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May 7, 2024

Re: Expedited Rule Making to Implement SSB 5667

Washington State Forest Practice Board

Chairman Young and members of the Forest Practices Board:

For the record I'm Ken Miller, co-representing Washington Farm Forestry Association and small forest land owners (SFLOs) on the TFW Policy Committee. I'm here today to:

- Thank everyone who suggested or supported SSB 5667.
- Thank DNR staff for their efforts towards a smooth transition.
- Fully support the draft rule language.
- Pledge support for help drafting the accompanying Board Manual.

SSB 5667 allows us to now focus more of our efforts on doing what is right for RMZs.

I'm especially looking forward to increased levels of transparency and collaboration with the SFL Advisory Committee: Helping DNR, AND giving more purpose to the Advisory Committee.

Additionally I'd like to share an example of how Structured Decision Making worked for me when offering WAC language dealing with rare exceptions:

- I had my mind made up on specific language.
- Decided to try SDM/PrOACT, just for giggles.
- Following the process helped change MY 😊 mind, resulting in even better language for the exceptions.

Thanks for listening, and I'd be happy to take any questions,

Ken Miller

Rainer Hummel

[REDACTED]
[REDACTED]
[REDACTED]

Comments to the Washington State Forest Practices Board
Quarterly Meeting – May 7, 2024

My name is Rainer Hummel, I testified during the last Forest Practices Board meeting in February about an unpermitted commercial rock pit and other forest land conversion activities in the White Salmon Watershed in Klickitat County. My first email to DNR Forest Practices related to this activity dates back to June 5, 2023. As of May 2024, there are still no permits obtained or even applied for.

In this context I would like to do a slight variation of a two-step thought experiment with you that I learned from a former DNR policy director.

Step 1:

Let's assume you wanted to show that you really do not care about forest land conversion and impacted public and cultural resources, what would you do? Here is my list:

You ignore obvious conversion activities visible from a county road for over two years. They occur on a mainline road five miles from DNR's local work center.

In response to an inquiry, you write in an email that no violations were observed. It later turns out you had never been on site before writing said email.

You leave other inquiries unanswered for months.

If your standpoint is questioned, you never engage on the substance. Instead, you double-down and circle the wagons.

You claim that the landowner limited access and did not allow you to take pictures on site. DNR Surface Mining, Dept. of Ecology and Klickitat County do not report any issues with access. They have pictures and produce meaningful reports based on site visits.

You do not create photographic documentation from the county road. A professional sign for a commercial rock pit, a road clearly exceeding forest practices standards and proof of utilities are all visible in plain sight.

You confirm with the operator of an unpermitted rock pit that he is shipping more than 50 T/Ls per day on Oct. 10, then go out on site on Oct. 12 and deny in a Notice of Conversion that a rock pit even exists. Incredibly, you state in the same Notice of Conversion that you learned about this issue two days prior.

When confronted with this discrepancy, along with many other falsehoods, you simply state that you do not intend to make any changes to the Notice.

You document as little as possible, usually nothing at all. With one exception - the deeply flawed Notice of Conversion - you do not even know the day or days when you were on site. There are no records of what was discussed.

At no point do you initiate contact with TFW partners or affected tribes

Rainer Hummel

[REDACTED]
[REDACTED]
[REDACTED]

Another, internal, DNR document, poignantly also dated Oct. 12, points out that the rock pit is within a quarter mile of an archeological site recorded on the National Register. The site form specifies that there are burial sites north of the recorded site, just like the commercial rock pit. Earth movement and excavation are allowed to continue unabated.

Step 2:

How many of these things have you done?

The answer is of course, all of the above.

DNR Forest Practices' actions since June of 2023 clearly conflict with Forest Practices' own guidelines and principles. While there is currently no rock pit activity, many other conversion activities are present and ongoing. On June 12, 2023 I asked in writing: What is DNR Forest Practices' position regarding the need for an FPA? This question remains unanswered to this day. Based on the activities on site, the requirement for an FPA is obvious. Why does DNR Forest Practices fail to act?



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May 5, 2024

Washington Forest Practices Board
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Re: Water Typing Rule Making, Np Buffer Rule Making

Dear Forest Practices Board Members:

Washington Forest Protection Association (WFPA) is a forestry trade association representing large and small forest landowners and managers of more than four million acres of productive working forests, including timberland located in the coastal and inland regions of the state. Our members support rural and urban communities through the sustainable growth and harvest of timber and other forest products for U. S. and international markets. For more information about WFPA, please visit our website at www.wfpa.org. WFPA respectfully submits the following comments for the Forest Practices Board's (FPB) May 2024 meeting.

Water Typing Rule Making

WFPA has submitted comments regarding the challenges and opportunities associated with the water typing rule making during multiple meetings over the last several years, most recently in February 2024. Those comments, particularly those about problematic draft rule language, the lack of clarity on decision criteria and sidestepping proper Adaptive Management Program (AMP) process, are incorporated by reference here. While the above referenced challenges remain unaddressed, the recent spatial analysis results have complicated the rule making process even further. Spatial analysis results are the foundational underpinning of all the required rule making analyses to follow; therefore, the FPB should have high confidence in the base data, analysis methods, and results. Multiple spatial analyses of the various anadromous fish floor (AFF) and potential habitat break (PHB) alternatives have been completed since 2018 and the results have been different, substantially so in some cases. This means comparative estimates are not reliable enough to inform substantive regulatory decisions. It's been seven years since the FPB assumed control of the water typing rule making deliberation from the Timber, Fish & Wildlife (TFW) Policy Committee. Accordingly, it may be instructive, particularly for the newer FPB members, to be aware of how this unfolded. While not a detailed accounting, the below summary hits the high points of major events/decisions over that time frame.

The FPB filed a CR-101 with the Office of the Code Reviser in December 2016¹ in anticipation of a recommendation from Timber, Fish & Wildlife (TFW) Policy Committee, who had been working on water typing sporadically for several years. The TFW Policy work was not a result of any AMP science study, but rather a rule making petition filed by one of the caucuses, and direction from the FPB to work the issue and provide a recommendation. TFW Policy delivered a report to the FPB in April 2017² outlining the results of Dispute Resolution on proposed water typing rule changes. That report contained several consensus and

¹ [Water Typing Preproposal Statement of Inquiry](#)

² [TFW Policy water typing recommendations](#)

majority/minority recommendations for FPB consideration, and a request for more time to resolve key sticking points, including specific PHB criteria. The FPB refused this request and assumed control of the topic. The FPB formed an independent science panel (SP) and began work to resolve the remaining issues³. Two primary tasks for the SP were to recommend PHB criteria and develop a field validation study design. The SP requested data from the caucuses and evaluated them for inclusion in the analysis. The SP provided a recommendation and report to the FPB in July 2017 on PHB criteria⁴. The criteria were derived primarily from DNR concurred water type modification forms (WTMFs) supplied by the landowner caucus (those who conduct the vast majority of water typing surveys) which contained enough associated stream channel meta data to reliably estimate PHB criteria. The FPB did not accept the SP's recommendation. However, due to concerns about bias associated with WTMF data being supplied by landowners and some areas of the state not represented, the FPB directed the SP to gather additional WTMF data from areas not represented and validate the original analysis and recommendations⁵. Thus began a series of decisions which have served to politicize the process, deepen caucus division, and set up the FPB for an uncertain and potentially risky decision-making process.

Instead of supplementing the original WTMF data set, the SP replaced it with a different WTMF data set of lesser quality (more errors, less meta data) and supplemented those data with the original data to fill out geographic representation. These WTMF data were analyzed, and a second SP report delivered in February 2018 contained a series of PHB criteria recommendations⁶. Some of the recommended PHB criteria were in conflict with the original recommendations regarding PHB characteristics, and these contradictions are contained within the second SP report. At this same FPB meeting, the former FPB chair asked TFW caucuses to submit PHB proposals to the FPB for consideration in rule making, setting up a competition between the caucuses⁷. This is also when the concept of an AFF first came before the FPB, again, at the request of the former FPB chair. Note the concept of an AFF is not contained within any of the recommendations from TFW Policy or the SP reports. Nonetheless, the FPB immediately incorporated caucus AFF proposals into the rule making process.

