DEPARTMENT OF NATURAL RESOURCES

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MEMORANDUM

July 25, 2025

TO: Forest Practices Board (Board)

FROM: Lori Clark, Adaptive Management Program Administrator (AMPA)
lori.clark@dnr.wa.gov | 360-819-3712

SUBJECT: TFW Policy Small Forest Landowner Conifer Thinning Alternate Harvest Prescriptions Dispute Resolution

A memo was delivered to the Board for the May 2025 Board meeting on the resolution of the Small Forest Landowner Conifer Thinning Alternate Harvest Prescriptions dispute. The items in dispute were originally considered in a TFW Policy workgroup in February 2020 (see AMPA memo to the Board for here). The Small Forest Landowner (SFL) Caucus invoked the Dispute Resolution process at the September 2024, TFW Policy meeting regarding a failed motion to complete the development of an experimental small forest landowner conifer thinning alternate harvest prescription and associated AMP monitoring study for western Washington. An informal meeting on September 18 helped disputing parties to accurately characterize the dispute and begin the formal process. TFW Policy members discussed the caucus position papers, including potential solutions to resolve the dispute at two meetings, November 7th TFW Policy meeting and November 20th. Discussions concluded without resolution which led to the initiation of stage 2. Triangle and Associates was contracted to support TFW Policy with stage 2 mediation.

The TFW Policy Committee reached consensus on the following motion during the TFW Policy meeting on March 6:

Part 1: Alternate Harvest Conifer Thinning Prescription

a. Consider the SFL conifer thinning alternate harvest prescription as a standard alternate plan to be applied for by willing landowners. DNR will monitor the FPAs and report to the Forest Practices Board on frequency and compliance,

b. Drop the alternate harvest conifer thinning prescription as an AMP project, and

c. Recommend the Board direct staff to, when appropriate, form a Board Manual Section 21 Workgroup and task the workgroup to review alternate plan FPAs and determine at what point, if at all, this recurring alternate plan will qualify for a template to be included in BM 21.

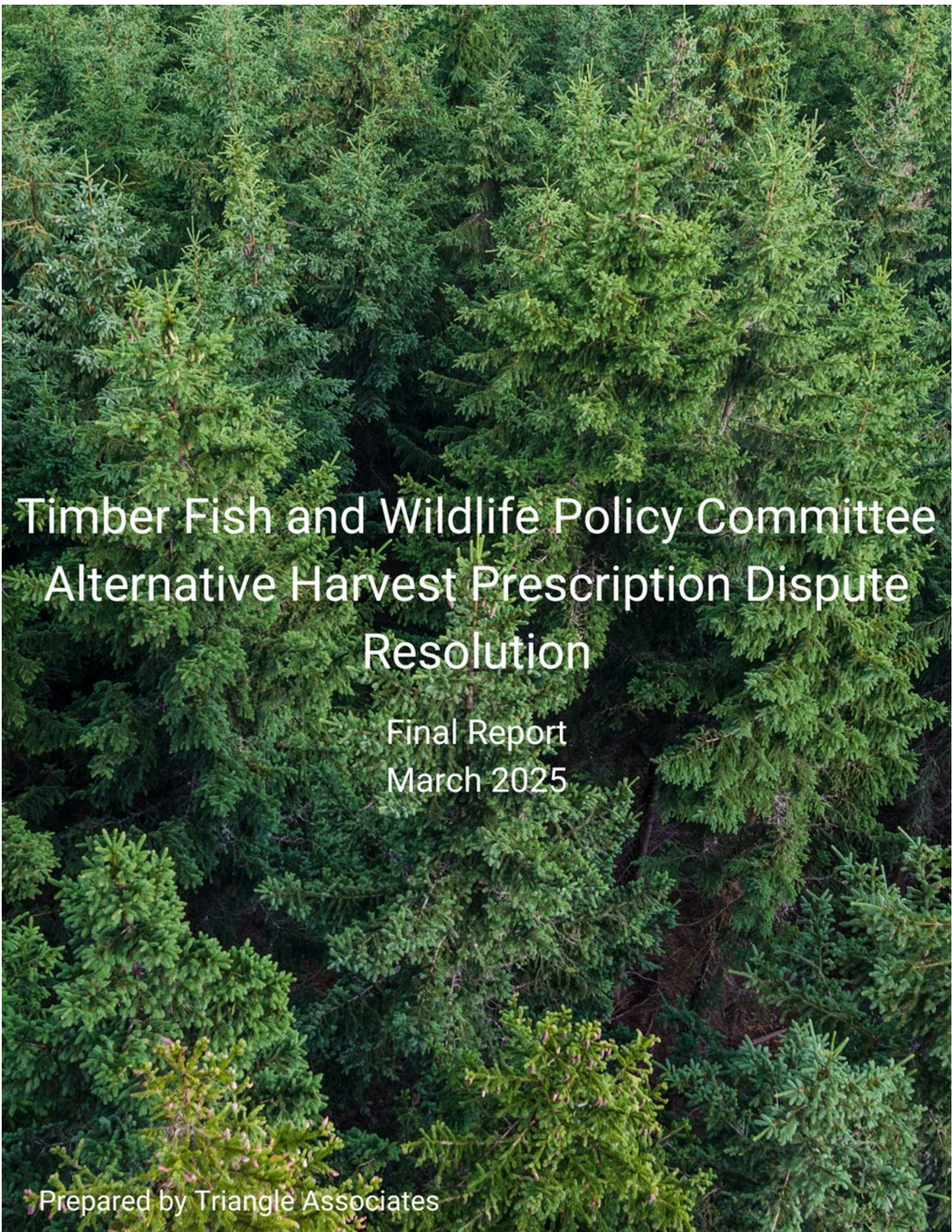
Part 2: 75-Foot Buffer Proposal

The 75-ft buffer prescription will be considered as a treatment under the 5.3.7.3 Westside Type F Experimental Buffer Treatment Project.

The dispute was resolved with a consensus recommendation that requires no final determination action from the Board as would be the case in unresolved disputes. The Board is requested to consider acknowledging the TFW Policy consensus recommendation and the thinning prescription guidance document for small forest landowners. Please let me know if you have any questions.

Attachments:

- Timber Fish and Wildlife Policy Committee Alternate Harvest Prescriptions Dispute Resolution Final Report (March 2025)
- Alternate Harvest Conifer Thinning Guidance Document



Timber Fish and Wildlife Policy Committee Alternative Harvest Prescription Dispute Resolution

Final Report

March 2025

Prepared by Triangle Associates

Executive Summary

Triangle Associates was contracted by the Washington State Department of Natural Resources (DNR) Adaptive Management Program (AMP) to mediate the Small Forest Landowners (SFL) Alternative Harvest Prescription dispute. This Final Report outlines the background of the dispute, the steps taken to reach a consensus resolution, and the mediation methods used.

1. **Background Information** details previous resolution efforts, dispute language, participating caucuses, and key stages of the dispute.
2. **Steps to Resolve the Dispute** outlines the mediation process, culminating in a consensus motion, and the types of meetings and documentation used.
3. **Mediation Methods** explains how Triangle facilitated resolution, including communication strategies and consensus-building approaches.

Summary of Process and Outcomes:

Triangle conducted a situational Assessment via nine total one-on-one interviews with participating Policy Committee members and facilitated a total of three mediation sessions and numerous one-on-one calls with individual Policy Committee members in between meetings. During these sessions a proposal for resolution of the dispute was drafted and presented to the mediation team by the State Caucus (see Section 2 for proposal language). After working with each caucus individually and during the second and third mediation sessions to review and discuss the proposal and explore opportunities for agreement, the proposal was approved by consensus during the Policy meeting on March 6th, 2025.

1. Background Information

a. Dispute Language

The description for the Criteria for the SFL Alternative Harvest Prescription dispute is excised from the mediation team's contract with the DNR as follows:

> *"The SFL caucus has invoked the Dispute Resolution process with the intent to achieve consensus through amending of the 5th of September Policy motion to complete the development of an experimental small forest landowner conifer thinning alternate harvest prescription and associated Adaptive Management Program (AMP) monitoring study for western Washington which can be presented to the Forest Practices Board. The SFL caucus believes the language in the motion can be accepted or can be amended to accept the draft experimental conifer thinning alternate harvest prescription for western Washington based on:*
>
> - *The prescription applies the current rule protections in WAC 222-30-021(1)(b)(I) and (II) for DFC Options 1 and 2.*
> - *If needed include site data for these options from the Westside Type F Riparian Management Zone Exploratory Study findings.*
> - *The prescription incorporates the stand eligibility requirements and riparian width requirements from the Board approved Templates 1 & 2 in Part 3 of Board Manual Section 21.*

If needed, include data from approved Forest Practice Applications (FPAs) harvested under these Alternative Plan (AP) templates and results from Compliance Monitoring reports for the application of these templates for the past 10 years. The SFL caucus supports Policy review of the potential to apply a 75-foot RMZ buffer for all site classes to the draft experimental conifer thinning alternate harvest prescription for western Washington to a limited number of FPAs under a Pilot rule. The motion on the 5th of September to Policy was "I move to accept the alternate harvest prescription in response to the Board request to develop experimental alternate harvest prescriptions and Policy requests CMER develop a monitoring plan to evaluate the effectiveness of the prescription. Additionally, to request the board to allow a minimum number of 75' harvest prescriptions cross all site classes through a pilot rule making."

