

MMLC Area/Standard/ Practice	MN Voluntary Site Level FMGs	Guideline Monitoring Metrics
Area One: Protection of Water Quality and Soils		
<i>FMG Practices :</i>		
I-A.1: Minimizing skid trails	F.R. 9	---
I-A.2: Skid trail location outside RMZs & filter strips	F.R. 13	---
I-A.3: Consideration of topography in skid trail layout.	T.H. 26	28-31
I-A.4: Minimizing rutting & erosion in soft, wet, or steep areas	T.H. 28	38, 46, 63,101, 110, 114
I-A.5: Installation of water diversion structures	T.H. 31	170-177
I-A.6: Location of slash outside of drainage areas	T.H. 28	36; 122
I-A.7: Skidding traffic is planned consistent with silvicultural objectives	F.R. 12	123-124
I-A.8: Use of low ground pressure equipment	G.G. 20; T.H. 7	---
I-A.9: Retention of leave snags, decayed, and cavity trees	G.G. 75-78; T.H. 33	235 & 237
<i>FMG Practices:</i>		
I-B.1: Establishment of RMZs on harvest site	G.G. 29-67	35b, 49-59
I-B.2: Distribution of longer-lived trees in RMZ	G.G. 35	56,58
I-B.3: Location of roads outside of RMZ	F.R. 13	37
I-B.4: Location of landings and fueling/maintenance areas outside RMZ	G.G. 39	215; 224
I-B.5: No deposition of slash in filter strips, RMZs, lakes, or streams	T.H. 28	36; 122
I-B.6: Establishment of filter strips on all streams, lakes, and wetlands	G.G. 24	41-48
I-B.7: Logging residue kept out of all water wetlands, except where prescribed	T.H. 28	36
I-B.8: Logging residue is kept out of all seasonal ponds and wetlands	T.H. 28	36; 217
I-B.9: Soil exposure, rutting, and compaction minimized in RMZs, filter strips, and wetlands	G.G. 15	47
I-B.10: Harvesting in wetlands done in frozen ground conditions when necessary	G.G. 17-18; T.H. 31	---
I-B.11: Borrow pits outside of filter strips and RMZs	F.R. 13	164
I-B.12: Coarse woody debris in RMZs consistent with FMGs	G.G. 79	231
<i>FMG Practices:</i>		
I-C.1: Stream crossing permits in place and followed	F.R. 17	---
I-C.2: Number of stream crossings is minimized	F.R. 17	---
I-C.3: Stabilization practices used to minimize erosion into streams	F.R. 32	47, 78

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I-C.4: Stream crossings installed appropriately	F.R. 17	68-83
I-C.5: Water flow in wetland or water bodies undisturbed following harvest	F.R. 18	75
I-C.6: Appropriate culvert diameter and length for stream size and road width	F.R. 18	83
I-C.7: Culverts installed with appropriate fill and riprap	F.R. 18	83
I-C.8: Road drainage diverted into filter strip	F.R. 31	45
I-C.9: Stream crossings stabilized and minimize sedimentation	F.R.17	78
I-C.10: Temporary crossing structures anchored to prevent washouts	F.R. 18	77
I-C.11: Temporary crossings removed after use	F.R. 18	77
I-C.12: Natural fords have low stream banks and firm base	F.R. 18	72-73; 76
I-C.13: Equipment avoids stream banks for all non-frozen intermittent and perennial streams	F.R. 18	---
<i>FMG Practices:</i>		
I-D.1: Appropriate granular soils used for backfill in wetland crossing construction	F.R. 38-39	80
I-D.2: Sufficient size culverts and ditches installed to minimize disruption of water flow across landscape	F.R. 25-26; F.R. 38-39	83
I-D.3: Geotextile fabrics, special embankment structures, and underlying peat layers utilized in deep peat wetland crossings	F.R. 40-43	104-112
I-D.4: Winter wetland crossings select shortest routes, avoid open water wetlands, avoid soil fill, and do not block normal water flow	F.R. 43	87
I-D.5: Winter wetland crossings removed after management activities	F.R. 45	77
<i>FMG Practices:</i>		
I-E.1: The number and size of roads and landings are kept to the minimum required	T.H. 22	124; 216
I-E.2: Road locations allow for drainage away from the road	F.R. 8	157
I-E.3: Roads located in well drained soil	F.R. 9	---
I-E.4: Road grades do not exceed 10%, grade lengths minimized, and drainage structures used	F.R. 14	124; 139-141; 156-157
I-E.5: Roads follow natural contours, minimize and balance cut/fills	F.R. 8-9; T.H. 17	125
I-E.6: Road surfaces crowned, outsloped, or insloped to provide adequate drainage	F.R. 8	205-209
I-E.7: Debris for road construction deposited outside filter strips	F.R. 21	122; 126
I-E.8: Cut/fill slopes are stable and will revegetate easily	F.R. 32	---
I-E.9: Steep grades and erodible soils surfaced to minimize erosion	F.R. 8	---
I-E.10: Ditches and cross drains constructed to handle water runoff entering onto or adjacent to road	F.R. 28	139-148
I-E.11: Culverts are properly sized and installed correctly	F.R. 26	149-155
I-E.12: Culvert base and fill is appropriate	F.R. 18	150
I-E.13: Water diversion structures installed properly	F.R. 28-31	170-213
I-E.14: Landings located and constructed to promote efficient drainage	T.H. 22	215