By May 2018, the SP had produced a final draft PHB field validation study design and were gearing up for a field-based pilot study. In a unique interpretation of the AMP process, the SP solicited input on the study design from stakeholders while at the same time conducting independent peer review and a field pilot. The plan was to incorporate feedback from stakeholders, peer reviewers, and the field pilot into a final study design and launch the full study in the spring of 2019. Once field implementation of the PHB study began, the project would ostensibly realign with the standard AMP process overseen by the Cooperative, Monitoring, Evaluation and Research Committee (CMER) and the Instream Scientific Advisory Group (ISAG)⁸. Concurrently, the same contractor facilitating the SP, developing the PHB validation study design and pilot study was tasked with conducting a GIS based spatial analysis of PHB and AFF alternatives accepted by the FPB. Spatial analysis results were to be provided to a separate contractor for the purposes of conducting a cost/benefit analysis (CBA) and small business economic impact statement (SBEIS).

In late 2018, several tasks were converging. The PHB pilot study had been completed, the final PHB validation study design was provided to the FPB, the spatial analysis of PHB and AFF alternatives was complete, and DNR had hired a CBA/SBEIS contractor who was beginning work⁹. Stakeholders had been

³ [fpb_minutes_2017050910](#)

⁴ [phb_recommendations_I](#)

⁵ [fpb_mtg_min_20170809](#)

⁶ [phb_recommendations_II](#)

⁷ [fpb_minutes_20180213](#)

⁸ [phbstudydesign_update_052018](#)

⁹ [fpb_mtgminutes_20191113](#)

expressing dissatisfaction with the review process associated with development of the PHB field validation study design and requested a formal CMER review/approval step consistent with required AMP process. While initially reluctant to send the PHB field validation study design to CMER for review/approval, the FPB ultimately agreed to allow for a truncated review and consideration of comments by the Adaptive Management Program Administrator (AMPA). Results of the spatial analysis were questioned when it became clear the contractor had precluded the channel size criterion contained within the PHB alternatives. The companion AFF alternatives analysis was too coarse to reliably inform the follow-on CBA/SBEIS analysis. Nonetheless, the CBA/SBEIS contractor began work, releasing a preliminary draft report in April 2019¹⁰.

Stakeholders continued to express discontent with the rule making process and products, lack of transparency, inconsistency with established processes, lack of data from Eastern Washington (EWA) and questionable spatial analysis results. The 2019 preliminary draft CBA/SBEIS did not help as it contained multiple unsubstantiated assumptions and relied on the questionable spatial analysis results. Recognizing the discontent and substantial remaining workload, in June 2019¹¹ the FPB decided to form a committee to oversee resolution of a number of issues and deliver recommendations to the full FPB. The committee delivered nine recommendations in November 2019¹² which were unanimously accepted by the FPB. One of those recommendations was to fully assign all water typing related science work to CMER, including the PHB validation study. CMER delivered a recommend water typing workplan to the FPB in mid-2020 regarding sequencing and integration of the various studies (PHB, default physical criteria, LiDAR model)¹³. The FPB did not take any official action in response to the recommendations, nonetheless CMER began work on reviewing/revising the PHB validation study design originally developed by the SP.

From late 2019 through mid-2022 the FPB's committee oversaw work related to the remaining recommendations, primarily determining appropriate EWA data to use in a revised PHB spatial analysis and having a new contractor perform a separate spatial analysis of AFF alternatives in Western Washington. While both of these tasks were primarily technical work, and should've been assigned to the AMP and CMER, they were overseen by the FPB's committee with a heavy dose of caucus policy and technical representatives. Thus, it's no surprise neither task resulted in consensus recommendations to the committee or the full FPB. The FPB's committee disbanded in mid-2022. Some of the committee's original recommendations were not addressed, notably the recommendation to clarify the goals and performance targets for the water typing system rule.

Non consensus recommendations regarding EWA data and two AFF alternatives were delivered to the FPB by the committee in May 2021 and June 2022, respectively^{14,15}. While the FPB accepted the majority EWA data recommendation and the two AFF alternatives, it requested caucus principals meet and try to resolve differences over the AFF alternatives by November 2022¹⁶. While several caucus principal meetings occurred, no resolution resulted; therefore, both AFF alternatives proceeded into the rule making analysis. In recognition of the absence of AMP science regarding the AFF, at the November 2022 meeting DNR also recommended a proposal initiation (PI) for an AFF field validation study be prepared and submitted to TFW

¹⁰[fpb_mtgminutes_2019050809](#)

¹¹[fpb_mtgminutes_20190604](#)

¹²[Water Typing System Rule Committee Recommendations](#)

¹³[CMER water typing strategy](#)

¹⁴[wtcomupdate_20210512](#)

¹⁵[fpb_wtypingcom_policyaddendum](#)

¹⁶[fpb_mtgminutes_20220810](#)

Policy. This recommendation was unanimously accepted by the FPB. Later in 2023 the AFF PI was accepted by TFW Policy and assigned to CMER to develop the study design¹⁷.

Throughout 2023 DNR prepared for a revised spatial analysis which commenced in late 2023 with a new contractor¹⁸. The original CBA/SBEIS contractor from 2019 was rehired and began revising their methods in response to stakeholder comments submitted in 2019. New PHB and AFF spatial analysis results were released in March 2024 for review/comment and a workshop was held for the contractor to present the analysis approach/methods. The spatial analysis results for both the PHB and AFF alternatives were a bit surprising in that they were different from prior analysis results. It is not necessarily unexpected that spatial analysis of AFF and PHB alternatives by different contractors, using different methods, and different baseline datasets can produce different results; however, when results are different in direction, magnitude, and order, substantially so on some cases, it presents a problem. The reliability of such an approach to inform substantive regulatory decisions becomes suspect. In addition to these differences, the report contained several math errors in the rolled-up acreage, volume, and value figures. Given the feedback from stakeholders, DNR has decided to rerun the spatial analysis, yet another set of results are anticipated sometime this month. While DNR is simply carrying out FPB direction to prepare a CR-102, the wisdom of continuing to force this rule making process forward using inadequate baseline data, non-standardized spatial analysis approaches, and no agreement on performance targets is highly questionable. Once this latest version of the spatial analysis is complete, the FPB will have in its water typing rule making administrative record three different sets of spatial analysis results for PHB alternatives, and four different sets of results for AFF alternatives, which are likely to all be different.

Spatial analysis results are clearly dependent on who is doing the work, the methods employed, assumptions made, and the limitations of the data. In the end, a spatial analysis cannot reliably identify PHB features on the ground, only field work can do that. The CBA/SBEIS cannot be completed until there is confidence and agreement around whether F/N breaks will, on average, move upstream or downstream (or stay about the same) and the extent to which that will happen. We are at the point where this cannot be determined until a field study has been completed

Fortunately, since mid-2020 CMER and ISAG have been working to catch the AMP science up to the rule making process, which of course, is not how the regulatory system for aquatic resources is supposed to work, we are supposed to do the science work first^{19,20}. The PHB field validation study is beginning implementation this year, the default physical criteria (DPC) validation study design add-on is being developed²¹, the AFF field validation study design and LiDAR model development are in the queue. The PHB field validation study will collect channel feature data downstream and upstream of the upper most fish. The study will also estimate seasonal and annual variability of upper most fish. The criteria associated with the FPB's accepted PHB alternatives will be evaluated against the stream channel data in a modeling exercise to determine which alternative best estimates the upper limits of fish habitat. In addition, the modeling will estimate if a different set of PHB criteria performs better at delineating the upper limits of fish habitat than the FPB's accepted PHB criteria. Consequently, a new set of PHB criteria may result from the study^{22,23}.

¹⁷[aff_pi_ampa_memo](#)

¹⁸[fjb_minutes_20231108](#)

¹⁹[RCW 76.09.370](#)

²⁰[WAC 222-12-045](#)

²¹[AMP water typing update_05112023](#)

²²[Final PHB Study Design_03202019](#)

²³[tfw_phb_prosp_6_quest](#)

While the details were revised by CMER/ISAG, the conceptual design of this study is similar to that developed by the SP in late 2018, it has been through all the AMP process steps, including independent peer review, and has consensus support. It is an expensive project and is ~5 years from completion but represents the opportunity to course correct this process with robust, purpose specific scientific information developed by the AMP. Default physical criteria validation can occur with the same dataset. The time needed to complete the two studies also provides plenty of time for TFW Policy to clarify the performance targets and make a recommendation to the FPB. Undoubtedly, some caucuses will object to this approach, decrying it as additional, unnecessary delay. However, it's worth noting that this topic has been worked on for more than 10 years, the first several by TFW Policy, that last seven by the FPB. It has been a long and winding road and while a lot of work has been done, little tangible progress has been made. Further, in all that time no AMP information has been produced to indicate there is an emergency or that the existing rule and procedures are systemically under protecting fish habitat. There has been a lot of emotional clamor but no actual data to demonstrate it. In fact, AMP water typing studies of the past suggest the existing survey protocol is likely reliable at determining the upper limits of fish habitat²⁴. Many years of independent water typing studies performed by landowners, including one soon to be published, also indicate the survey protocol is reliable at determining habitat likely to be used by fish, seasonally and annually²⁵, and anadromous fish encounters during protocol surveys remain exceedingly low.

