Final report to the MN Forest Resources Council on

Ad hoc committee recommendations on guideline implementation goals

February 2014

Prepared by:

Robert Slesak
Site-level Program Manager
Minnesota Forest Resources Council
1530 Cleveland Avenue N.
St. Paul, MN 55108

Introduction

The Minnesota Forest Resources Council is charged under the Sustainable Forest Resources Act (89A.05 Subd. 3) with developing implementation goals for forest management guidelines that will result in overall conservation of forest resources. In April of 2013, an ad hoc committee composed of MFRC members and stakeholders (representing landowners, managers, and loggers) was convened and charged by the MFRC Chair with evaluating development of implementation goals for a subset of key guidelines critical to protection of forest resources. Over the course of several meetings, the committee identified key resources for consideration and specific topics associated with each, reviewed regulatory frameworks associated with the guidelines and protocols used to monitor their implementation, and evaluated the potential for impacts to forest resources arising from historic rates of guideline implementation. Following this evaluation, the committee generally agreed that adverse impacts to forest resources at the statewide scale were unlikely. The committee also agreed on several recommendations to promote increased guideline implementation and address underlying factors, but decided not to develop specific numerical implementation goals for any guidelines or related topics.

Forest Management: Minnesota Context

In Minnesota, much of the northern forested landscape is available to be managed for production of pulp and sawtimber products, but the level of management intensity (including practices such as fertilization, site preparation, improved genetics, plantation Silviculture, etc.) is relatively low compared to other regions of North America. This *extensive* level of management in combination with low-impact harvesting conditions (e.g., winter harvesting, level topography) and declining harvesting levels makes it unlikely that sustainability of forest resources at the <u>statewide scale </u>are threatened due to forestry activities. Nonetheless, the forestry community has a responsibility to conduct management activities in a manner that minimizes impacts to forest resources, including implementation of the forest management guidelines during harvesting operations. In particular, the ad hoc committee universally felt that guidelines related to maintenance of water quality, and to a lesser but considerable extent wildlife and soil, were key in maintaining sustainable forestry and deserve the most focus for guideline implementation efforts.

Recommendations

<u>Policy</u>

1) Stakeholders and users of the guidelines should be asked to formally recommit their organizations to implementing the guidelines during forest management activities. Recommitting could take the form of a letter from an organizations leader or representative to the MFRC Chair.
2) The Council should continue to support continuous improvement in guideline implementation, especially in situations where risk of impact to forest resources is high.
3) The Council should formally recognize that potential impacts to streams, lakes, and wetlands vary in magnitude, and are generally lower for non-open water wetlands compared to streams, lakes, and open water wetlands.

Training and research

1) Guideline training for practitioner groups (loggers, foresters, and landowners) should be used as a primary mechanism to maintain and improve levels of guideline implementation.
2) Training emphasis areas should be periodically reviewed and updated by education cooperatives (MLEP, SFEC, and others as appropriate) and the Council based on implementation monitoring findings and effectiveness studies. Emphasis areas for training based on past monitoring reports are noted with (**T**) in Appendix A.
3) Research studies and related assessments should be conducted to determine the conditions where the risk of impact to forest resources is high and the underlying factors contributing to it. Information generated from these studies and assessments should be conveyed to practitioners so that additional implementation efforts can be applied in high-risk situations.
4) Effectiveness studies (particularly related to erosion control, leave tree retention, and infrastructure) should be conducted to determine the effectiveness and need of recommended practices in operational settings of Minnesota. Findings should be reported to the Council and practitioner groups to either substantiate the need for guideline implementation or guide revision of the forest management guidelines in the future.

Implementation Monitoring

1) The Council should advise the DNR to conduct implementation monitoring in a manner that continues to strive to reflect conditions on the ground with more inference at scales appropriate for assessment of detrimental effects to forest resources.
2) The Council should advise the DNR to make specific changes to its monitoring program measurement and analysis protocols outlined in Appendix A of this report (Recommendations to DNR are noted with (**M**) in Appendix A).
3) The Council should re-evaluate monitoring protocols following implementation of the new watershed approach to determine if modifications to protocols are needed for appropriate inference and interpretation of results. The Council should make recommendations to DNR on modification of measurement protocols and reporting as needed following this evaluation.