The Conservation Caucus voted not to move forward with the September 5th Motion due to concerns about the lack of a strong scientific foundation as follows:

"The Adaptive Management Program (AMP) is a science-driven process, and our primary concern is that this prescription lacks the necessary scientific support. After questioning, the experimental prescription authors stated that the prescription was primarily based on the best professional judgment of those involved in its development and its adherence to past approved Forest Practice Applications (FPAs). However, the monitoring of the effectiveness of these past FPAs has been limited and does not provide sufficient confidence that the proposed prescription, as broadly written, would adequately protect resources. Additionally, the last-minute inclusion of a 75-foot Riparian Management Zone (RMZ) buffer for all site classes had previously been addressed through a dispute resolution process and should not be revisited. There is also no new supporting evidence to show that this approach would be equally or more protective than the current rule. While the experimental prescription may have potential, it is a better candidate for further study and should follow the standard AMP process to ensure any changes are fully backed by scientific evaluation and will be protective of the resources."

b. Participating Caucuses

All caucuses opted to participate in the mediation as follows:

- Small Forest Landowners
- Conservation
- Westside Tribes
- Eastside Tribes
- Counties
- Industrial Landowners
- Washington Department of Fish and Wildlife
- Washington Department of Ecology
- Washington Department of Natural Resources

2. Steps to Resolve the Dispute

The mediation team guided the TFW Policy Committee through a structured and collaborative mediation process designed to address concerns, explore solutions, and build consensus. The key steps included:

- **Establishing a Mediation Agreement** – A foundational agreement was developed and signed by all parties, outlining the principles, expectations, and ground rules for the mediation process.
- **Facilitating a Kickoff Meeting** – The mediation team convened an initial meeting with the TFW Policy Committee to set the stage for discussions, clarify objectives, and ensure all caucus members were aligned on the mediation process.
- **Conducting Assessment Interviews** – A series of nine individual assessment meetings were held with each participating caucus to gain insight into key concerns, interests, and priorities.
- **Developing a Thematic Summary** – Findings from the assessment interviews were synthesized into a Thematic Summary, which was presented during the first mediation session to highlight shared issues, areas of divergence, and opportunities for resolution.
- **Facilitating One-on-One and Small Group Discussions** – Throughout the process, the mediation team engaged in numerous focused discussions with individual caucuses and small groups to address concerns, clarify positions, and foster understanding.
- **Maintaining Communication Between Mediation Sessions** – The mediation team facilitated ongoing engagement between sessions, helping caucuses articulate their interests, refine proposals, and explore potential areas of agreement.
- **Achieving Full Consensus** – On March 6, 2025, after extensive deliberation and refinement of proposed language, all participating Policy caucus members reached full consensus on a motion to resolve the dispute.

For additional details on each step, see below.

a. Mediation Agreement

Triangle developed a Mediation Agreement (see appendix C), signed by all participating caucus members, to establish a clear framework for the process. It defined the mediation team's role as a neutral facilitator, set ground rules for respectful communication, ensured confidentiality, outlined participant responsibilities, provided guidelines for communication, and clarified decision-making expectations. This agreement helped align all parties, foster trust, and support a structured path toward resolution.

b. Introductory Meeting with the Policy Committee

On December 18, 2024, Triangle attended the TFW Policy Committee meeting to introduce the mediation team, confirm caucus participation, and outline next steps. All caucuses committed to the process, and the mediation team introduced the Assessment phase to gather key insights and shape the mediation strategy. By the meeting's conclusion, participants understood their roles, and a structured roadmap for resolution was established.

c. Assessment Interviews

Following the December meeting, Triangle conducted nine one-hour assessment interviews with TFW Policy Committee caucuses to build rapport, understand key concerns, and gather insights

into communication preferences. These discussions helped identify priorities, explore potential compromises, and shape a mediation approach that was responsive to the group's dynamics and needs.

d. Assessment Summary

After completing the assessment interviews, Triangle compiled a summary of findings for the TFW Policy Committee, distilling key insights while maintaining confidentiality (see appendix B). The summary highlighted values and interests, identified challenges to the dispute resolution process, and provided mediation team recommendations to facilitate resolution and build common ground. This structured approach helped the committee gain a clear understanding of the dispute's key themes and potential paths forward.

e. First Mediation Session – January 15, 2025

The first TFW Policy Committee mediation session on January 15, 2025, established a shared understanding of the process, expectations, and key issues. The session included a review of the Mediation Agreement, opening statements from caucuses, presentation of assessment findings, and a review of the principles of Interest-Based Negotiation. Participants also identified information needs, confirmed key issues and scope, and outlined next steps. By the session's conclusion, the committee had a clear framework for moving forward with resolution efforts (see appendix D).

f. Ongoing One-on-One Engagement Between Mediation Sessions

Between mediation sessions, the mediation team conducted one-on-one calls with TFW Policy Committee members to maintain momentum, clarify concerns, and explore solutions. These discussions helped deepen understanding of caucus interests, ensure a shared interpretation of key issues, and assess willingness to consider specific solutions. By addressing misunderstandings and refining negotiation strategies, these targeted conversations kept the process flexible, responsive, and aligned with the evolving needs of the committee.

g. Second Mediation Session – February 6, 2025

The second TFW Policy Committee mediation session on February 6, 2025, built on previous discussions, advancing efforts toward resolution. The session focused on reviewing key issues, discussing a draft resolution introduced by the State caucus (see full text below), and assessing support for Part 1 of the proposal. While tentative agreement was reached on Part 1, further discussions were needed. This session marked progress while identifying areas requiring additional refinement before full consensus could be achieved.

Proposed Resolution Suggested by the State Caucus:

Part I

a. *Consider the SFL conifer thinning alternate harvest prescription as a standard alternate plan to be applied for by willing landowners. DNR will monitor the FPAs and report to the Forest Practices Board on frequency and compliance*
b. *Drop the alternate harvest conifer thinning prescription as an AMP project*
c. *Recommend the Board direct staff to, when appropriate, form a Board Manual Section 21 Workgroup and task the workgroup to review alternate plan FPAs and determine at*

what point, if at all, this recurring alternate plan will qualify for a template to be included in BM 21.

Part II

d. *The 75 ft prescription be considered as a treatment in a future Type F effectiveness study*

h. Third Mediation Session and Preparations for Fourth Mediation Session – February 19 and March 6, 2025

The third TFW Policy Committee mediation session on February 19, 2025, aimed to affirm consensus on Part 1 of the proposed resolution and identify concerns with Part 2. During discussions, it became clear that the SFL caucus needed more time to consider its position. The mediation team conducted one-on-one follow-ups to assess trade-offs and gauge willingness to continue working toward full consensus.

Leading up to the fourth session on March 6, 2025, the mediation team worked to bridge differences between opposing parties and refine language for broader acceptance. Draft language was shared with committee members (see section below), and most indicated support. On March 6, the final resolution was put to a vote.

i. Consensus

The TFW Policy Committee reached consensus on the following proposed motion to resolve the dispute during the TFW Policy meeting on March 6. The final agreement reflected varying levels of support, with some expressing moderate agreement (thumbs sideways) and others stronger approval (thumbs up).

The consensus resolution:

"Part 1: Alternate Harvest Conifer Thinning Prescription

a. *Consider the SFL conifer thinning alternate harvest prescription as a standard alternate plan to be applied for by willing landowners. DNR will monitor the FPAs and report to the Forest Practices Board on frequency and compliance*
b. *Drop the alternate harvest conifer thinning prescription as an AMP project*
c. *Recommend the Board direct staff to, when appropriate, form a Board Manual Section 21 Workgroup and task the workgroup to review alternate plan FPAs and determine at what point, if at all, this recurring alternate plan will qualify for a template to be included in BM 21.*

Part 2: 75-Foot Buffer Proposal

The 75-ft buffer prescription will be considered as a treatment under the 5.3.7.3 Westside Type F Experimental Buffer Treatment Project."

3. Mediation Methods

The following is a short list of mediation methods utilized to resolve this dispute and to consider for future disputes.

a. Enhancing Communication and Refining Consensus-Building Approaches

Throughout the mediation process, Triangle coached caucuses on communication styles, helping them refine messaging for clarity and collaboration. Given the length and complexity of discussions, many were eager to reach a resolution, even if it was not ideal for all. The final agreement was seen as preferable to the Worst Alternative to a Negotiated Agreement (WATNA).