Taking this approach doesn't mean nothing can be done between now and when the field validation studies are completed. The FPB received several consensus and majority/minority recommendations from TFW Policy, those could be implemented, as appropriate, through rule and Board Manual (BM) revisions. For example, the fish habitat assessment method (FHAM) could be incorporated into the rule and PHB descriptions could be incorporated into the BM. Publicly available data depicting known/presumed anadromous fish use (i.e., SWIFD) could be incorporated into the HYDRO database. There are likely additional process or guidance clarification opportunities which can serve to reduce subjectivity and increase predictability, and stability of the overall water typing system while field-based AMP science is being conducted.

Np Buffer Rule Making

Over the last year and a half WFPA has submitted several comment letters detailing the procedural defects with the Np buffer rule making. To briefly summarize, beginning in 2019 the AMP policy deliberation process was steered down a path which was constrained and inconsistent the Forest Practices Act and Rules²⁶ regarding AMP resource objectives, the plain language of Ecology's antidegradation tier II rules²⁷ and supplementary guidance²⁸, existing practice associated with other non-point source land uses, and internal communication amongst Ecology staff about how the tier II process works. Namely that any temperature changes greater than 0.3 °C in streams which are cooler than the designated use temperature standard, regardless of magnitude and duration, is not allowed. This edict is repeated over and over in TFW Policy documents, including the Np Technical Workgroup report²⁹, Triangle and Associates dispute resolution report, and the Majority Report on Np stream buffer recommendations³⁰. While understandable as a policy preference, this position is clearly not a strict regulatory limit and we have provided the FPB with abundant evidence to demonstrate that. While we are still hopeful for an amicable resolution to this issue, time is drawing short.

²⁴ [EWA Last Fish Resurvey](#)

²⁵ [fpb_writtenpubliccomments_20210210](#)

²⁶ [RCW 76.09.370, WAC 222-12-045](#)

²⁷ [WAC 173-201A-320](#)

²⁸ [Supplemental Guidance on Implementing Tier II Antidegradation](#)

²⁹ [tfw_policy_type_n_workgroup_review_final_052021](#)

³⁰ [fpb_mtg_packet_20221031](#)

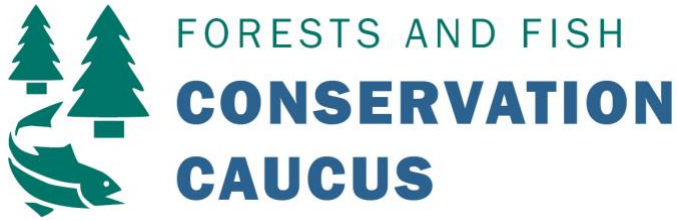
In addition, we submitted comments in February 2024 regarding the problem associated with inclusion of orphaned Np streams in the proposed rulemaking language. Orphaned Np streams have never been considered or evaluated in the AMP, doing so is recommended in order to be consistent with required process. Finally, also in February, we noted the proposed Np buffer spatial analysis was only comparing proposed buffers to the existing rule and not including the potential range of changes to the water typing rule. The Np buffer spatial analysis results were released for a two-week stakeholder review in early April. In addition to the above issue, several other problems were noted by WFPA reviewers, including missing relevant contextual information, incomplete analysis of the area control option, lack of clarity/consistency in tables/charts, and math errors in the rolled-up acreage, volume, and value figures. In short, the report needs considerable revision.

Thank you for the opportunity to comment, should you have any questions I can be reached at dcramer@wfpa.org or (360) 280-5425.

Sincerely,

Darin D. Cramer

Sr. Director of Forest & Environmental Policy



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To: Forest Practices Board

From: Washington State Forests and Fish Conservation Caucus

Date: May 6, 2024

Re: WFPA RFQQ on Extensive Monitoring

To the Forest Practices Board,

The Conservation Caucus has observed with concern and would like to bring to the Board's attention the Request for Qualifications and Quotations (RFQQ) issued by the Washington Forest Protection Association (WFPA) on November 17, 2023¹. The issuance of an RFQQ, is not in and of itself problematic. However, both its content and the context of the RFQQ have compromised the collaborative spirit of the Timber, Fish, and Wildlife Adaptive Management Program (TFW AMP), contributing to a climate of distrust and undermining the program's integrity.

The Board's recent decision to elevate the prioritization of Extensive Monitoring reaffirmed a commitment to study and address Extensive Monitoring collectively through the multi-stakeholder Adaptive Management Program process. In response, the Cooperative Monitoring, Evaluation, and Research (CMER) committee was directed by TFW Policy to begin scoping an Extensive Monitoring project and both committees have diligently worked to fulfill the Board's directions, establishing a structured timeline for the development, implementation, and completion of the EM project².

It is against this backdrop of concerted effort and progress that the Conservation Caucus took note of the WFPA's competing Extensive Monitoring RFQQ. WFPA's request utilizes the identical language developed in AMP's collaborative project, co-opting work products developed by CMER³. These work products were the result of rigorous discussion, compromise, and the assumption of contributing to the AMP's objectives. WFPA pursuing a unilateral study with this CMER developed content—which the AMP intends to pursue as a collective—not only raises questions regarding the good faith use of state funding and human resources devoted to the AMP process, but also threatens

¹ Stream temperature and riparian stand conditions status and trends monitoring program: study plan development phase

² AMPA Saboor Jawad memo to CMER from TFW Policy, April 19, 2022

³ CMER Extensive Monitoring memos to TFW Policy 2014, 2019, 2022, 2023

programmatic trust and cooperation between CMER members and TFW Policy members actively engaged in that process.

The core of our concern lies not just in the potential purposes behind the duplicative effort, or the current status of the RFQQ, but in the precedent it sets. It is not clear if WFPA intends to move forward with their effort and if they do, how they intend to use the results of their parallel study conducted under their sole supervision. Based on the timeline stated in the RFQQ, if the study moves forward than it would likely to be completed sooner than implementation of the AMP Extensive Monitory study. The introduction of a parallel, earlier independent WFPA study would likely introduce confusion and potentially bias the Board's AMP process.

The AMP's strength lies in its deliberative process, which is designed to be inclusive and comprehensive, ensuring rule changes and program advancements are grounded in the best available science and reflective of a broad spectrum of scientific expertise and TFW Policy perspectives. Consensus-based AMP scientific studies produced by CMER and approved by an Independent Scientific Peer Review (ISPR) process make it possible for Policy to forward recommendations to the Board based upon scientific rigor and shared agreements, bypassing the disputes that can result from disparate analysis from individual stakeholders. The potential for individual stakeholders actively participating in the AMP to unilaterally leverage AMP-generated resources and products for the sole benefit of a single stakeholder stands in stark contrast to these principles, instilling doubt about the purpose of shared intellectual contributions and participants' commitment to the Board's process. Had this step been taken by WPFA in good faith, if they intended to expedite this project, their energy would have been better dedicated to openly exploring how they could support efficient advancement of efforts within the AMP process instead of attempting to circumvent the program behind closed doors.

In light of these developments, the Conservation Caucus requests that the Forest Practices Board consider the adoption of guidance and policies governing the use of collaborative AMP products and outputs before they are completed and finalized by the Board. Such measures should include requirements for the transparent disclosure of research objectives and the intended use of raw data, ensuring that all endeavors undertaken with AMP resources serve the collective goals of the program and respect the collaborative investment of its participants. This could be accomplished through updates to the Board's Adaptive Management Board Manual (Section 22) and/or TFW Policy's recently approved and adopted Operations Manual (2023).

In addition, we advocate for a reinforcement of the principles that have enabled the AMP's success: transparency, mutual respect, and a commitment to collaborative progress. It is imperative that we address these challenges not just as isolated incidents but as opportunities to strengthen the integrity and efficacy of our collective efforts towards sustainable forest management and a fully functional AMP.