Appendix A: Summary of evaluation, conclusions, and specific recommendations

Topic: Rutting in non-open water wetland (NOWW) crossings

Issue: Monitoring has consistently reported "high" levels of rutting in NOWW crossings that are rutted across all sites that are monitored.

Evaluation:

- NOWW are widespread, covering greater than 4 million acres in MN.
- Only 1/3 of harvest sites have rutting in NOWW crossings (only half of sites with crossings have rutting, ~30% on average).
- Absolute area of rutted NOWW associated with crossings is very small (~0.002% of NOWW area annually).
- The limited information available indicates that impacts from rutting are short-lived or non-existent.

Conclusion: Rutting in NOWW is not a large issue at the statewide scale.

Recommendations:

1) Monitoring results should be presented at the site scale (rather than the individual crossing scale) to more accurately reflect conditions in the field. (**M**)
2) Factors contributing to rutting in NOWW crossings should be quantified and findings communicated to loggers and foresters.
3) Training should emphasize avoidance of NOWW when possible to minimize the potential for rutting. (**T**)

Topic: Use of erosion control on approaches and segments where water quality (WQ) impacts are possible

Issue: Monitoring has consistently documented low levels of erosion control implementation when impacts to WQ are possible (i.e., when "needed and necessary" per the forest management guidelines).

Evaluation:

- Erosion and potential sedimentation are partly dependent on stochastic events (e.g., storm intensity), which can be addressed with risk management via implementation of the guidelines.
- Sediment only reaches a water body between 2-3% of the time when erosion control is needed but not applied (i.e., potential impact to WQ).
- Most (85-90%) of the sedimentation that occurred was in NOWW, which are of less concern for WQ impacts compared to open water bodies (e.g., trout streams, lakes).
- Low erosion control implementation is likely due to the common sequence of harvesting operations in MN and a perception by practitioners that it is not needed.

- Implementation of erosion control is required to comply with the conditions of the Silvicultural Exemption of the Clean Water Act and the Wetland Conservation Act. Low rates of implementation could be a concern for regulatory authorities even though impacts are small.

Conclusion: low erosion control implementation is not causing large amounts of sedimentation overall and any impact to streams and lakes is likely small.

Recommendations:

1) Determine why erosion control is not applied during the course of harvest operations.
2) Quantify the risk factors contributing to erosion including those associated with more intense weather events that may occur with climate change.
3) Training should emphasize use of erosion control in situations where risks to WQ exist. (**T**)

Topic: Placement of roads, landings, and trails in filter strips and wetlands

Issue: Monitoring has shown that filter strips commonly fail when roads, landings and trails are placed near or in them, and that landings are commonly placed in wetlands even when suitable locations are available in uplands.

Evaluation:

- The integrity of most filter strips (85-90%) is maintained during harvesting.
- When strips fail because of road, landing, and trail placement, sedimentation of water bodies occurs 2-3% of the time.
- Most sedimentation that occurs is in NOWW, which are of less concern for WQ impacts compared to streams, lakes, and open-water wetlands.
- Some filter strip failure is associated with the use of pre-existing infrastructure. It is more desirable to utilize pre-existing infrastructure than to create new infrastructure to avoid strips.
- It is not clear why landings would be located in NOWW when upland areas are available.

Recommendations:

1) Modify monitoring methods to determine why landings were located in wetlands. (**M**)
2) Modify monitoring analysis to report the amount of strip failure due to use of pre-existing infrastructure. (**M**)
3) Training should emphasize avoidance of NOWW and filter strips when locating new roads, landings, and trails. (**T**)

Topic: Implementation of riparian management zone guidelines for width and residual basal area

Issue: Monitoring has reported full implementation of the RMZ guidelines between 50-70% of the time over the last decade. Failure to achieve full implementation is usually because widths are narrower than recommended.