A major challenge was negotiating precise language, as certain terms were contentious. The mediation team emphasized active listening and constructive framing, guiding participants to shape language that was workable, even if not universally preferred. Moving forward, continued focus on effective communication will be crucial to ensure future agreements are durable and not simply the result of negotiation fatigue.

b. Strengthening Communication, Trust, and Relationship Resilience

To strengthen future collaboration, the Policy Committee should prioritize open communication and trust-building among members. The intensity of this mediation process highlighted the need for long-term relationship development to support effective decision-making. The mediation team recommends:

- Utilizing a neutral third-party facilitator for complex discussions.
- Providing ongoing communication coaching to improve clarity and engagement.
- Organizing informal interactions (e.g., site visits, coffee meetings) to build relationships outside of formal negotiations.

These efforts will help create a more resilient foundation for navigating future disputes.

c. Establishing Agreed-Upon Communication Protocols

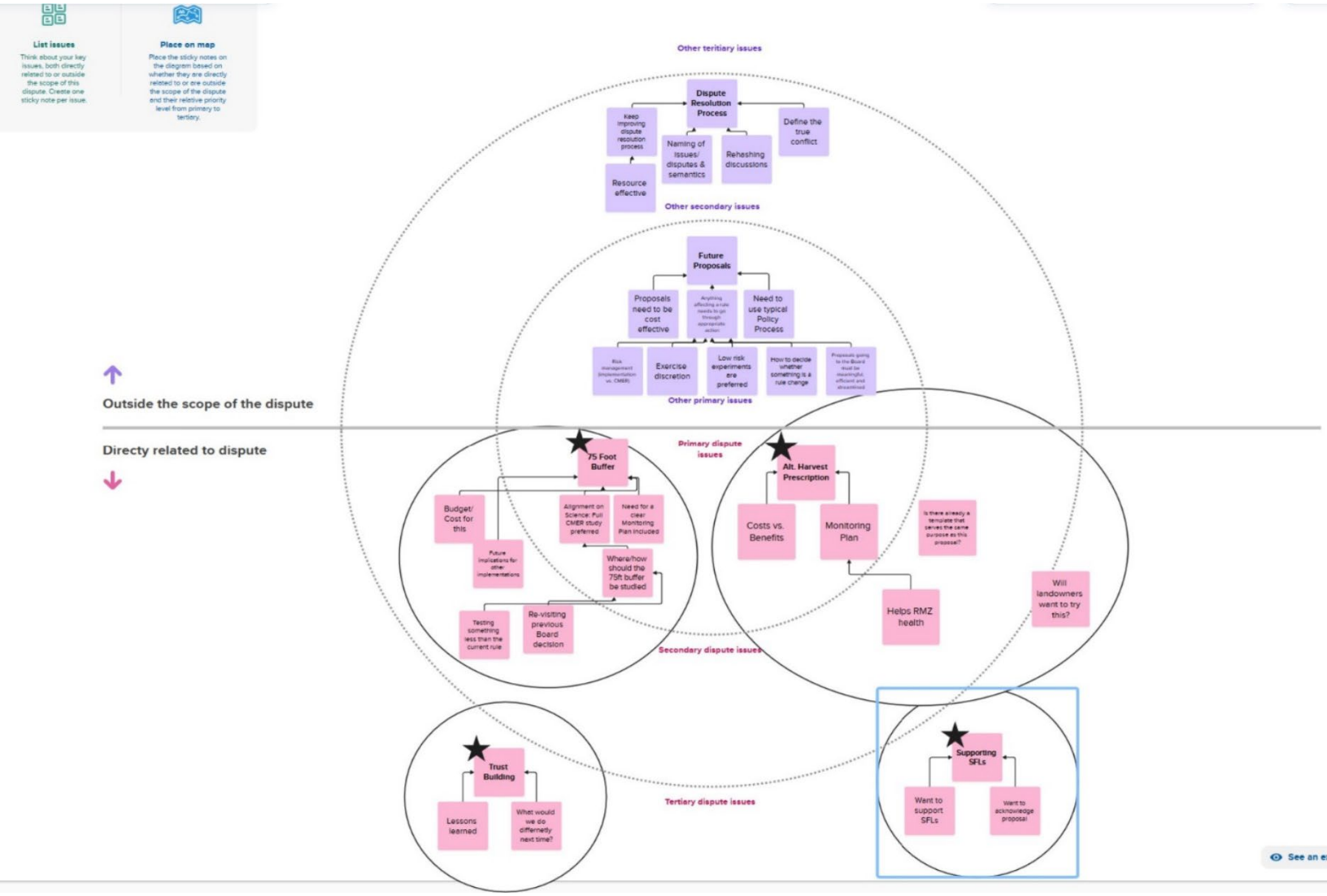
Differing communication styles emerged as a barrier to effective engagement, with some members finding certain approaches overly assertive, while others preferred more individualized discussions. To address this, the Policy Committee should establish or revisit communication protocols that align with the group's current needs.

The mediation team recommends:

- Developing agreed-upon norms for meetings and written communication.
- Revisiting existing protocols to ensure they reflect current membership.
- Incorporating small-group or one-on-one discussions for those who prefer direct engagement.
- Regularly assessing communication practices to make necessary adjustments.

By formalizing these expectations, the Policy Committee can foster a more inclusive and productive dialogue, reducing friction and improving engagement.

Appendix A: Key Issues Identified During Mediation Sessions #1 and #2



Appendix B: Key Themes and Recommendations from the Assessment

TFW Policy Committee

Alternative Harvest Prescription Dispute Assessment

Summary of Key Themes and Recommendations

Shared Values and Interests

- **Shared Interest in Science-Driven Decision Making:** Caucuses broadly support using credible, robust science as the foundation for decision-making, though opinions differ on what constitutes acceptable evidence.
- **Support for Experimental Approaches:** There is general agreement on the value of limited experiments to test new approaches, provided they include adequate monitoring and safeguards.
- **Commitment to Riparian Health:** Despite differing views on methods, all parties share a commitment to sustaining riparian functions and fish populations.
- **Value in Maintaining Forestry as a Viable Practice:** There is a shared interest in ensuring that forestry practices align with both environmental sustainability and economic viability.
- **Recognition of the Importance of Collaboration:** There is a collective interest in improving processes to ensure productive, respectful, and inclusive engagement.
- **Desire for Trust-Building:** Caucuses acknowledge that trust is a foundation for long-term cooperation.
- **Concern for Equitable Outcomes:** There is a shared recognition of the need to balance the interests of small forest landowners, conservationists, Tribes, and state agencies.

Key Challenges

- Divergent perspectives on the inclusion of the 75ft buffer proposal
- Need for clarity of information and effective communication
- Limited trust among caucuses and need for relationship building
- Principle-based vs. interest-based negotiation

Recommendations for the Mediation Process

- **Clarify Objectives and Outcomes:** Clearly define what the mediation aims to achieve and ensure all caucuses understand the scope of discussions.
- **Focus on Interest-Based Negotiation:** Encourage parties to articulate their underlying interests rather than positions.
- **Integrate Science into Discussions:** Potentially include a presentation on relevant scientific findings to address knowledge gaps and build consensus.

- **Promote Transparency and Inclusivity:** Ensure all caucuses feel heard and valued in the process.
- **Invest in Trust-Building Activities:** Include opportunities for informal interactions to strengthen relationships and reduce animosity.
- **AMP Process Clarification:** Identify what a policy track project, science track project, what informs role, etc. (maybe at a regular TFW Policy Meeting)

Appendix C: Mediation Agreement

AGREEMENT FOR MEDIATION

Small Forest Landowners Alternative Harvest Prescription Dispute

January 13th, 2025

Background

The SFL caucus has invoked the Dispute Resolution process with the intent to achieve consensus through amending of the 5th September Policy motion to complete the development of an experimental small forest landowner conifer thinning alternate harvest prescription and associated AMP monitoring study for western Washington which can be presented to the Forest Practices Board.

Criteria for Mediation
The dispute is described as follows:

1. The SFL caucus believes the language in the motion can be accepted or can be amended to accept the draft experimental conifer thinning alternate harvest prescription for western Washington based on:
    - The prescription applies the current rule protections in WAC 222-30-021(1)(b)(I) and (II) for DFC Options 1 and 2;
        - If needed include site data for these options from the Westside Type F Riparian Management Zone Exploratory Study findings
    - The prescription incorporates the stand eligibility requirements and riparian width requirements from the Board approved Templates 1 & 2 in Part 3 of Board Manual Section 21
        - If needed Include data from approved FPAs harvested under these AP templates and results from Compliance Monitoring reports for the application of these templates for the past 10 years.
2. The SFL caucus supports Policy review of the potential to apply a 75-foot RMZ buffer for all site classes to the draft experimental conifer thinning alternate harvest prescription for western Washington to a limited number of FPAs under a Pilot rule.

The motion on the 5th of September to Policy was "I move to accept the alternate harvest prescription in response to the Board request to develop experimental alternate harvest prescriptions and Policy requests CMER develop a monitoring plan to evaluate the effectiveness of the prescription. Additionally, to request the board to allow a minimum number of 75' harvest prescriptions cross all site classes through a pilot rule making."