We submit these concerns and recommendations in the spirit of constructive dialogue, with the hope that they will prompt thoughtful consideration and action. The Conservation Caucus remains

dedicated to the principles of the TFW AMP and to working collaboratively with all stakeholders to advance our shared objectives.

Thank you for your attention,

The Washington State Forests and Fish Conservation Caucus

References

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Notice of Request for Qualifications & Quotes-RFQQ

Title

Stream temperature and riparian stand conditions status and trends monitoring program:
study plan development phase

Scope

The Washington Forest Protection Association (WFPA) is seeking a qualified contractor to lead development and implementation of an environmental monitoring program on WFPA-member forest lands in western Washington. This monitoring program will provide temporally and spatially representative summaries of key resource conditions to evaluate the status and success of the Forest Practices Habitat Conservation Plan (FPHCP) to achieve conservation objectives. More specifically, monitoring data will address the following questions:

1. What is the distribution of stream temperatures in Type F (fish) and N (non-fish) streams across watersheds?
2. How is the distribution of stream temperatures changing over time (seasonally and annually)?
3. What is the riparian stand composition (e.g., conifer, deciduous, mixed) and size characteristics (e.g., height, cover, width) along Type F and N streams?
4. What is the riparian stand potential to provide shade and large wood (LW) to support desired ecological functions?

The monitoring will focus on forested basins that are large enough to include forest practices and associated riparian management zone (RMZ) prescriptions for Type F and N waters as defined by the FPHCP. Conceptually, stream and riparian attribute data should be collected at the stream reach and basin scales to facilitate analyses and predictions across the whole network (e.g., exceedance probabilities and proportions of suitable conditions). The monitoring program will identify a representative sample of monitoring basins that characterize variability associated with both environmental (ecoregion) and forest practices activities. Also, the monitoring program will achieve a balance between the number and size of basins necessary to evaluate questions of interest with consideration for both cost-effectiveness and level of inference.

Time Frame

Anticipate work on study plan to occur during January to March 2024 and program implementation during summer 2024.

Products/Deliverables

Study Plan Development Phase (initial contract)

1. Develop study plan in coordination with WFPA scientists to address the following:
 - a. Technical monitoring design, objectives, and task to address monitoring questions,
 - b. Identification and description of spatially representative sample population,
 - c. Methods of data collection,
 - d. Proposed analyses and modeling required to address monitoring questions,
 - e. Implementation schedule,
 - f. Cost estimate for implementation.

Program Implementation Phase (separate contract pending cost and approval of study plan)

1. Develop QA/QC plan for project implementation and data archive,
2. Reporting:
 - a. Quarterly project progress reports
 - b. Annual database (QC ed).
 - c. Annual project summary report.
 - d. Specific task reports (e.g., riparian stand conditions report) as identified in work plan.

Notice of Request for Qualifications & Quotes-RFQQ

3. Study findings report (schedule will be determined by WFPA and dependent on data collected)

Qualifications

Selection will be based on:

- Expertise and experience with developing and implementing stream water quality monitoring and forest stand inventory.
- Expertise in remote sensing and GIS assessment of environmental and forest stand attributes.
- Expertise in statistical study design and analysis of complex environmental data (e.g., spatial stream network modeling of temperature in river networks).
- Experience with quality control, data management, and reporting.
- Experience working with private or public forest management.

Point of Contact

Darin Cramer, Washington Forest Protection Association, dcramer@wfpa.org, (360) 280-5425

Doug Hooks, Washington Forest Protection Association, dhooks@wfpa.org, (360) 915-4508

Washington Forest Protection Association
Scoping Primer
Stream temperature and riparian stand conditions status and trend monitoring program
November 17, 2023

Introduction

The Washington State forest practices rules incorporated into the 2005 Forest Practices Habitat Conservation Plan (FPHCP) protects healthy forests and clean streams for salmonids, aquatic, and other riparian dependent species, supports a viable forest products industry, and secures the sustainable and responsible management of over 9 million acres of forestlands throughout the state (Washington Department of Natural Resources 2005). To support goals of the FPHCP, the Forest Practices Adaptive Management Program (AMP) was established to ensure the state's forest practices rules and guidance meet the aquatic resource objectives of the HCP. However, the AMP has not implemented a monitoring program to quantify, at stream, basin, and watershed scales, spatial and temporal variation (colloquially, "status and trends") in stream temperatures, riparian forest structure, and riparian functions on lands managed under the current forest practices rules.

The Cooperative Monitoring, Evaluation, and Research (CMER) Committee has conducted experimental studies to examine a small number of prescription alternatives (and orchestrated the studies so that within prescription variation was minimized). However, the number of operational prescription alternatives available within the FPHCP, site-specific conditions (topography, stream density) that influence unit lay-out, and post-harvest events (blow-down in winter storms) contribute substantial amounts of variation to target outcomes including riparian stand condition, large wood loading, and stream temperature. As a result, the Timber, Fish and Wildlife (TFW) Policy Committee has an incomplete understanding of current conditions and lacks the context for assessing whether current buffer prescriptions for Type F (fish-bearing) and Np (non-fish-bearing perennial) streams are sufficient to achieve resource objectives. Quantifying environmental variation associated with different operational prescriptions provides context that is essential for informing considerations prior to adaptive management.

Here, we describe a monitoring proposal to inventory spatial and temporal variation in riparian forest stand conditions and water quality while accounting for environmental (e.g., basin size, geology) and management factors (e.g., percentage of watershed harvested) at the watershed scale. We propose to sample multiple basins with ongoing forest practices in watersheds with stream networks that are large enough to include Type F and Np waters as defined by FPHCP. The goal is to quantify variation in key resource conditions within and across watersheds and over time to provide spatial and temporal context for evaluating the status and success of the FPHCP to achieve current and future performance targets.

Objectives and Questions

The objective is to develop and implement a status and trends monitoring program for Washington Forest Protection Association (WFPA) member lands (Attachment Figure 1) that will provide data sufficient to address policy relevant questions of interest to WFPA. In general, the monitoring program should provide information to address the FPHCP Schedule L-1 question #2: "will the rules produce forest conditions and processes that achieve resource objectives as measured by the performance targets, while taking into account the natural spatial and temporal variability inherent in forest ecosystems"? To accomplish this question, the monitoring project will address select Timber, Fish, and

Wildlife (TFW) Policy Committee relevant questions concerning the status and trends of stream temperature and riparian stand conditions across WFPA member lands (Table 1). Estimates of resource status and trends will be based on monitoring key resource indicators that can be collected easily and that can be used to judge the success of the FPHCP, as recommended by the Monitoring Design Team (MDT) (Benkert et al. 2002). Key indicators will include the applicable performance targets (drawn from L-1) and specific resource condition indicators of success that are ecologically relevant for addressing monitoring questions (Appendix Table 1). Data collected for assessing resource status and trends could also be used to address supplemental questions given future interests and funding priorities (Appendix Table 2).

Table 1. Policy relevant questions, resource targets, and products to be addressed by monitoring. These questions are adapted from questions formulated by TFW Policy (April 07, 2022).

Question	Target	Products/What it tells us
1) What is the distribution of stream temperatures in Type F and Np streams across watersheds?	Temperature criteria/metrics (e.g., 7-DADMax) Indicators of success ^a	<ul style="list-style-type: none"> • Status measure across landscape (e.g., network exceedance probabilities; Santos-Fernandez et al. 2023) • Proportions of stream network length having temperatures within levels suitable for salmonids • Measures variability of temperature metrics by spatial strata (e.g., within Type F and Np waters and among basins) • Estimates potential downstream temperature propagation and cumulative effects across watersheds.
2) How is the distribution of stream temperatures changing over space and time?	Temperature criteria/metrics	<ul style="list-style-type: none"> • Stream temperature trends as air temperature (interannual variability) and site characteristics (spatial variability) change during implementation of FPHCP BMPs.
3) What is the riparian stand composition (e.g., conifer, deciduous, mixed) and size characteristics (e.g., height, cover, width) along Type F and N streams?	HCP Riparian Strategy Indicators of success	<ul style="list-style-type: none"> • Riparian stand composition and size characteristics by spatial strata • Provide spatial context for the overall extent of FPHCP which states "RMZs are the primary riparian protection measures for typed waters."
4) What is the riparian stand potential to provide shade and large wood (LW) ecological functions?	Schedule L-1, Shade performance target Indicators of success	<ul style="list-style-type: none"> • Baseline for assessing variability in riparian ecological function potential to provide shade and LW by stand type and spatial strata. • Status measures across landscape (e.g., proportion achieving shade target, proportion of riparian stands with large-size trees to provide LW, effective width of riparian stands to provide LW).