Evaluation:

- Since 2009, all RMZ's have had at some level of partial width implementation.
- When partial implementation is accounted for relative to the recommended width, overall RMZ implementation is between 80-90% over the last decade.
- There are justifiable reasons to deviate from the RMZ recommendations, including periodic regeneration of longer-lived covertypes under even-aged management and maintenance of early successional covertypes in and near RMZ areas.
- Misunderstanding of RMZ recommendations may have contributed to lower levels of full guideline implementation in RMZ's.

Recommendations:

1) Monitoring analysis protocols should be modified to account for partial implementation of RMZ guidelines. (**M**)
2) Given the recent changes in RMZ guidelines, monitoring should report whether or not the new guidelines are being implemented and training emphasis should be adjusted as needed. (**M, T**)

Topic: Use of scattered leave trees vs. leave tree clumps

Issue: Scattered trees are much more commonly retained than leave tree clumps even though the latter is most preferred. Protection of sensitive features and wildlife may be reduced with low use of clumps.

Evaluation:

- Overall leave tree implementation is relatively high (~80% in the most recent report) and all sites have some leave trees present.
- Unclear if sensitive features (e.g., seasonal ponds, cultural resources) are present when leave tree clumps are not used.
- Unclear if wildlife species may be impacted by lower use of the clump option at the statewide scale.

Recommendations:

1) Modify monitoring analysis to report the number of times a sensitive feature was present, and when the feature was not protected with scattered leaves trees or clumps. (**M**)
2) Effectiveness studies should be conducted to evaluate the relative benefits of clump vs. scattered leave trees for wildlife species across a range of scales and findings disseminated to landowners and practitioners.
3) Training should continue to emphasize that the use of clumps is more desirable than scattered leave trees and the reason why. (**T**)

Topic: Leave tree characteristics

Issue: No information on leave tree characteristics has been presented in the monitoring report, inhibiting assessment of potential impacts to wildlife species, landowner economics, and operating costs.

Evaluation:

- Benefits of leave trees to wildlife are dependent on their characteristics related to species, size, condition, and economic value.
- Effects on wildlife are likely to be species-specific and variable depending on leave tree characteristics.
- Some information related to leave tree species, condition, and blowdown have been recorded during past monitoring campaigns but not reported.

Recommendations:

1) Modify the monitoring measurement and analysis protocols to report on leave tree size, condition, and species. (**M**)

Topic: Total infrastructure area

Issue: Implementation of allowable infrastructure guidelines has been historically low. Recommended maximum amounts were modified recently for small harvests (<30 ac.), but larger harvests will still likely exceed recommendations.

Evaluation:

- Infrastructure is inherent to forest management and some impact is inevitable.
- Impacts of landing and road infrastructure largely accrue to individual landowners as they primarily cause a reduction in fiber productivity at the site.
- The magnitude of impact associated with infrastructure likely varies with site and harvest conditions, and recovery is likely at some point in the future.
- The factors contributing to high infrastructure at larger harvest sites are not clear but are likely associated with decisions on harvest design and infrastructure layout (e.g., long skid distances vs. more landings).

Recommendations:

- Modify monitoring analysis protocols to evaluate the factors contributing to high infrastructure area at larger harvests (e.g., larger road area vs. multiple landings, etc.). (**M**)
- Studies should be conducted to evaluate longer-term impacts and recovery rates of landings and roads, and determine the combination of site and operational factors where impacts are large.

Appendix B: List of Committee members and meeting summaries

Committee member	Affiliation
Wayne Brandt	MFRC (representing forest industry)
Dave Chura	MM Logger Education Cooperative
Bruce Cox	MN Forest Resources Partnership
Amber Ellering	DNR - Forestry
Tom McCabe	Timber Producers Association
Dave Parent	MFRC (representing non-industrial private landowners)
Shawn Perich	MFRC (representing game species organizations)
Susan Sulterman-Audette	MFRC (representing environmental organizations)
Greg VanOrslow	US Forest Service – Chippewa National Forest

Meeting Summaries (note that the ad hoc committee was also tasked with developing a field guide. Meetings solely focused on that task are not included in this Appendix). All meetings were held at the Cloquet Forestry Center.

