III.E. + IV.B. + V.=VI.)

X. Percent of Harvest Area in Infrastructure _____ %

(I. + II.)/V.=X.

XI. Percent of Total Site in Infrastructure _____ %

(I. + II.)/VI.=XI.

XIII. Percent of Harvest Area in Leave Tree Clumps _____ %

(III.D./V.=XIII.)

XIV. Percent of Total Site in Leave Tree Clumps _____ %

(III.F./VI.-XIV>)

DNR Forest land Rutting Guidelines

Purpose

The current Voluntary Site-level Forest Management Guidelines recommend minimizing rutting of forest management sites to protect site productivity, hydrologic function and water quality, reduce erosion, and minimize impacts to flora and fauna. In most instances, the guidelines do not define rutting in measurable terms, instead using terminology such as “minimize rutting” and avoid “repeated rutting” or “excessive rutting”.

The following rutting standards have been developed to provide staff foresters, and timber sales administrators with measurable metrics for applying the rutting guidelines to forest management activities on DNR administered state lands.

Rutting Standards

Wetland Roads

- Rutting ≥ 6 " deep shall not exceed a contiguous length of road in a wetland of 300' or more than 50% of the width of the wetland in the vicinity of the rutting, whichever is less*.

Skid Trails – Timber Harvest

- Upland: Rutting ≥ 6 " deep shall not exceed 10% of all skid trails (total of all lengths of skid trail with rutting ≥ 6 " deep divided by the total length of all skid trails), and rutting shall not exceed 50' of any 200' section of skid trail*.
- Wetlands: Rutting ≥ 6 " deep shall not exceed a contiguous length of skid trail in a wetland of 300' or more than 50% of the width of the wetland in the vicinity of the rutting, whichever is less*.

Forwarding Trails –Decorative Tree Harvest on Peatland

- Rutting shall not exceed 6" deep for a cumulative total length of 300' for each mile of forwarder trail (total of all lengths of trail with rutting ≥ 6 " deep divided by the total length of all trails) prorated by length of trail.*

General Harvest Area (GHA): The GHA is defined as the area within the boundaries (blue paint line) of the harvest unit or site development project. **The extent of rutting in wetlands is to be evaluated separately from uplands. In the GHA, the length of rut made by the wheels or track on each side of a machine is to be measured separately and added to determine total length of rutting.**

- Upland: Rutting ≥ 6 " deep shall not exceed an average of 200'/acre for the GHA, with no more than 400' of rutting on any one acre of the GHA*.
- Wetlands: Rutting ≥ 6 " deep shall not exceed an average of 200'/acre for the GHA, with no more than 400' of rutting on any one acre of the GHA*. In addition, rutting should not exceed 50% of the width of the wetland*.

Assumptions related to Roads, Landings, and Skid Trails

- Road, landing, and skid trail surfaces are shaped and stabilized (e.g., graded, ruts filled) as needed during construction and operations, and at closure to maintain their operability. Expanding the footprint of roads, landings, and skid trails to maneuver around wet or muddy areas that develop during use is restricted.
- Appropriate water diversion and erosion control structures are to be used during construction and active operations, as well as at closure to reduce erosion and minimize sediment transport.
- Roads and landings are restricted to $\leq 3\%$ (roads 1-2%) of the harvest site.

*** Prior to reaching any of these levels of rutting, it is expected that the logger/resource manager will apply the appropriate suite of guideline recommendations to reduce rutting so that the maximum extent of rutting is not reached.**

MMLC Complaint Investigation and Review Process

Approved 10/01/2010

The Minnesota Master Logger Certification (MMLC) program utilizes the Minnesota Forest Resources Council's Public Concerns Registration Process (PCRP) for initiating the investigation process for complaints about the practices of a Minnesota Certified Master Logger (MCML).

The PCRP's primary purpose is to investigate forest management activities that may result in a negative impact on forest resources. The PCRP is intended to be educational in nature and precludes becoming involved in contract disputes or issues such as trespass that would more appropriately be dealt with in civil courts.

For issues that do not fall under the scope of the PCRP, MMLC will conduct its own investigation.

Depending on the findings of the complaint investigation, MMLC may take one or more of the following actions:

1. **For all complaints (regardless of outcome/merit)**, MMLC will contact the MCML to acknowledge the program is aware a complaint has been filed against them. Upon receipt of the PCRP report, MMLC will ask the MCML to provide any additional comments/evidence they may have regarding the complaint. A follow-up letter will be sent to the MCML reiterating the requirements under the MMLC Standard and program conformance expectations. The MMLC Management Committee will also be made aware of the complaint and sent copies of the investigation report.
2. **For complaints that include non-conformance(s)** with the MMLC Standard, the MMLC Management Committee will review the non-conformance(s) and make a recommendation for further action based on the seriousness of the complaint findings. Those actions may include:
 - Sending a letter to MCML highlighting the nature of the non-conformance and MMLC Standard requirements and expectations. Letter will note that the MCML will be audited for recertification during the next audit cycle and that auditors will pay particular attention to the issue(s) found to be out of conformance with the MMLC Standard.
 - For complaints that include a serious non-conformance issue(s), the MMLC Management Committee will make a recommendation to the MMLC Certifying Board for action – including invalidating the logging company's certification.

An annual summary of any complaints will be included in the MMLC Annual Report.