The Conservation Caucus voted not to move forward with the 5th of September motion due to concerns about the lack of a strong scientific foundation:
The Adaptive Management Program (AMP) is a science-driven process, and our primary concern is that this prescription lacks the necessary scientific support. After questioning, the experimental prescription authors stated that the prescription was primarily based on the best professional judgment of those involved in its development and its adherence to past approved Forest Practice Applications (FPAs). However, the monitoring of the effectiveness of these past FPAs has been limited and does not provide sufficient confidence that the proposed prescription, as broadly written, would adequately protect resources.

Additionally, the last-minute inclusion of a 75-foot Riparian Management Zone (RMZ) buffer for all site classes had previously been addressed through a dispute resolution process and should not be revisited. There is also no new supporting evidence to show that this approach would be equally or more protective than the current rule.
While the experimental prescription may have potential, it is a better candidate for further study and should follow the standard AMP process to ensure any changes are fully backed by scientific evaluation and will be protective of the resources.

Mediation Agreement
The participating parties agree to enter into a mediated negotiation for the purpose of resolving this dispute.

The parties agree to this Agreement for Mediation as follows:

1. Mediator. The mediator, the individual who conducts the mediation, in all cases serves at the pleasure and with the consent of the parties. The parties agree that the mediator for this case shall be Annie Kilburg Smith of Triangle Associates, Inc. Annie Kilburg Smith will be assisted by Triangle Associate Anna Shepherd. All aspects of this agreement that apply to the meditator shall apply to any employee of Triangle Associates.
    a. The mediator's role shall be to mediate negotiations between the parties. The mediator will provide notice to the parties of joint meetings and distribute materials prior to the sessions. The mediator will meet and communicate separately and together, as necessary, with the parties to discuss possible ways of resolving the disputes.
    b. The mediator shall not disclose to any other party information conveyed in confidence by another party, unless authorized to do so by that party or otherwise required under the Washington Uniform Mediation Act (Chapter 7.07 RCW) or the federal Administrative Dispute Resolution Act (5 U.S.C. § 571 et seq.) or other applicable law.
    c. The mediator, in her capacity as mediator, shall not be deemed a "necessary or indispensable" party, as those terms are used in connection with Rule 19 of the Federal Rules of Civil Procedure and any relevant state law equivalent, in any future judicial, administrative or arbitral proceeding.
    d. The parties shall not subpoena or otherwise seek to obtain from the mediator any documents relating to the mediation process submitted to the mediator by a Party. The parties shall not subpoena the mediator to testify as a witness regarding the mediation process. In no event will the mediator voluntarily testify on behalf of one or more Party or participate as a consultant and/or expert, in any pending or future judicial, administrative, or arbitral action or proceeding relating to any of the matters discussed in the mediation process.
    e. The mediator shall not offer a decision on the merits of the dispute nor offer an opinion on the technical merits of the position of any of the parties.

2. Mediation Sessions. Mediation sessions will be conducted virtually or in person at locations, dates, and times agreed to by the parties.
    a. The mediation will be conducted in compliance with the Open Public Meetings Act Chapter 42.30 RCW and therefore:
        i. The mediation sessions will be noticed as "special meetings" of the Policy Committee.

ii. Policy may follow its practice of delegating 4 or fewer caucuses to work together as a subcommittee. This delegation to subcommittees must take place within a noticed public meeting.

b. The mediation and all communications amongst the parties will comply with the Policy Committee Ground Rules (see Appendix A (page 24) of Section 22 of the Forest Practices Board Manual, linked **here** and the TFW Policy Operating Manual, linked here The parties will work with the mediator and each other to ensure that the Ground Rules are followed to help ensure constructive negotiations.

c. Participation in the mediation by the mediator, parties, and nonparty participants, including attendance at proceedings, statements made, and documents prepared or furnished by any party, attorney, or other participant shall not be construed for any purpose as an admission of liability or otherwise against any party's interest.

d. All mediation sessions will be scheduled at a time when representatives of all parties are available to participate. If one or more parties choose not to participate in the mediation or a mediation session, the remaining quorum will determine if the mediation or mediation session will continue.

e. Each of the parties will have up to three representatives at the mediation session "table", including attorneys if agreed to by both parties. All other individuals present will be considered observers without a speaking role. Additional technical or policy representatives will participate by agreement of the parties.

f. In advance of the first joint mediation session, representatives of each participating party will confirm to the mediator and all other parties in writing their ability to make decisions on behalf of their organization during the mediation sessions. Any change to the ability of the parties to make decisions during a mediation session will be provided in writing in advance of a joint mediation session.

3. Media and Public Communications.

a. The parties will be mindful of the impacts their public and private statements will have on the tenor of this effort and on future interactions between parties.

b. At any point in the mediation, the mediator may work with the parties to draft statements, settlement options, or proposals. If these products are jointly approved by all parties, the parties can use these products to communicate with their respective boards, caucus members, decision maker(s), or constituents.

c. During the mediation, all communications with news media concerning the mediation discussions will be by agreement of all parties. Parties may confirm to the media that the mediation and negotiations are taking place.

d. At selected intervals and at the conclusion of the mediation, with agreement of all parties, the mediator may draft a brief statement, which will be jointly approved by all parties, which the parties can use to communicate with the media and/or the public.

4. Mediation Schedule. The parties will follow the schedule of completing this mediation by March 31, 2025, or another date mutually agreed-upon by all parties if all parties agree that substantive progress is being made.

5. Costs of the Mediation. The fees and expenses of the mediator will be paid for by the Department of Natural Resources through the Adaptive Management Program budget. The mediator is providing services hereunder without charge to the individual parties.

6. Good Faith. All parties will act in good faith in all aspects of these negotiations by adhering to the provisions in this agreement.

7. Right to Withdraw and Termination. The parties agree to participate in the mediation. Withdrawing parties remain bound by the provisions of this Agreement.

8. Release. The parties hereby release the mediator from any and all claims arising out of their failure to reach agreement or their decision to enter into any agreement, or the terms of any agreement reached. The mediator makes no representation that the participants will reach agreement on any of the issues, disputes or controversies discussed in the mediation.

9. Additional Provisions. Agreements among the parties on other issues or ground rules may be developed and incorporated into this Agreement at any time during the assessment phase, by a written modification to this Agreement signed by all of the parties.

10. Counterpart Signatures. This Agreement may be executed in one or more counterparts, which together shall constitute one instrument.

IN WITNESS, WHEREOF, the parties to this Agreement have executed or caused this Agreement to be executed by their duly authorized officers or representatives, as of the date set forth below.

Mediator: Annie Kilburg Smith, Triangle Associates, Inc. on behalf of the Triangle mediation team

Signature: _____Date: _____

[insert name of Party]:

Lead Name: _____

Signature: _____ Date: _____

Principal Name or Policy Resource (if Applicable): _____

Signature: _____ Date: _____

Example/Overview of the Mediation Process for Two Parties in Dispute

v. 9-11-2024

Introduction: Mediation is a voluntary and confidential process in which a neutral third-party mediator assists disputing parties in reaching a mutually acceptable resolution. The process emphasizes communication, understanding, and collaboration, with the goal of addressing each party's interests and needs rather than assigning blame. Below is an overview of the mediation process spread across three sessions, beginning with an assessment phase to tailor the mediation approach to the needs of both parties.

Assessment Phase: Individual Pre-Mediation Interviews

1. **Individual Interviews:**
   - The mediator conducts a private interview with each party to understand their perspectives, interests, and key issues. This helps the mediator grasp the context of the dispute, individual concerns, and desired outcomes.
   - The mediator explains the mediation process, outlining the role of the mediator, the structure of the sessions, and the principles of confidentiality and neutrality.
   - Each party is given the opportunity to ask questions, express any concerns about the process, and provide input on how the mediation can best meet their needs.
2. **Tailoring the Mediation Process:**
   - Based on the interviews, the mediator refines the approach to ensure that the process is responsive to the specific dynamics of the dispute.
   - The mediator may adjust the session structure, establish any special accommodations (e.g., alternating speaking order), and agree on any additional guidelines that could facilitate constructive dialogue.
3. **Setting Expectations and Finalizing the Process:**
   - The mediator finalizes the mediation plan, including the session 1 agenda, time frames, and any pre-session tasks or information exchange.
   - Both parties receive a summary of the finalized process and confirm their understanding and agreement to proceed.

Session 1: Initial Joint Meeting and Issue Identification

1. **Opening Statements:**
   - The mediator opens the session by reintroducing the purpose of mediation, reinforcing guiding principles (or ground rules), and setting a collaborative tone.
   - Each party presents their perspective on the dispute, highlighting key issues and concerns without interruption.
2. **Identifying and Clarifying Issues:**
   - The mediator synthesizes the main issues based on the parties' statements, confirming mutual understanding.

- The mediator helps the parties prioritize the issues to be addressed in the mediation, ensuring alignment on the focus areas.

3. **Establishing Mediation Goals:**
   - Both parties are encouraged to share their goals for the mediation, outlining what a successful resolution looks like for them.
   - The mediator ensures that the parties' goals are realistic and achievable within the mediation framework.