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I-E.15: Cleared or excavated materials for landings deposited in stable locations	F.R. 23	217
I-E.16: Landings and roads are seeded to prevent erosion	G.G. 81	218
<i>FMG Practices:</i>		
I-F.1: Specified area used to drain lubricants from equipment	G.G. 70	224
I-F.2: Maintenance vehicles available to collect and store lubricants	G.G. 70	---
I-F.3: Solid waste material are recycled and disposed of properly	G.G. 70	---
I-F.4: Fueling and maintenance areas located away from open water and outside filter strips and RMZs	G.G. 70	224
I-F.5: Waste containers present in maintenance areas to collect and store hydraulic products	G.G. 70	---
I-F.6: Spills less than five gallons thin spread	G.G. 70	225
<i>FMG Practice:</i>		
II-A.1: Slash height does not exceed 24 inches for most sensitive sites	T.H. 29	15
<i>FMG Practice:</i>		
II-C.1: Irregular boundaries, feathered edges, leave trees, and other applications used	T.H. 17	9
II-C.2: Disturbed areas, borrow pits, and landings are cleaned up, stabilized, leveled and seeded	G.G. 81; T.H. 41	168-169; 218-223
II-C.3: Slash is reduced to 24 inches in areas classified as most to moderately sensitive	T.H. 29	15
II-C.4: Muddy road exits are cleaned up	F.R. 15	---
II-C.3: Root wads, slash piles, hanging tops, and broken trees not present	T.H. 24	---
Area 3: Conformance with Acceptable Silvicultural, Operational and Utilization Standards		
<i>Practice:</i>		
III-A.1: Acceptable cutting system was used for the timber type in question	G.G. 20	---
III-A.2: For final harvests, regeneration was planned for	REF. 6	---
<i>FMG Practice:</i>		
III-B.1: All merchantable timber utilized within road clearing	F.R. 22	4
<i>FMG Practice:</i>		
III-C.1: Felling and skidding damage to residual trees is minimized	T.H. 26	---
III-C.2: Protection of advanced natural regeneration during harvest	T.H. 39	---
<i>FMG Practice:</i>		
III-D.1: Harvest operations disperse slash on site where appropriate	T.H. 28	10-15;187- 189; 230
III-D.2: Equipment used to move slash minimizes soil disturbance	T.H. 28	230
III-D.3: Landings left clean with little waste	T.H. 24	222-223
Area 4: Compliance with Government Regulations Applicable to Logging Operations		
IV-A.3: File necessary notices and secure permits before logging	F.R. 34; G.G. 10	---
IV-A.4: Federal and state laws concerning cultural resources are followed	G.G. 10	---
IV-A.5: Awareness of responsibilities under the U.S. E.S.A. and Minnesota's threatened and endangered species statutes	G.G. 10	---
Area 5: Adherence to Site Specific Harvest Plan		
V-A.4: Plan includes landowner objectives for the harvest	G.G. 7	---