- August 20, 2013
- September 11, 2013
- November 20, 2013
- January 8, 2014

Summary of August 20, 2013 meeting, 9:30 a.m. – 2:30 p.m.

The meeting began with Rob noting that the primary objective for the day was to review the draft field guide sections and provide Committee members the opportunity to make specific recommendations for edits and alterations. The intended outcome was to obtain agreement among the Committee on the draft language so that the draft field guide can be presented to the full Council for initial review. Dave asked each of the Committee members for their general comments on the draft sections. Comments were generally very supportive, with most Committee members stating that the draft was a good first

cut at compiling and condensing the guideline content. The Committee then reviewed each of the 11 draft sections of the field guide, and members provided suggestions for specific and general changes in an informal manner. Rob will incorporate all the changes into the draft sections and then forward them to the Committee members to solicit feedback from their respective organizations. Rob will also compile a list of graphics (mostly pictures, but also some schematics) that need to be acquired, which will be distributed to members and other individuals who might have those we need. The modified draft sections will be forwarded to the MFRC and feedback will be solicited at their September meeting.

Rebecca Barnard then joined the committee via phone to discuss forest certification as it relates to development of implementation goals. Rob informed the committee that he had asked Rebecca to provide her perspective on this topic because the implications to certification had come up in many previous discussions of the MFRC. In general, Rebecca did not see any major problems for certification if *practical* implementation goals are developed, but did note the possibility of several benefits including goals would assist auditors in identifying key guidelines, would help auditors to identify a sufficient level of implementation, and would help DNR to target resources to those guidelines in need of improved implementation. Goals should be focused on key guidelines and set high enough to protect resources but also be achievable and attainable. She also stated that certification is only one of many factors to consider when developing goals. Discussion amongst the Committee ensued. Wayne commented that he was grappling with setting goals when we did not have good information on guideline effectiveness. Dave P. stated that setting goals by ownership category was difficult because of insufficient sample sizes (in monitoring), and also voiced concern that goals would be viewed by auditors as rigid levels and that a goal range may be more appropriate. Both Shawn and Susan (via phone) stated that DNR is generally mediocre in their level of implementation and that they should be the leader in implementation with high goals. Wayne stated that if 100% implementation goal was the intent, then Industry's position would be to stick with original goals set earlier. Amber noted that goals were needed because individuals are already setting them on their own (e.g., auditors), and it would be better if the Committee provided reasonable and justifiable goals. Dave C. asked if these goals were baseline goals or stretch goals. Dave Z. replied that this is the difficult question that the Committee is charged with addressing. Rob noted that the goals being set would be applicable at the statewide scale, and need to incorporate the flexibility that is inherent in the guidelines. The challenge is to identify a sufficient level of implementation at the statewide scale and across all ownerships that will mitigate impacts to the forest resource. Impacts (if implementation is low at a site) to resources may occur at any one harvest site, but the broader resource base will be sustained as long as the statewide goal is achieved. Wayne stated that not all guidelines are equal in their importance. Rebecca identified those guidelines related to soil quality, water protection, leave trees, and chemical application or site preparation as most commonly important to certification auditors.

The meeting began with Rob reviewing the agenda and noting that the intended outcome of the meeting was to 1) identify those guidelines or topics that the committee would evaluate for development of implementation goals, and 2) identify the information that committee members will need to conduct the evaluation. Before beginning, there was discussion on how to proceed with soliciting comment and input from stakeholders and users on the field guide and the sequence of tasks and timing before forwarding a recommendation to the MFRC. It was decided that stakeholders (via the ad hoc and MFRC members) would be asked to provide input over the next two months in combination with more formal review by individuals with expertise in guidelines and training. This input will be summarized by Rob and presented to the ad hoc for further review before formalizing a final recommendation sometime in September. The goal is to have the MFRC evaluate the field guide at their January 2014 meeting. Usability testing will occur after initial MFRC approval.