Session 2: Exploration and Negotiation

1. **Exploring Interests and Needs:**
   - The mediator facilitates a deeper exploration of each party's underlying interests, needs, and motivations behind their positions.
   - The focus is on understanding each party's perspective to foster empathy and identify common ground.
2. **Generating Solutions:**
   - The mediator leads a brainstorming session where parties propose potential solutions to address the identified issues.
   - Creative and flexible thinking is encouraged, with an emphasis on options that meet the core needs of both parties.
3. **Negotiating Terms:**
   - The mediator assists the parties in evaluating the proposed solutions, negotiating terms, and making adjustments to bridge any remaining gaps.
   - Tentative agreements are noted, with an understanding that they are subject to further review in the final session.

Session 3: Finalizing the Agreement

1. **Review of Tentative Agreements:**
   - The mediator reviews the tentative agreements reached in the previous session, ensuring that they remain acceptable to both parties.
   - Any unresolved issues are addressed, with the mediator guiding discussions toward final resolution.
2. **Final Negotiations and Refinement:**
   - The mediator facilitates any last adjustments needed to finalize the terms of the agreement, ensuring that the outcome is practical, fair, and sustainable.
   - The parties refine the agreement to ensure clarity and mutual satisfaction with the terms.
3. **Drafting the Final Agreement:**
   - The mediator drafts a written agreement detailing the terms, including provisions for implementation, follow-up, and any contingencies.
   - Both parties review the document, provide feedback, and confirm their understanding and acceptance.
4. **Closure:**
   - The agreement is signed by both parties, marking the formal conclusion of the mediation process.
   - The mediator provides guidance on next steps, including implementation and any post-mediation support or follow-up sessions.

- The session concludes with an acknowledgment of the parties' efforts to collaboratively resolve the dispute.

Conclusion: The mediation process, enhanced by an initial assessment phase, is designed to provide a tailored, effective pathway to dispute resolution. By focusing on individual needs and interests, the process aims to foster mutual understanding and guide the parties toward a sustainable and mutually agreeable outcome.

Low Impact Conifer Thinning Prescription for Western Washington
For Small Forest Landowners
April 7, 2025

Overview

This document contains resources and information developed to assist small forest landowners with the preparation of a low impact alternate harvest prescription designed for thinning of conifer dominated riparian forests in western Washington. The intent of this prescription is to function as an alternate plan at qualifying sites to improve the long-term riparian function of crowded riparian forest stands which demonstrate the potential for substantial suppression of tree growth if no thinning occurs. By allowing a light to moderate thinning of the trees through the alternate plan process (WAC 222-12-040), these forested riparian areas can be managed in a manner that will encourage growth of understory vegetation and achieve larger tree diameters of the residual stands helping them meet the desired future condition goals of the forest practices rules faster than would have occurred under a no-thinning option. This prescription is intended to be used in riparian forest stands with an existing stocking level of less than 300 conifer trees per acre (TPA). Landowners who intend to thin riparian forest stands that exceed this stocking level should consider using the Overstocked Stand Template (https://www.dnr.wa.gov/publications/fp_form_overstock.pdf).

The riparian management zone (RMZ) for this prescription includes a No-Cut Zone and an adjacent Thinning Zone. The prescription is designed to:

- Meet or exceed the stand requirements needed to "protect aquatic resources and related habitat to achieve restoration of riparian function; and the maintenance of these resources once they are restored." (WAC 222-30-010(2)); and
- Provides allowances to specifically help offset the costs for small forest landowners to conduct a restoration thinning of the riparian area.

Though this prescription may result in some short-term loss in the availability of large woody debris and shade, by retaining a No-Cut zone adjacent to the stream and by conditioning the allowable thinning based on site class and average stand diameter, the prescription is designed to address potential wind-throw and maintain rule required in-stream functions (large wood, shade, bank stability, sediment filtering, leaf litter and nutrient processes) that are expected to improve over time.

This prescription has been developed as a package and, as such, the individual prescription elements are not intended to be simply inserted into other alternate plans.

This prescription is intended to be applied to RMZ's adjacent to Type F and S waters and cannot occur within any rule identified sensitive sites (WAC 222-16-010) or unstable slope buffers.

Process

A completed alternate plan form, available from DNR, must be included with the landowner's forest practices application (FPA). The form documents the details of the landowner's plan and site conditions and must be included with the FPA.

This prescription is intended to, at minimum, replace the following standard forest practice rules:

1. Western Washington riparian management zones (core and inner) for Type S and F waters: WAC222-30-021(1)(a) and WAC 222-30-021(1)(b)
2. The shade requirements to maintain water temperature: WAC 222-30-040(2) and WAC 222-30-040(4).

Depending on the site-specific factors, additional departed standard rules may need to be documented on the alternate plan form.

While an Interdisciplinary (ID) Team of specialists may be called to review the proposed harvest (WAC 222-12-0401(5)), by following the provisions in this prescription the need for an ID Team will typically be necessary only if specific issues related to site eligibility arise, although ID Team review may be necessary in other situations.

Difference from Standard Riparian Management Zone Rules

This prescription differs from standard rules (WAC 222-30-21-(1)(ii)(A) and (B)) by:

- Providing an opportunity to use narrower RMZ and No-cut Zone widths,
- Allowing conifer thinning without needing to conduct a full inventory of all of the trees in the stand or to run the Desired Future Conditions (DFC) model to determine eligibility and to identify which trees can be harvested,
- Eliminating the outer zone leave tree requirement,
- Eliminating the documentation that harvest meets the shade requirements in Board Manual, and
- Establishing a simplified prescription which will allow a landowner to mark their own leave-trees without the assistance of a consultant, if desired.

Eligibility Requirements

This prescription is intended for riparian stands that meet the following:

- Owned by a Small Forest Landowner;
- Located adjacent to fish-bearing (Type S/F) waters;
- Containing more than 70% conifer trees per acre;
- Containing less than 300 conifer trees per acre greater than 6 inches diameter at breast height (DBH);
- Eligibility for this prescription is limited to heavily stocked stands exhibiting signs of significant loss in growth potential. This is best determined using the conifer live crown ratios (height of live green branches compared to total tree height) of leave trees sufficient for these leave trees to release and stimulate height, diameter and crown growth response; generally, this requires that leave trees following thinning retain at least 33% (preferably 40-50%) of total tree height in live crown (see Figure 1 illustration and Crown Classification Descriptions in Appendix A.)
- Meeting the tree retention requirements as described in this document.

Harvest Prescriptions

The Riparian Management Zone (RMZ) for this prescription:

1) The Riparian Management Zone (RMZ) prescription is separated into two management zones:

a) ***No-Cut Zone****:* The width of the No-Cut Zone (Core) is 30 feet measured horizontally from the outer edge of BFW or the CMZ per Table 1.

b) ***Thinning Zone***: The Thinning Zone extends beyond the No-Cut Core Zone where the appropriate Thinning Zone distance is determined by the Site Class (See Table 1).

The width of the Thinning Zone is dependent upon site class and is shown below in Table 1:

Table 1 RMZ zone widths for use with a 30-foot No-Cut zone.

Site Class	No-Cut Zone Width (Feet)	Thinning Zone Width (Feet)	Total RMZ Width (Feet)
I	30	115	145
II	30	88	118
III	30	71	101
IV	30	52	82
V	30	45	75

Tree Retention Requirements

The harvesting strategy for the thinning zone is to "thin from below". Thinning from below removes trees **from the lower crown classes (suppressed, intermediate and co-dominant crown classes) to favor those in the upper crown classes (dominant, co-dominant and residual trees) (see Figure 1.).**

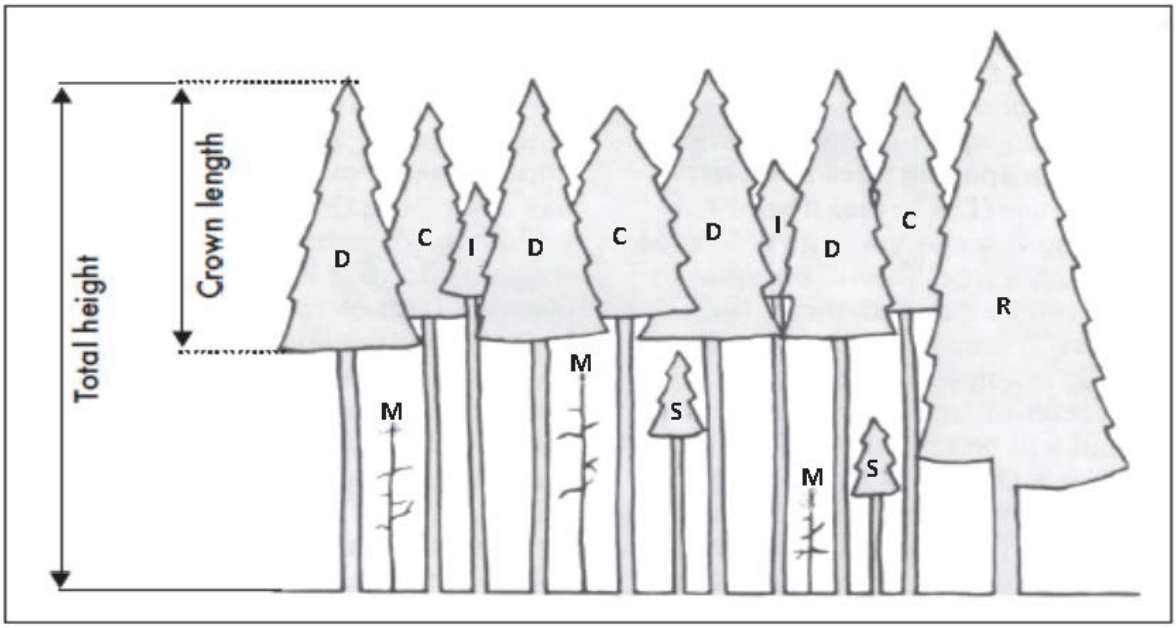


Figure 1. *Crown type classifications of trees in even-age stands. D = Dominant, C = Codominant, I = Intermediate, S = Suppressed, M = Mortality and R = Residual Trees. The "crown ratio" is the proportion of total tree height that is occupied by live crown. In this illustration, the dominants have a 50 percent crown ratio; the residual tree has an 80 percent crown ratio. See Appendix A for Crown Classification Descriptions.*