5) What is the area of riparian timber stand retention resulting from the cumulative implementation of FP rules (i.e., RMZ's plus adjacent unstable slope and wetland buffers)?

No target

- Provides a quantitative measure of riparian forest retention and overall resource protection under FPHCP.
- Proportion of riparian forest retention by FP rule category and by spatial strata.

^a See Appendix Table 1

General Approach

Selection of watersheds

A representative sample of monitoring basins that incorporate commonly implemented forest practices (FP) best management practices (e.g., riparian management zones, unstable slopes, wetlands) will be selected from WFWA member lands in western Washington. To encompass the range of FP activities, the target population of basins should have the following features:

- minimum of 70% WFWA-member ownership,
- timber harvest as the primary land use, and
- basin area large enough to include both Type Np and F waters; the latter should encompass at least 20% of the total network length within a basin. See example of stream network water types in Attachment.

Basin physical characteristics (including basin size, elevation, precipitation, geology) that are known to influence water temperature, forest composition, and fish distribution vary greatly across western Washington. Therefore, the basin selection scheme must be spatially balanced, random, and provide valid scientific inferences to the target population in all regions of western Washington. The selection scheme should also be general enough to facilitate future expansion of the target population to basins that occur at lower elevations, have reduced WFWA-member ownership, and contain land uses such as agricultural and development.

Sampling and potential tools for analysis

The sample design for monitoring stream water temperature within the study basins must provide the data necessary to address questions 1 and 2 as well as associated products listed in Table 1. These data support spatial inference extending beyond an extensive population of sample sites/segments to the whole stream network including unsampled locations. Standard designs such as simple random sampling and the Generalized Random Tessellation Stratified (GRTS; Stevens & Olsen 2004) approach are often used in monitoring programs (WDOE 2015). However, not all standard designs can account for spatial and temporal autocorrelation in stream network data and are not appropriate for estimating responses of interest (i.e., probabilistic estimates of temperature, network exceedance probabilities, and estimation of the proportion of habitat within temperature levels suitable for salmonids). Spatial stream network (SSN) models (e.g., Isaac 2017, Marsha et al. 2017, Ver Hoef et al. 2006) are one option for

incorporating spatial and temporal autocorrelation and have been shown to outperform random and spatially balanced survey designs (Pearse et al. 2020).

Timber stand attribute data collected at the stream-adjacent reach (RMZ) and basin scales will support analyses required to address questions 3 to 5, and associated products listed in Table 1. A combination of LiDAR and satellite (e.g., Sentinel-2, Landsat) remote sensing surveys can provide the necessary data depending on spatial scale of interest. An accurate hydro layer will be required to delineate the channel network and location of RMZ's for Type F and Np waters in all study basins (Figure 2 of Attachment). Because the primary focus of the status and trends monitoring is riparian stand composition (e.g., conifer, deciduous, mixed) and size characteristics (e.g., height, cover, width), high resolution LiDAR is recommended for data collection. Remote sensing data must be adequate for measurements of stream canopy cover and riparian stand characteristics to facilitate a suite of analyses including estimates of stream effective shade (Allen and Dent 2001) and large wood supply potential (e.g., Hyatt 2023). Information for upland stand, harvest unit, and basin scale (e.g., harvest unit areas by stand age/size, basin size, proximity to streams) and changes in characteristics over time may be cost-effectively derived from publicly available satellite or digital aerial photogrammetry (DAP: Gould and Ricklefs 2021).

In order to ground-truth LiDAR and other remotely sensed data, a separate reach/plot-based sampling plan for riparian stand structure, stream canopy/effective shade, large wood supply potential, and related attributes will be required. Ground-truthing data will improve estimates of amounts/sizes of large wood recruitment as a function of riparian stand structure, geomorphic setting (gradient, confinement), and windthrow.

Remote sensing inventories and analyses will focus initially on the study basins. Over time, we anticipate expanding the riparian and basin timber stand inventories to all basins/lands within the WFPA membership. Expanding the sample supports direct evaluations of Question 5 and predicting temperature regimes for all lands in the target population using the study basin- and reach-scale covariates in the SSN temperature models (e.g., Winkowski et al. 2023).

Finally, the potential association between water temperature and timber harvesting is of particular interest in the monitoring program. Therefore, data collection and analyses should facilitate evaluation of riparian and upland stand influence on distributions of water temperature responses within and at the outlet of study basin networks. Consequently, we anticipate using methods to relate spatially distributed sources to an integrated response at a point or along the stream network. Parametric distance weighting can identify the distance scales, and hence the approximate areas within watersheds, for which land use is most strongly associated with a stream response variable. Evaluating the data in this manner avoids burdensome assumptions about temperature data that are unlikely to be true in an experimental setting. In addition, distance-weighting parameters offer a simple and direct language for comparing the scales of landscape influence on streams across different land uses and stream ecosystem components. (Vansickle & Johnson 2008, Weller et al. 2023).

Stream channel morphology, hydrology, and basin-scale physical attributes (covariates) that will be needed for analyses may be derived from a synthetic stream channel network based on Lidar DEM (Benda et al. 2007). Further, GIS-based tools (e.g, NetMap; Benda et al 2007) can identify and quantify channel (e.g., gradient, width, elevation) and hillslope (e.g., erosion potential, valley confinement) attributes as well as connectivity in networks to identify potential patterns across multiple scales.

Target sample

Our target sample will include sites sampled yearly and sites sampled at selected time intervals. This “rotating panel” design will allow us to quantify annual variation (hot vs. mild summers) and spatial variation (basin/riparian conditions) across a large sample of sample units as well as temporal trends using sites with repeated measures. For sites sampled each year, more instrumentation could be deployed and/or data collected at finer scales of resolution. We anticipate conducting a power analysis to determine the effective sample size required to estimate parameters of interest at the desired level of precision.

Importantly, sites sampled each year can allow for detailed ground-truthing of LiDAR data. Given the time requirement of sampling physical data, we recommend that an assessment of LiDAR accuracy be included within the scope of work. If an association between covariates of interest and environmental responses is established, LiDAR can be employed to draw a broad sample from the watersheds of interest.

Project Timeline

Initial work, including identification of strata of interest, site evaluation and selection, and preliminary data collection may begin in 2024. Field sampling at a small sample of units may begin in 2025, with the expectation that additional sample units will be added to the sample in each subsequent year until the desired sample size is achieved. Given this project focuses on monitoring, no completion date is identified.

Costs

A full cost schedule can be developed after the study plan is developed and accepted. Critical areas for estimating costs include GIS analysis to identify a pool of sites for sampling, LiDAR sampling, installation of temperature monitoring hardware, analysis, database development, and riparian structure sampling.

The number and size of basins necessary to achieve the program goal will be based on consideration for both cost-effectiveness and level of inference. Options with associated cost will be included in the study plan.

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Appendix

Appendix Table 1. Resource targets and indicators for assessing success of FPHCP based on extensive monitoring.

Attributes	FPHCP Resource Targets	Possible Indicators
Temperature	L-1 Performance target: Water quality standards—current and anticipated in next triennial review (e.g., for bull trout).	<ul style="list-style-type: none"> • Stream temperature observations compared to the 95% Prediction Interval of reference streams (e.g., Bladon et al. 2018) • Proportions of stream network length having temperatures within levels suitable for salmonids • Probability of temperature exceedance of thresholds
Shade	L-1 Performance target: Type F & S streams, except Eastside bull trout habitat: that produced by shade model or, if model not used, 85-90% of all effective shade	<ul style="list-style-type: none"> • Proportions of stream network length achieving shade targets • Stream canopy closure within range observed in streams with old growth riparian stands; adjusted for channel width
Large Wood (LW)	L-1 Functional objective: “Develop riparian conditions that provide complex habitats for recruiting large woody debris and litter”	<p>Large wood supply potential of riparian stand indicated by:</p> <ul style="list-style-type: none"> • Potential recruit source distance (i.e., given current tree heights, what is source distance for potential LW recruitment) • Functional LW recruits (i.e., what proportion of trees in recruit source distance large enough to form instream habitat) • Proportion of riparian stands achieving both shade and large wood targets/indicators
Riparian stand DFC	L-1 Performance target: Westside and high elevation Eastside habitats: riparian stands are on pathways to meet Desired Future Condition (DFC) targets (species, basal area, trees per acre, growth, and mortality).	<ul style="list-style-type: none"> • Proportion of riparian stands achieving DFC target and/or projected to achieve target.