Rob then presented some background information on implementation goals including their importance to a voluntary program, early efforts at development by the MFRC, requirements under the SFRA, and more recent related events leading up to creation of the ad hoc committee. Wayne commented on the implementation goal report from 2001, noting that implementation goals related to training, institutional support, and landowner education had largely been successful. Wayne stated that the most effective way to improve implementation was to garner support and commitment from those who apply the guidelines in the field. There was much discussion on issues surrounding implementation goal development, with a few clearly against attempting to develop goals and others in support of conducting an evaluation to see if it was possible. Rob reminded the committee that Chair Stine had requested an evaluation and assessment on implementation goal development, and all of the members had agreed to participate in the ad hoc committee tasks.

Key principles and the process for evaluation of implementation goal development and related tasks were briefly reviewed. Rob noted that the process was largely defined in the original ad hoc committee charge, and asked for any comments or issues with it. Wayne stated that he was fundamentally opposed to the development of numerical goals and did not agree with the process as laid out. Rob replied that the intent was always to attempt development of numerical goals, and that committee members should follow up with Chair Stine if they have any concerns. The Committee then reviewed the draft criteria for identification of guidelines which may have implementation goals developed, including those proposed by Amber. Easily quantified criteria include 1) consider only those included in the field guide, and 2) consider only those that are capable of being monitored. More difficult criteria to evaluate include 3) those guidelines with greatest potential for resource protection, and 4) those guidelines perceived as being important.

Shawn stated that goals need to be put into context of why the guidelines are not followed. Rob stated that the why may not matter if a particular goal is being achieved, but becomes an important point of assessment if a goal is not being achieved. Susan stated that the why is important which is why we need to evaluate the monitoring data and have the discussion on setting goals. Shawn responded that he was concerned we would set goals and then still have to ultimately come back to why guidelines were not being implemented.

After lunch, Rob handed out list of guidelines that are included in the field guide and are capable of being monitored for the committee to review. Dave Chura asked if the list was composed of guidelines that are currently monitored or if it also included some which are capable of being monitored. Rob indicated that almost all of the guidelines which can be monitored are, but analysis and reporting of the results has limited interpretation of implementation on some of them. Many questions related to how monitoring data is collected and its limitations were posed by several committee members.

Committee members were then asked to comment on what some of the most important topics are related to forest resources. All committee members who were present indicated that water quality-related guidelines are important including RMZ's, infrastructure, erosion control, crossings, wetlands, and filter strips. Other topics with broad but more limited support included leave trees and snags, total infrastructure, rutting, and ETS species.

Dave Zumeta then summarized the priority topics for evaluation, and what information would be sent to committee members prior to the next meeting including reports of what other states do for monitoring and their implementation rates, the most recent monitoring report for MN, and the forms used by the contractors when monitoring harvest sites. Rob will also work to summarize the monitoring data from the last decade on the priority topics for committee members to review. Dick Rossman will be invited to the next meeting to present some more detail on the monitoring data collection protocols, techniques, and inference of results; a substantial amount of time will be allocated for a question and answer period. Someone with knowledge of the various regulatory frameworks associated with water quality (Clean Water Act, Wetland Conservation Act, etc.) will also be invited to present information and perspective on interrelationships with the voluntary guidelines. Amber will work with Rob to identify a person suitable for the task. The meeting adjourned at 2:30.

Summary of November 20, 2013 meeting, 9:30 a.m. – 3:00 p.m.