After completion of a "thinning from below" harvest, the quadratic mean diameter (roughly equivalent to the average stand diameter) will be the same or larger than the quadratic mean diameter before harvest. The guideline for a thinning from below is to produce a d/D ratio of less than (<) 1.

Average diameter of a stand of trees, expressed as "DBH" (diameter at breast height) is a widely used tree stand statistic in forestry. To most people, "average' is synonymous with the arithmetic mean, where all individual measurements (such as all measured tree diameters from a stand) are summed and divided by the total number of measurements. Unfortunately, the expression of average stand diameter conventionally used in forestry is not the arithmetic mean of diameters, but the quadratic mean. The distinction between arithmetic and quadratic means are not important to understand; the important part is that you need to take a sample of tree diameters within the planned Thinning Zone in order to know the number of leave trees required following the proposed thinning operation. How many trees necessary to measure for diameter and what to do with those measurements will be explained later in this section.

To determine d/D ratio, first calculate the quadratic mean diameter (QMD) of the trees to be cut (d), next calculate the quadratic mean diameter of the stand prior to thinning (D), then compare the ratio of d/D to assure the value is less than one. **Both of these calculations of quadratic mean diameter will be performed by entering your tree diameter measurements into the following spreadsheet located at https://www.dnr.wa.gov/publications/fp_form_murrelet_calculator.xlsx, and further explained later in this document.**

The tree retention requirements (leave tree stocking levels by diameter class) are determined by the (QMD) of the conifer trees in your Thinning Zone(s) and by knowing the dominant conifer species group (Douglas fir or Western hemlock) within the Thinning Zone. The QMD method works well in even-aged stands where the dominant and codominant trees are of uniform diameter.

Dominant conifer species group: Dominant conifer species group is determined by stem count. If there are more Douglas fir stems than other conifer tree species, choose Douglas fir as the dominant conifer species group and use the Douglas fir "Modified Curtis Relative Density Calculator RD 40" table. If there are fewer Douglas fir stems than other conifer species, choose western hemlock as the dominant conifer species group and Western Hemlock "Modified Curtis Relative Density Calculator RD 50"

The QMD of conifer trees in the Thinning Zone will be calculated by measuring DBH for a sample of trees using a strip cruise methodology or utilizing tree diameter data from plots located within the Thinning Zone during a total stand cruise (whichever method works best for your site) and inputting those measured tree diameters into the "QMD calculator" spreadsheet located at https://www.dnr.wa.gov/publications/fp_form_murrelet_calculator.xlsx. This QMD calculator was originally developed for use in marbled murrelet habitat data collection, however the concepts built into the calculator are also useful for riparian areas. The sample size of trees for the strip cruise to calculate conifer QMD will be roughly 10% of the conifer trees within the Thinning Zone (see Appendix B). The QMD is only determined from the conifer trees in the Thinning Zone itself, so trees in the No-Cut zone (core) are not used for this calculation. Residual trees in the Thinning Zone will be noted during the cruise sample but not included in the calculation of QMD. Once the QMD is determined and the dominant conifer species group, use the appropriate "Modified Curtis Relative Density Calculator" table below to determine the appropriate leave tree stocking level for your stand.

In most conifer-dominated even-aged stands (those with a relatively narrow range of tree diameters), the calculated QMD alone can be applied to guide the appropriate tree spacing

(see tree spacing per QMD diameter class in the two "Modified Curtis Relative Density Calculator" tables below) to achieve a well distributed stand condition. However, the largest conifer trees must be retained regardless of this tree spacing guidance.

Conifer-dominated even-aged stands occasionally contain large residual conifer trees (scattered large residuals left unharvested during a prior harvest, small trees that were un-merchantable at the time of past harvest activity but are now years older and larger than the current even-aged component of the stand, trees that survived previous wind / blowdown events, etc.). These types of stands do not lend themselves to the standard QMD calculation method, since including the diameters of any such large residual conifer trees will skew the calculated QMD to something not representative of the predominant even-aged stand condition. These are not uneven-aged stands but even-aged stands with a small but significant component of older, larger residual trees. In this type of even-aged stand, the diameters of these residual conifer trees will not be included in the QMD calculation but all residual conifer trees within the Thinning Zone must be marked for leave; for these types of stands, QMD will only be determined from the actual even-aged conifer trees in the stand. Additionally, average tree spacing is a lesser concern in these stands as the large residual trees will drive leave tree distribution.

Modified Curtis Relative Density Calculator for Douglas Fir (RD 40) for conifer thinning

QMD Quadratic Mean Diameter	Leave Trees/Acre (Minimum)	Average Tree Spacing (Feet)
29	47	34
28	50	33
27	52	33
26	55	32
25	59	31
24	62	30
23	66	29
22	71	28
21	76	27
20	82	26
19	89	25
18	96	24
17	105	23
16	115	22
15	126	21
14	140	20
13	156	19
12	176	18
11	201	17
10	232	15

Modified Curtis Relative Density Calculator for Western Hemlock (RD 50) for conifer thinning

QMD Quadratic Mean Diameter	Leave Trees/Acre (Minimum)	Average Tree Spacing (Feet)
30	56	32
29	59	31
28	62	30
27	65	29
26	69	28
25	73	28
24	78	27
23	83	26
22	89	25
21	95	24
20	102	23
19	111	22
18	120	22
17	131	21
16	143	20
15	158	19
14	175	18
13	196	17
12	221	16
11	251	15
10	290	14
9	340	13
8	405	12

These two tables incorporate Relative Density (RD) as a reasonable approach that is intended to address stand mortality, windthrow, shade and LWD recruitment to ensure sufficient stocking is available to improve riparian function over time.

Simplified Guidance for Conducting Thinning

1. Determine the outer edge of bankfull width (BFW) or the channel migration zone (CMZ), see Board Manual Section 2.

Field determination of the bankfull channel edge generally relies on two or more of the following:

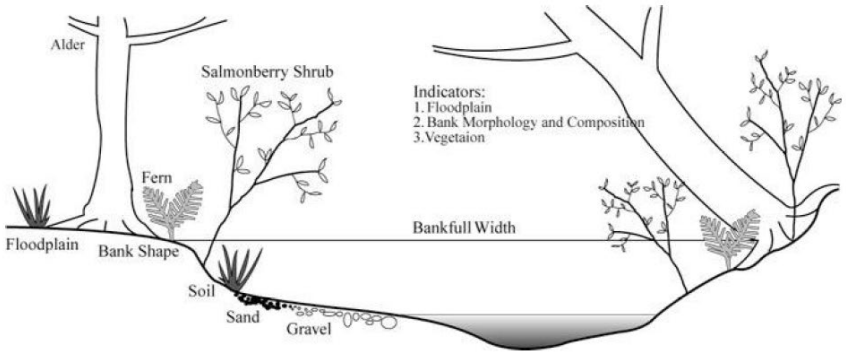


***Figure 2**. Indicators for determining bankfull width (adapted from Pleus and Schuett-Hames, 1998.*

2. Determine the site class for the RMZ adjacent to the stream. To determine site class, download a Forest Practices Application/Notification activity map for your area and activate the site class layer. Go to https://www.dnr.wa.gov/programs-and-services/forest-practices/review-applications-fpars/forest-practices-forms-and, and under the heading, "Forest Practices Application/Notification", click on "Print an activity map." After navigating to the location of your activity, in the upper left corner under the "Themes" button, choose Site Class Map. Directly under the "Table of Contents" window header, click the right arrow to navigate to the Legend.
3. Establish the 30-foot wide No-Cut Zone (or multiple No-Cut Zones if you have more than one thinning buffer zone segment within your harvest unit) on the ground by measuring horizontally from the outer edge of BFW or the CMZ, whichever is greater; mark the outer edge of the No-Cut Zone(s) with flagging or tags.
4. Determine the Thinning Zone width using Table 1.
5. Establish the Thinning Zone (or multiple Thinning Zones if you have more than one thinning zone buffers within your harvest unit) on the ground by measuring horizontally from the outer edge of the No-Cut Zone, using the width determined in Step 4; mark the outer edge of the Thinning Zone(s) with different colored flagging or tags than used to mark the edge of the No-Cut Zone.
6. Establish the strip cruise plot centerline for your Thinning Zone (or for each individual Thinning Zone if you have more than one thinning zone buffer within your harvest unit) following the procedure described in Appendix B.
7. Once the strip cruise plot centerline has been established, measure the DBH (diameter at breast height, i.e. 4.5 feet above the ground) and note the conifer species group (see "Dominant conifer species group" information box on Page 4) of each conifer tree that falls within your strip cruise plot. Determine for each conifer tree you have measured

whether it is a residual tree (see description in Appendix A) or not a residual tree. The vast majority of eligible Thinning Zone stands will truly be even-aged and have no or very few residual trees, but identifying which trees are residuals is critically important to the proper calculation of QMD and what trees need to be left in the Thinning Zone. Do not measure the diameters of any hardwood trees within your Thinning Zone(s).