Appendix Table 2 Supplemental monitoring questions, resource targets, and products that could be addressed by extensive monitoring.

Question	Target	Products/What it tells us
1) What proportion of riparian stands are on trajectory to reach the Desired Future Condition (DFC) or have reached DFC?	Schedule L-1, Performance target, Type F DFC	• Provides a quantitative measure to compare with goals of FFR.
2) What proportion of riparian stands are dominated by hardwoods?	no target	• Provides a quantitative measure of spatial and temporal variation in hardwood cover in RMZs by spatial strata.
3) What is the proportion of buffers with disturbances such as windthrow, fire, disease/bugs?	no target	• Quantitative measure of the extent to which buffers have been modified by major disturbances and the associated loss of functions (e.g., shade and LW) at the landscape scale.
4) How does the stream temperature distribution on FFR regulated lands compare to non-FFR regulated lands?	Temperature criteria	• Relative difference or similarities among different land uses pending suitability of public data

GIS Attachment

Geographic Scope

The geographic extent of the analysis is determined by the percentage of Washington Forest Protection Association (WFPA) membership lands within the Washington State Watershed Administrative Units (WAUs) and may be further adjusted based on the percentage or acreage of membership lands relevant to further analysis. The number of WAUs containing membership lands is 425, representing approximately 15 million acres statewide (Figure 1).

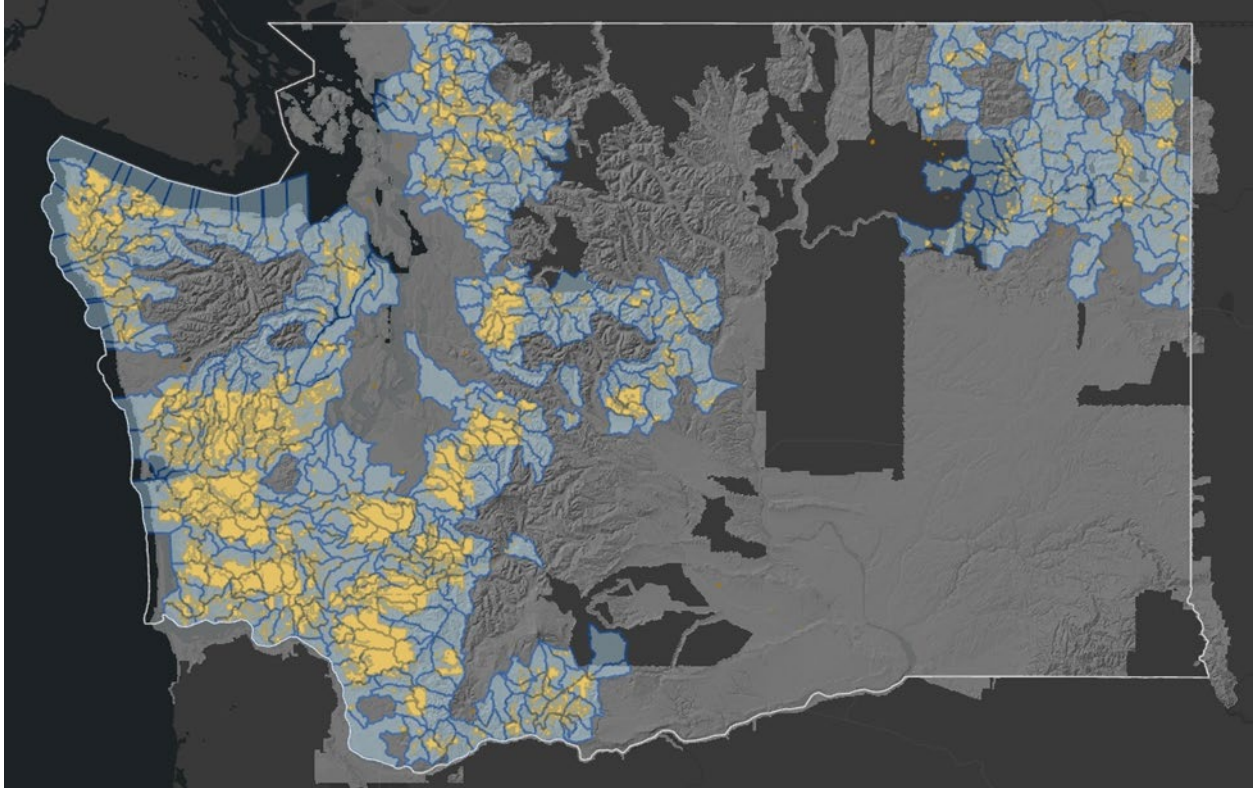


Figure 1. Map of statewide WAU boundaries (blue) and location of WAUs (yellow) within WFPA-membership lands.

Data

Table 1 provides a list of public data that are currently available as either a direct download or webservice through the respective agency source. Table 2 provides a list of prepared datasets that will be provided at the onset of analysis.

Table 1. Public spatial data descriptions and current webservice or download links.

Data Layer Description	Source Link
PUBLIC_FP_Watershed	https://gis.dnr.wa.gov/site2/rest/services/Public_Forest_Practices/WADNR_PUBLI_C_FP_Watershed/MapServer/0
PUBLIC_FP_Hydro	https://gis.dnr.wa.gov/site2/rest/services/Public_Forest_Practices/WADNR_PUBLI_C_FP_Hydro/MapServer
PUBLIC_FP_Water_Type	https://gis.dnr.wa.gov/site2/rest/services/Public_Forest_Practices/WADNR_PUBLI_C_FP_Water_Type/MapServer
National Hydrography Data (NHD) Major Waterbodies	https://fortress.wa.gov/ecy/gispublic/DataDownload/ECY_WAT_NHDWAMajor.zip
National Hydrography Data (NHD) Hi-Resolution Hydrography	https://fortress.wa.gov/ecy/gispublic/DataDownload/ECY_WAT_NHDWA.zip
NHDPlus_HR	https://hydro.nationalmap.gov/arcgis/rest/services/NHDPlus_HR/MapServer

Table 2. Prepared spatial data and descriptions.

Data Layer	Description
WFPA WAUs	Derived by the percentage of membership lands with a given WAU
Stream Order Points	Derived from preliminary analysis of NHDPlus Hi-res dataset
Water Type Break Points	Extracted from PUBLIC_FP_Water_Type (MapServer)
Analysis Basins	Derived from NHD Catchments from the NHDPlus_HR (Mapserver) service and NED10m digital elevation model derived watershed delineations

Prepared Data

A NHD stream order point feature class has been created (Figure 2). The NHD stream order points form the basis of each sub-watershed basin delineation. Washington State Forest Practice water type break points have been extracted from within each WAU. A polygon feature class of sub-watershed basins created from the NHD Catchment layer refined with NED 10m digital elevation model watershed delineations, along with the polygon feature class of the selected WAUs will be provided. The prepared data will be provided in a file geodatabase upon onset of analysis.