The meeting began with Rob reviewing the primary agenda items including presentations by Dick Rossman on the monitoring program and water quality regulations, review of monitoring results specific to key guidelines identified at the last meeting, and adoption of a process for goal evaluation. Before beginning with the first item, Rob reviewed the plan for finalizing the field guide recommendation at the next meeting. No comments on the draft field guide were submitted by stakeholders, so Rob will modify the drafts based on more technical review comments made by Charlie Blinn and Dick Rossman. These modified drafts and a list of graphics which still need to be acquired will be sent to the committee members at least a week prior to the next meeting.

Dick then presented information on the monitoring program, primarily focused on how it is conducted including site-selection, data collection, and analysis and reporting. Dick walked the committee through several examples of how data is collected prior to field monitoring and during field visits including examples related to ETS species, leave trees, and RMZ's. Several committee members asked detailed questions on how flexibility and partial compliance were addressed in the data. Dick answered these questions and also pointed out that the data could be interpreted a number of different ways, especially depending on how an implementation goal might be developed. There was engaging discussion among all present on how monitoring results are currently presented related to what is occurring on the ground, and how they might be presented in different ways to more accurately reflect observed conditions. Rob stated that how monitoring results are reported is important because it influences how we view past implementation, but will also be used as a metric to assess if implementation targets are being achieved. Dick stated that he tries to be objective in his reporting and not make judgment calls on what level of implementation is acceptable and what level is not, and he welcomed more guidance from the committee on how to analyze and report results.

Dick then presented a brief overview of the regulatory programs associated with our water quality (WQ) guidelines. Rob reminded the committee that discussion on this item was suggested at the last meeting because there was general agreement among the members that WQ guidelines serve as the foundation for the guidelines, and also because they are associated with regulatory frameworks that may require a different level of evaluation (compared to those that are not regulatory and have more flexibility). Dick proceeded with his presentation, noting that there are 4 primary regulatory programs that address WQ and wetlands in MN. Each of the programs has different requirements and administrative oversight, but most of them allow an exemption from permitting for silvicultural activities. Dick summarized the specific requirements for each exemption and emphasized that each of the programs required that WQ best management practices be implemented in order to comply with conditions of the exemption. There was discussion among the committee on the history of WQ BMP's in MN and how they were incorporated into the voluntary guidelines.

After lunch, Rob presented a summary of monitoring results specific to each of the guideline topics that were identified at the last meeting as potential candidates for goal development. These included crossings, approaches, RMZ's , erosion control, filter strips, infrastructure (total amount and location), leave trees and snags, and ETS species. For each of the topics, Rob identified a key area of emphasis that could be focused on (e.g., only those situations when erosion control was necessary on approaches, or the target distribution of clump and scattered leave trees across sites statewide). There were many comments and much discussion throughout the summary on the underlying reasons, inference, and implications of the results.

Rob then presented a general overview of a process that could be used to evaluate and develop implementation goals which included 4 steps: 1) identify key guidelines and indicators, 2) determine the need to develop a goal (potential for detriment), 3) evaluate existing information related to the topic and determine relative degree of certainty in establishing a goal, and 4) recommend modifying the monitoring program to ensure that results accurately reflect conditions on the ground. After going through each of these steps in more detail and presenting a list of specific issues that could potentially be evaluated, Rob asked committee members for their thoughts on the process. Wayne stated that he did not think setting hard goals was going to improve implementation and that we should focus on ways to improve buy-in through education. Specifically, he recommended that we get statements from stakeholders recommitting to implementing the guidelines, adopt a policy of continuous improvement that recognizes diminishing returns, work more on education to explain why implementation of certain guidelines is important and what we are trying to achieve, make recommendations on structural changes to improve implementation such as easier access to DNR's ETS database, and to have key individuals (DNR, MFRC, MLEP, SFEC, etc.) meet periodically to determine where we need to improve implementation and target education. Amber stated that she agreed with all of Wayne's recommendations, but also thought that establishing targets and goals was worthwhile and that we should continue with the evaluation.