8. As you measure each conifer tree, either a) directly enter the diameter and conifer species group you have measured into the appropriate category ("Residual" tree category or "Non-Residual" tree category) in the "QMD Calculator" spreadsheet or b) record (on any paper form of your choice) the diameter and conifer species group of each measured conifer tree, again making sure to note whether the tree is a Residual or Non-Residual and then input your data into the "QMD Calculator" computer application (to be provided).
9. The QMD Calculator will provide the calculated QMD for the Non-Residual trees within your Thinning Zone stand(s), as well as the estimated number of Residual trees within your Thinning Zone(s), based on your strip cruise measurements. It will also provide the "Dominant conifer species group", either Douglas fir or Western Hemlock.
10. Use the identified "Dominant conifer species group" category to determine which Modified Curtis Relative Density Calculator" table you should use (either Douglas fir or Western Hemlock). Using the appropriate species table and the calculated Non-Residual QMD for your Thinning Zone, find the stand QMD in the table and determine the calculated number of conifer "Leave Trees/Acre (Minimum)" to retain after thinning.
11. Use this calculated minimum number of leave conifer trees per acre to determine the actual conifer trees you must retain within your Thinning Zone. **If there are no residual conifer trees within your Thinning Zone**, merely use this calculated minimum number of leave conifer trees per acre for your field layout of conifer leave trees within your Thinning Zone, using the appropriate "Average Tree Spacing (Feet)" figure from the table as a guide. **If, however, you have any residual conifer trees within your Thinning Zone**, all such residual conifer trees within your Thinning Zone must be identified for leave. Once these residual conifer trees have been identified for leave, the remaining minimum number of conifer trees per acre to leave within the Thinning Zone should be calculated and then those remaining leave conifer trees must be identified for leave during field layout. Remember all hardwood trees must also be left and conifer trees that lean toward the stream(s) should be preferentially identified for leave. Strive to maintain pre-harvest levels of conifer diversity.
12. Mark leave trees, as appropriate, as specified under the "**Additional Preparation and Harvest Requirements**" section.

NOTE: A basic understanding of silviculture and stand dynamics is necessary to meet these requirements. Applicants will be required to provide documentation that the proposed harvest unit meets the eligibility requirements and / or sampling of trees within the Thinning Zone for this prescription (strip cruise data, stand survey, etc.). Technical assistance from a professional forestry consultant or local DNR Small Forest Landowner Regulation Assistance Forester may be helpful.

Additional Preparation and Harvest Requirements:

- A pre-application review of this alternate plan is recommended to determine eligibility before the FPA is submitted.
- Leave trees must be marked prior to harvest and before the FPA is submitted.
- Reasonable care shall be taken to avoid damage to the stems and root systems of all residual trees within the Thinning Zone from falling, skidding or yarding. Any residual leave trees damaged must remain on site and do not count toward the residual conifer retention requirements.
- Trees with observable lean toward the stream are to be retained where possible for future LWD recruitment.
- Harvesting must not occur within any Type Np sensitive site buffers. The width of RMZ buffers adjacent to sensitive sites varies by the type of sensitive sites. Headwall and side-slope seep RMZs are measured from the perennially saturated soil edge and are 50 feet wide. RMZs associated with Type Np confluences, headwater springs and Type Np initiation points are measured from the center of the feature or point of confluence, are circular in shape and are 56 feet wide (i.e. have a radius of 56 feet). No timber harvest is permitted within an alluvial fan – irrespective of shape or size.
- Within the Thinning Zone, ground-based systems shall not be used on slopes where in the opinion of the department, this method of operation would cause actual or potential material damage to a public resource. When transporting logs in or through the Thinning Zone with ground-based equipment, the number of routes through the zone shall be minimized. Logs shall be transported so as to minimize damage to leave trees and vegetation in the Thinning Zone, to the extent practical and consistent with good safety practices.
- Cable yarding within the Thinning Zone is subject to requirements listed in WAC 222-30-060 Cable Yarding.
- Salvage logging is subject to requirements listed in WAC 222-30-045 Salvage logging within riparian management zones.

Hardwoods in the Thinning Zone

As a conifer thinning prescription in conifer-dominated stands, removal of hardwood trees shall be avoided in order to maintain the biodiversity of the stand. If incidental damage to hardwood trees occurs, they shall remain in place.

DNR Review of this Alternate Plan Prescription

Following DNR approval of an alternate plan FPA containing this conifer thinning prescription, DNR will monitor the FPA and will report to the Forest Practices Board on frequency and compliance.

APPENDIX A: CROWN CLASSIFICATION

A tree crown classification system is useful in discussing stand development. Figure 1. illustrates a commonly used system, which has the following six classes:

1. Dominant. Trees with the crown extending above the general level of the crown canopy receive full sunlight from above and some from the sides. The sides of the crowns are well developed but (possibly) somewhat crowded. Live crown ratios generally greater than 50%.

2. Codominant. Trees with crowns forming the general level of the crown cover receive full light from above but little from the sides. The tree crowns are medium size and more crowded on the sides than are dominant crowns. Live crown ratios generally greater than 40%,

3. Intermediate. These trees usually are shorter than those in the two preceding classes. They have small, crowded sides. The crowns extend into the canopy formed by dominant and codominant trees; they receive a little direct light from above but none from the sides. Live crown ratios generally below 40%.

4. Suppressed (overtopped). The crowns on these trees are below the level of the crown canopy. They receive no direct light from above or from the sides. Live crown ratios generally less than 33%.

5. Residual trees. These trees developed and grew in the open or trees not harvested during previous harvest(s). Their diameters are generally significantly larger than the diameters of the rest of the stand. They often have full crowns on all sides, with branches well above or below the general canopy level of the rest of the stand. The crowns are uncrowded on two or more sides and receive full light from above and well down on two or more sides. Live crown ratios often exceed 75%.

6. Mortality. These are dead trees within the stand. Suppressed trees usually die, and trees of any crown class may die from disease or insect attack.

Adapted from: W.H. Emmingham and N.E. Elwood_1983 “Thinning: An Important Timber Management Tool”, Oregon State University, PNW 184

Determining Crown Class

1. Crown class identification is somewhat subjective, so it is important to try to stick to the definitions and be consistent. Certainly, there will be many trees that do not fit neatly into the classification scheme, so expect some challenges and assign the crown class that most clearly illustrates the condition of each tree or its place in the stand.

2. This is particularly true when it comes to “suppressed” trees. They are still part of the canopy; they do not make up a second layer. Therefore, they do not have to have their entire crowns

below the lowest branches of the tree canopy. Figure 3 illustrates a realistic interpretation of the definition.

Figure 3. *A simplified view of trees in different crown classes in an evenaged pure stand. The letters D, C, I and S denote dominant, codominant, intermediate, and suppressed respectively.*

Note that the suppressed trees extend into the canopy – after all they are in the same cohort or are the same age as the others; they just do not receive any direct light. The low vigor and poor crown condition of a suppressed shade intolerant tree will be very different from that of an intermediate and should be documented as such.

Determining Live Crown Ratio

1. Never "eyeball" LCR without measuring. You will underestimate the crown ratio. Standing on the ground looking up results in a foreshortened view of the crown; it will look shorter than it really is. The closer one is to the tree, and the taller the tree, the more your eye is tricked. In fact, it is an interesting exercise to guess what you think the LCR will be, then measure it, and see how close you are.

2. Determine length of crown using the same measuring techniques and equipment that you use to estimate total height.

3. It is sometimes difficult to determine where the base of the crown is. Brush or limbs from other trees may obscure it, or one side of the tree may have limbs lower than the other side. Try to get to a spot where you can see the tree to take care of the first problem. The standard for handling an uneven tree base is to sight on a spot halfway between the lowest branches on each side of the tree – "split the difference" so to speak (Figure 4).