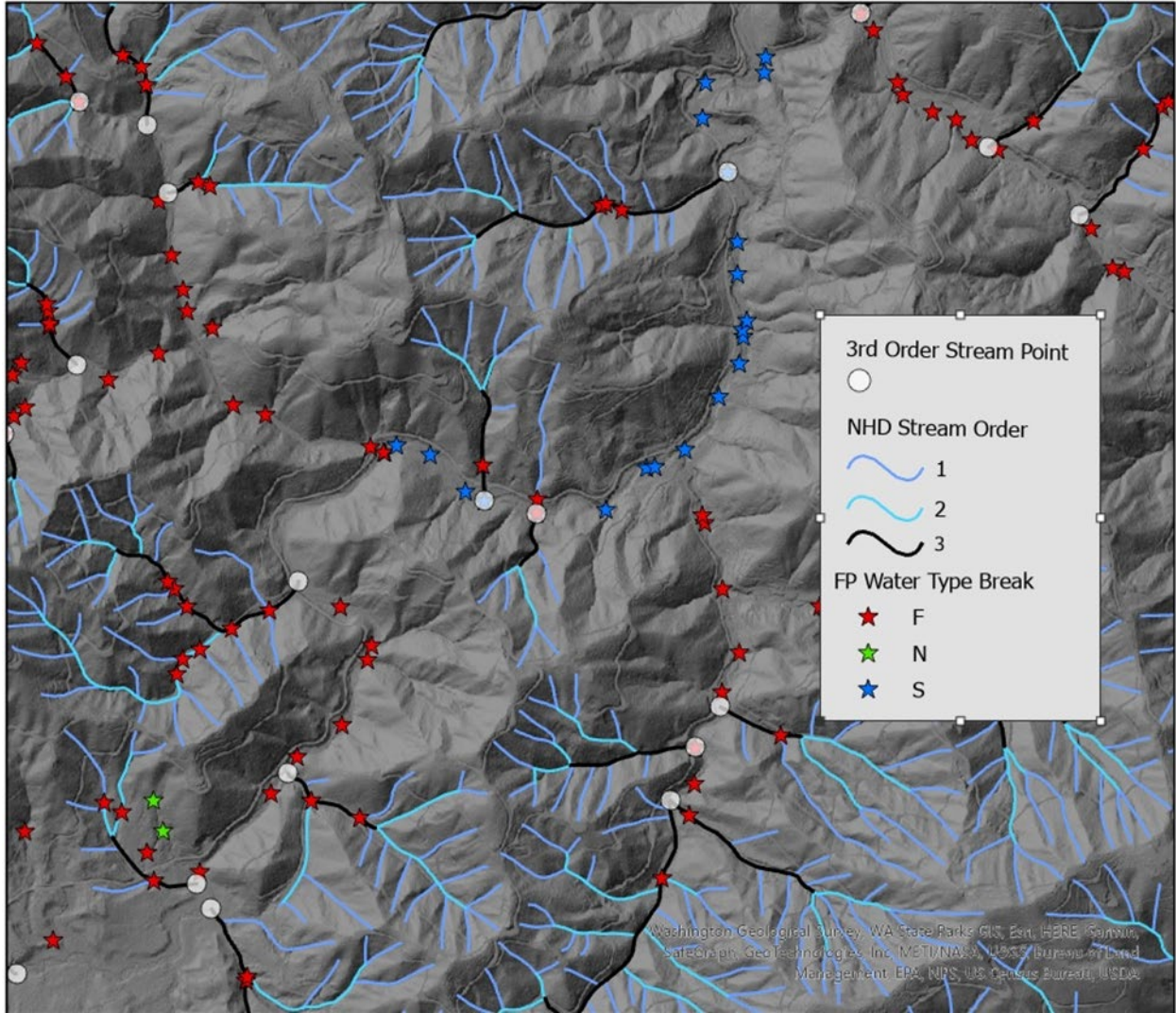


Figure 2. Example map showing 3rd order stream network and end of fish water type break points.

RSAG - Extensive Monitoring for Stream Temperature and Riparian Stand Conditions Questions

August 11, 2022

In June 2022, the Cooperative Monitoring, Evaluation, and Research Committee (CMER) assigned RSAG the task of developing an extensive monitoring proposal for stream temperature and riparian stand conditions. CMER and RSAG have previously submitted multiple documents to Policy outlining options and urging the TFW Policy Committee to assess and discuss what type and resolution of data and what amount of change in riparian conditions would be useful for the Adaptive Management Program in order to clarify research/monitoring needs (CMER/RSAG February 2014; CMER/RSAG March 2019). In his April 2022 memo to CMER, the Adaptive Management Program Administrator (AMPA) forwarded a set of questions and additional considerations from Policy. In the memo, Policy stated that their request was intended to initiate an iterative conversation between TFW Policy and CMER.

This memo is intended to continue the conversation to refine and seek clarity on the questions posed by Policy, outline some of the extensive monitoring options, and to provide critical background documents that are relevant to initiating a meaningful iterative conversation between RSAG/CMER and Policy.

Table 1. A Summary of Riparian Function Attributes, Resource Targets, and Possible Surrogates

Attributes	Resource Targets	Possible Surrogates
Temperature	L-1 Performance target: Water quality standards—current and anticipated in next triennial review (e.g., for bull trout).	Shade?
Shade	L-1 Performance target: Type F & S streams, except Eastside bull trout habitat: that produced by shade model or, if model not used, 85-90% of all effective shade	
LWD	L-1 Functional objective: “Develop riparian conditions that provide complex habitats for recruiting large woody debris and litter”	Large wood supply potential of riparian stand and effective recruit width for large wood supply (i.e., how far from stream can trees be recruited given current tree heights)
Litter fall	L-1 Performance target: Targets for Westside and Eastside Type S and F streams are a low priority because adequate leaf litter is expected to be a by-product of riparian stand conditions.	
Riparian condition and DFC: Surrogate – height and/or Basal area	L-1 Performance target: Westside and high elevation Eastside habitats: riparian stands are on pathways to meet Desired Future Condition (DFC) targets (species, basal area, trees per acre, growth, and mortality).	
Sediment: Riparian stand width and percentage cover for sediment filtering	L-1 Functional objective: Provide clean water and substrate and maintain channel forming processes by minimizing to the maximum extent practicable, the delivery of management-induced coarse and fine sediment to streams (including timing and quantity) by protecting stream bank integrity, <u>providing vegetative filtering*</u> , <u>protecting unstable slopes</u> , and preventing the routing of sediment to streams. *Vegetative filtering can be measured by riparian vegetation, which is covered under the target for riparian condition under LWD	

Table 2. An interpretation of Policy's questions translated to focused questions that clarify with resource targets and products. Is this what Policy intended for extensive monitoring?

Policy Question	Source	Focus questions	Target	Products/What it tells us
1) What is the distribution of stream temperature in Type F and N streams across FFR regulated lands, and how is the distribution changing over time as the forest practices prescriptions are implemented?	Field data collection	a) What is the distribution of stream temperature in Type F and N streams across FFR regulated lands?	Temperature criteria	<ul style="list-style-type: none"> •Cum. freq. distribution, •Mean, min. max. metrics •Prop. & duration achieving targets •Baseline for assessing trends
	Field data collection	b) How is the distribution of stream temperatures changing over time?	Temperature criteria	<ul style="list-style-type: none"> •Annual variability/trends of 1a products
2) What is the variation in stream temperature distribution on FFR regulated lands compared to non-FFR regulated lands?	Analyses of 1a	c) How does the stream temperature distribution on FFR regulated lands compare to non-FFR regulated lands?	Temperature criteria	<ul style="list-style-type: none"> •Compares 1a product metrics to existing data from other agencies, but must have similar geophysical match among sites. •Relative difference or similarities among different land uses
3) For Type F and N streams, what is the status of riparian stand condition; e.g. stand structure, large wood present (contributing to pools and stream morphology), and shade.	Remote sensing	a) What is the riparian stand composition (e.g., conifer, deciduous, mixed) and size characteristics (e.g., height, cover, width) along Type F and N streams across FFR regulated lands?	<ul style="list-style-type: none"> •HCP Riparian Strategy •MDT-Indicator of success 	<ul style="list-style-type: none"> •Riparian stand distribution by composition and size categories •Provide spatial context for the overall extent of FFR which states "RMZs are the primary riparian protection measures for typed waters"
	Analyses of 3a	b) What is the riparian stand potential to provide shade and large wood (LW) ecological functions?	<ul style="list-style-type: none"> •Schedule L-1, Shade performance target •Large Wood HCP Riparian Strategy 	<ul style="list-style-type: none"> •Cum. freq. distribution of shade and large wood supply potential •Prop. achieving shade target •Riparian effective recruit width for large wood supply •Function effectiveness for given riparian stand conditions
4) What other questions can we answer with this effort?	Analyses of 3a	a) What proportion of riparian stands are on trajectory to reach the Desired Future Condition (DFC) or have reached DFC?	Schedule L-1, Performance target, Type F DFC	Provides a measure for how well we are achieving the goals of FFR.
	Analyses of 3a	b) What proportion of streams dominated by hardwoods?	no target	Addresses questions about the extent of hardwood in RMZs and changes in hardwood dominance over time.

	Analyses of 3a	c) What is the proportion of buffers with disturbances such as windthrow, fire, disease/bugs?	no target	Estimates the extent where buffers have been impacted by major disturbance and the associated loss of functions (e.g., shade and LW) across the landscape.
	Analyses of 3a	d) What is the relationship between stand conditions, site conditions (e.g., slope, elevation, aspect, site class etc.)? What is the relationship between species and basal area?	no target	Growth potential of the riparian forest. The degree to which the potential is being realized by the riparian stands. Compare to the DFC growth and yield tables.