Dave Z. asked Tom to expand on a comment that he made regarding the WQ-related guidelines. Tom stated that the de facto level of implementation for those guidelines that are required by laws or regulations is 100%, and it is not our place to try and recommend a goal that is different than that. Dave P. stated that he had a problem with evaluating the ETS inventory check because it seemed that NIPF owners were at a disadvantage in the evaluation. Shawn indicated that he agreed with what everyone had said so far, but was still struggling with how we ultimately change what happens on the ground. Rob asked Wayne if he was opposed to conducting the evaluation at all. Wayne indicated he was against setting hard goals for implementation, but was not necessarily opposed to evaluating information related to each topic to determine if there is a problem. Amber suggested that we proceed with the evaluation, which could then be used to either set goals or be used to address problems

identified in the evaluation and identify ways to move forward. Rob asked if there was general agreement to this suggestion from the rest of the committee and they all indicated that this approach was acceptable. Rob then asked if the list of specific issues was sufficient. Committee members indicated it was with the exception of the ETS inventory check. Rob reminded the committee that most of the next meeting will be focused on finalizing the field guide recommendation, but he will prepare for evaluation of these topics in case there is time remaining after finishing the primary task. The meeting was adjourned at 3:15pm.

Summary of January 8, 2014 meeting, 9:30 a.m. – 2:30 p.m.

Rob reviewed the agenda and noted that the intent was to finalize the committee's work with a maximum of one more meeting depending on how much was accomplished today. Rob noted that the last meeting ended with agreement to conduct an evaluation of specific guideline topics identified as possible issues from previous monitoring reports, but there was no agreement on how to proceed following that evaluation. A decision key that was developed to assist the committee in evaluating the various topics was passed out. The decision key consisted of three options: 1) Is improvement in implementation necessary?, 2) Do monitoring measurement and analysis protocols need to be modified to more accurately reflect reality?, and 3) Is more information needed on the topic to make an informed decision? Dave C. asked if topics could only be placed on 1 category, or could multiple categories be used. Dave Z. responded that either option was acceptable and gave examples for each one. Rob stated that monitoring reports have shown consistent trends in implementation for several of the guidelines, and determining whether or not there was an issue with implementation levels or a need to modify the monitoring protocols would be very helpful in moving forward. The committee generally agreed that this was an acceptable approach to begin finalizing a recommendation to the MFRC.

The specific topics to be evaluated were then summarized based on whether or not they were associated with water quality issues (i.e., associated with regulatory frameworks). The specific topics which were evaluated were: rutting in NOWW crossings; low use of erosion control at crossing approaches and road/trail segments when risks to WQ exist; failure of filter strips due to placement of roads, landings and trails; partial RMZ implementation; low use of the clump option for leave tree retention; limited information on leave tree characteristics; and high total infrastructure area for larger harvest sites. For each topic, Rob presented reported monitoring data and additional analysis, relevant research findings, and a list of considerations.   The committee then discussed the information and evaluated the topic by placing it (and related recommendations) within the appropriate decision key option(s). There was generally good agreement among the committee on overall conclusions and recommendations, but there were some instances when one or more members partially disagreed with the larger group. Most of these instances arose from differences in opinion on whether or not implementation could be improved, and not differences in opinion on whether or not there was an

impact. At some point in the discussion, Wayne stated that he envisioned the committee's recommendation being a high-level policy statement with options for improvement that would include stakeholder recommitment to implementation and targeted training, and some recommendations on changes to monitoring program protocols. Dave Z. asked the committee if they agreed with this approach and they generally concurred. Amber suggested that the committee could still make more detailed recommendations that could be prioritized. Bruce stated that he did not want all of the detailed work and evaluation of the committee to be lost, and that it should be incorporated into the report in some way. The committee agreed that the report should be one to two pages in length with "high" level recommendations and background, and that an appendix should be included which summarized the evaluation they had conducted and the more specific recommendations related to training, research and assessment, and modification of monitoring protocols. The draft report will be sent to committee members by the end of the month, with a goal of having it completed before the March MFRC meeting. The report will be finalized via email in addition to either a conference call or short meeting if needed. The meeting adjourned at 2:30.