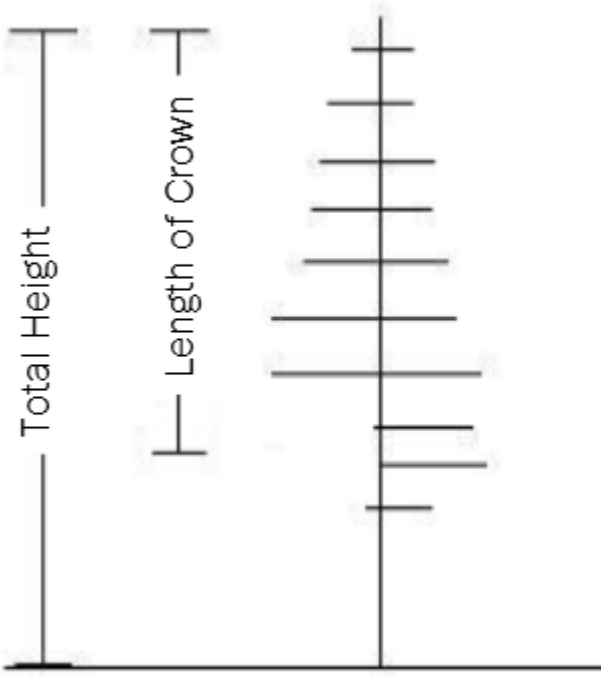


Figure 4. *Estimating LCR when crown base is uneven. Measure the base halfway between the lowest significant branches on each side of the tree.*

4. Ignore a lone live branch low on the tree that is clearly not part of the overall crown.

5. Live crown ratio is generally recorded as a whole number (%), not as a fraction in decimal form. Always record to the precision of the instrument used. Note that measures cannot be accurately made to a tenth of a percentage. So, for example, if the calculator reads 53.6, then record LCR as 54.

APPENDIX B: Preferred Strip Cruise Plot Layout and Cruise Procedure

Once the No-Cut Zone(s) and Thinning Zone(s) have been delineated (marked) in the field, follow the following steps to layout the strip cruise plot for each Thinning Zone:

1. Using the site class identified under Step 2 of the "Simplified Guidance for Conducting Thinning" section above, determine the "Thinning Zone Width (Feet)" for your Thinning Zone from Table 1.

2. Divide by 2 the "Thinning Zone Width (Feet)" identified in Step 1 above. Example: The "Thinning Zone Width (Feet)" for Site Class II in Table 1 is 88 feet; dividing by 2 equals 44 feet.

3. Locate one of the two end points of the common line between your No-Cut and Thinning Zones. Using a compass, determine the rough compass bearing from this end point along the common line between these two zones back toward the other endpoint. Note or remember this compass bearing.

4. Move halfway up the side edge of your Thinning Zone from one of these two end points; in our example, move 44 feet up the side edge of your Thinning Zone. Hang a flag here; use a different color of flagging than you used previously to delineate the No-Cut and Thinning Zones. This flag is the starting point for layout of your strip cruise plot and the eventual end point of your strip cruise plot.

5. Establish the centerline of your strip cruise by following the compass bearing you determined in Step 3 above, to the opposite side edge of your Thinning Zone. Hang flagging intervisible (in sight of each other) along this compass line, as the centerline of your strip cruise plot. Hang your last flag where your compass line meets this opposite edge of your Thinning Zone.

6. Once you have completed flagging this centerline of your strip cruise plot, turn around. This last flag that you hung in Step 5 is the actual starting point for of your strip cruise.

7. As noted earlier in this document, to calculate conifer QMD within the Thinning Zone, roughly 10% of the conifer trees will be measured within the Thinning Zone. Since the Thinning Zone Width varies by site class, the total strip cruise plot width will also vary by site class, as follows:
   - Site Class I: ten (10) feet total plot width, five (5) feet on either side of plot centerline
   - Site Class II: seven (7) feet total plot width, three and one-half (3.5) feet on either side of plot centerline
   - Site Class III: five (5) feet total plot width, two and one-half (2.5) feet on either side of plot centerline
   - Site IV: three (3) feet total plot width, one and one-half (1.5) feet on either side of plot centerline
   - Site V: two (2) feet total plot width, one (1) feet on either side of plot centerline

8. Start your strip cruise at the last flag you hung in Step 5 and referenced again in Step 6, using the flagged centerline you established in Step 5 above and the total plot width appropriate for your specific Thinning Zone. In our example, Site Class II will use a seven (7) foot total plot width, three and one-half feet on either side of plot centerline. A pole or rod five (5) feet in total length and marked with the five exact half-plot widths identified in Step 7 may be a valuable tool to determine which trees are "in" your strip cruise plot.

9. Measure the DBH (diameter at breast height, i.e. 4.5 feet above the ground on the uphill side) and determine the conifer species group (see "Dominant conifer species group" information box on Page 4) of each conifer tree that falls within your strip cruise plot. Trees are considered within your strip cruise plot (and should be measured) if at least half of the tree bole falls within the total plot widths identified in Step 7. Determine for each conifer tree you have measured whether it is a residual tree (see description in Appendix A) or not a residual tree. The vast majority of eligible Thinning Zone stands will truly be even-aged and have no or very few residual trees, but identifying which trees are residuals is critically important to the proper calculation of QMD and what trees need to be left in the Thinning Zone. Do not measure the diameters of any hardwood trees that fall within your strip cruise plot.

10. As you measure each conifer tree, either a) directly enter the diameter and conifer species group you have measured into the appropriate category ("Residual" tree category or "Non-Residual" tree category) in the "QMD Calculator" spreadsheet or b) record (on any paper form of your choice) the diameter and conifer species group of each measured conifer tree, again making sure to note whether the tree is a Residual or Non-Residual and then input your data into the "QMD Calculator" computer application (to be provided).

11. Continue collecting all required information for each conifer tree within your strip cruise plot until you reach the end of the plot as identified in Step 4.

12. The QMD Calculator will provide the calculated QMD for the Non-Residual trees within your Thinning Zone stand(s), as well as the estimated number of Residual trees within your Thinning Zone(s), based on your strip cruise measurements. It will also provide the "Dominant conifer species group", either Douglas fir or Western Hemlock.

APPENDIX C: Riparian Functions

When completing the required Alternate Plan form to accompany the Forest Practices Application, consider the following potential effects of thinning on various riparian functions, as adapted from DNR's Overstocked Stand Alternate Plan Template:

The purpose of thinning an overstocked conifer stand is to reduce crowding and nutrient competition. Once thinned, the growth of the remaining trees will accelerate and more rapidly achieve the minimum basal area and desired future condition targets for riparian forests required by the state forest practice rules. Although the basal area of the overstocked stand may temporarily be taken below the state rule requirements, the objective is to improve riparian habitat over the long-term.

Bank Stability: *Retaining trees within the core zone provides the root mass necessary to stabilize a stream bank. Although roots can extend beyond the drip-line of a tree's crown, the bulk of the root mass is contained within this area. In areas of undercut banks, or active erosion, a larger setback may be required.*

Woody Debris: *Periodic large woody debris input is vital to properly functioning riparian and aquatic systems. Thinning near a stream may reduce the potential source of woody debris in the short term. If no thinning occurred, the woody debris that would recruit to the stream is that which is immediately adjacent to the bank. Thinning the overstocked stand will produce larger diameter trees that will serve as a source of naturally recruited large woody debris sooner than would be available from an unmanaged stand.*

Leaf Litter / Nutrients: *Reducing the canopy density of a conifer stand in a riparian area may result in a short-term reduction in litter-fall to the stream. Needles and leaf litter are an essential component of the nutrient cycle of a stream by serving as food sources for insects and fish. When overstocked stands are thinned according to the aforementioned prescriptions, the canopy should recover within 5-8 years as crowns develop and main trunk epicormic branching occurs. A thinned stand may also result in increased growth and diversity of understory vegetation, further improving nutrient cycling in the riparian area and duff development on the forest floor.*

Sediment Filtering: *Thinning on overstocked stand may result in 1-2 years of exposed, un-vegetated soil. Depending on the slope of the site, there may be a risk of overland runoff due to decreased canopy interception of rainfall. Management practices such as equipment limitation zones, retention of stream-adjacent trees, leaving ground vegetation undisturbed, and distribution of slash in the core zone can minimize the risk of sediment delivery until groundcover is reestablished.*

Shade: *A thinned stand may increase sunlight penetration to the stream. When overstocked stands are thinned according to the aforementioned prescriptions, the canopy should approach pre-treatment conditions within 5-8 years as crowns develop and main trunk epicormic branching occurs. Trees retained within the core zone will continue to provide shade.*

Other Riparian Features: *Microclimate features such as ambient air temperature may be impacted depending on the extent of upland management. Thinned stands may result in temporary soil temperature increases that can affect groundwater and instream water temperatures. However, as understory vegetation fills in and as the canopy of the residual stand recovers, temperature fluctuations will be reduced, resulting in a low likelihood of impact to groundwater or instream temperatures. Additionally, wildlife diversity and abundance is likely to improve as the understory develops and slash is utilized as habitat.*