Table 3. Examples of purpose, questions, and utility of an extensive riparian vegetation monitoring program

No	Purpose	Questions	Utility/Why do we want to know this?
1	status	What is the proportion and miles of streams currently typed as S/F and Ns/Np streams with buffer strips established post FFR?	This is a report card on how many stream miles are protected by FFR. This helps us understand the extent the FFR are applied across the landscape.
2	status/ trend	What proportion of streams dominated by hardwoods?	This can address questions about the extent of hardwood in RMZs and changes in hardwood dominance over time.
3	status/ trend	What is the spatial distribution of forest stand/structure types along F and N streams by region or WAU and how is it changing over time?	To identify the potential of these stands to provide ecologic function and how they change over time due to management, climate change, etc.
4	status	What is the proportion of buffers with disturbances such as windthrow, fire, disease/bugs?	This estimates the extent where buffers have been impacted by major disturbance and the associated loss of functions (e.g. shade and LWD) across the landscape.
5	context	How similar or dissimilar are the buffers in CMER effectiveness studies (e.g., composition, width, length) to those across the landscape?	Provides some spatial context to the results of the CMER effectiveness studies' findings.
6	function	What proportion of RMZs provide various levels of shade and LWD?	This could inform questions about if and where buffer rules may or may not maintain shade and LWD.
7	status	What proportion of the riparian forest has reached the Desired Future Condition (DFC)?	Provides a measure for how well we are achieving the goals of FFR.
8	trend	What proportion of the riparian forest is on the trajectory to reach the Desired Future Condition (DFC)?	Provides a measure for how well we are achieving the goals of FFR.
9	status	What proportion of the stream network meets the state temperature standards?	This would give an estimate of the measure of success on lands which are not available for sampling because of access issues.
10	status	What proportion of RMZs have been thinned?	This would evaluate the proportion of RMZs thinned which may improve the riparian forest for fire resilience, forest health or to improve fish habitat.
11	status	What proportion of riparian forest have adjacent upland fire resiliency or forest health thinning treatments?	This would indicate the risk to RMZs from prescribed burning of the upland forests.
12	status/ trend	What proportion and total length of S/F and Np streams have riparian functions protected by rules <u>other than</u> the riparian prescriptions themselves (e.g., murrelets, unstable slopes etc.)?	Illustrates the contributions to riparian functions provided by these other prescriptions.
13	status/ trend	What total amounts and proportions of S/F and Np streams in the overall FFR footprint have been treated to date under each of the different riparian prescriptions (NIZH, DFC1, DFC 2, etc.)?	In combination with the results of our prescription effectiveness studies, this will allow us to estimate the effectiveness of the riparian prescriptions at landscape to state scales.

Listed below are highly relevant documents for a conversation between RSAG and Policy regarding past extensive monitoring efforts and should be reviewed prior to a joint RSAG/CMER/Policy conversation on August 24th, 2022. If you need access to any of these documents, please contact Alexander Prescott.

- March 2019 memo from RSAG to Policy, 'Extensive Status and Trends Monitoring Background and Guidance Questions'
- February 2014 memo from RSAG to Policy, 'Use of Remote Sensing to Conduct Extensive Riparian Monitoring'
- Extensive Riparian Status and Trends Monitoring – Vegetation, Type F/N Westside and Eastside projects;
 - Suitability of Aerial Photography for Riparian Buffer Monitoring Pilot Study 2006;
 - A literature synthesis review to evaluate the feasibility of applying remote sensing to assess riparian stand conditions was completed in November 2015;
 - The Extensive Riparian Vegetation Monitoring Remote Sensing Pilot (see findings report) completed in June 2017, Moskal et al.;
 - The Extensive Riparian Vegetation Monitoring Implementation Pilot (see finding report) completed in September 2018;
 - Extensive Riparian Vegetation Monitoring, Model Transferability Testing Draft Report January 2020, Cooke and Devine.
- 21-23 Biennium CMER Work Plan, 5.2.8 Extensive Riparian Status and Trends Monitoring Program
- Monitoring Design for the Forestry Module of the Governor's Salmon Recovery Plan "MDT Report", July 2002

PROJECT CHARTER

Extensive Riparian Status and Trends Monitoring Program – Riparian Vegetation and Stream Temperature November 2023

1. PROJECT CHARTER OVERVIEW

The purpose of the Project Charter is to describe the riparian vegetation and stream temperature components of the Extensive Riparian Status and Trends Monitoring Program.

OVERSIGHT COMMITTEE

Riparian Science Advisory Group (RSAG)

PROJECT TEAM MEMBERS

Alexander Prescott- Project Manager
Jenelle Black- CMER Scientist
Hans Berge
Mark Meleason
Aimee McIntyre
Douglas Martin
Ash Roorbach
Principal Investigator(s) (TBD)

2. APPROVAL DATES

	SAG Approval Date	CMER Approval Date
Charter Version 1	10/11/2023	10/24/23

3. PROJECT TITLE

Extensive Riparian Status and Trends Monitoring Program – Riparian Vegetation and Stream Temperature

4. PROBLEM STATEMENT

The Forests and Fish Agreement (further adopted within the Forest Practices Habitat Conservation Plan: FPHCP) is intended to restore and maintain riparian and aquatic resources for the protection of fish and other riparian-dependent species on over nine million acres of state and private forest lands in the state of Washington. However, uncertainty exists as to whether resource objectives of the FPHCP are met across the full extent of forestlands subject to the Forest Practices Rules. Previous Cooperative Monitoring Evaluation and Research Committee (CMER) studies (Table 1) addressed various aspects of extensive monitoring, but none had the spatial and temporal scope components needed to address the identified uncertainty. Designing and implementing an extensive monitoring program will reduce uncertainties surrounding the status and trends of aquatic conditions, riparian forest structure and functions that support desired habitat conditions on lands managed under the current forest practices rules.¹

¹ Extensive monitoring programs are defined in the 23-25 CMER Work Plan as follows, “Extensive monitoring programs evaluate the current status of key watershed resources and habitat condition indicators across FP HCP lands, and document trends in these indicators over time as the forest practices prescriptions are applied across the landscape. Extensive monitoring provides a statewide, landscape-scale assessment of the effectiveness of forest practices rules to attain specific performance targets on FP HCP lands. Extensive monitoring is designed to provide report-card-type measures of rule effectiveness (i.e., to what extent are

Table 1. List of Previous CMER Studies with an Extensive Monitoring Focus.

Project Title	Year Completed
The Suitability of Aerial Photography for Riparian Buffer Monitoring Study	2006
The Extensive Riparian Status and Trends Monitoring – Temperature, Type F/N Eastside Project	2013
The Feasibility of Applying Remote Sensing to a Riparian Stand Conditions Assessment Literature Review	2015
The Extensive Riparian Vegetation Monitoring - Remote Sensing Pilot Study	2017
The Extensive Riparian Vegetation Monitoring Implementation Pilot Study	2018
The Extensive Riparian Status and Trends Monitoring – Temperature, Type F/N Westside Project	2019
The Extensive Riparian Vegetation Monitoring Model Transferability Testing Study	2020

5. PURPOSE STATEMENT

The purpose of the Extensive Riparian Status and Trends Monitoring Program is to provide data needed to evaluate landscape-scale effects and changes over time of implementing forest practices riparian prescriptions. This information will inform State and Federal regulatory agencies if the Forest Practices Rules meet resource objectives for key aquatic conditions and processes affected by forest practices and Clean Water Act requirements. This program will also help CMER prioritize, plan, conduct, interpret, and assess scope of inference of other CMER studies and monitoring work.

6. PROJECT OBJECTIVES

The Timber Fish and Wildlife (TFW) Policy committee has directed CMER to “develop options for a monitoring program to help determine how stream temperature and riparian functions have changed or are changing in association with the application of the forest practice rules.” (TFW Policy Committee Minutes, March 2, 2023). The objective is to build and maintain a status and trends monitoring program that will evaluate how aquatic conditions, riparian forest structure and functions, and the desired habitat conditions they support change on a landscape scale.²

7. CRITICAL QUESTIONS

The following critical questions are provided as they currently exist in the CMER Workplan. Critical Questions will be revised as part of the project scoping phase.

CMER Work Plan Rule Group Critical Questions

- What is the current status of riparian conditions and the HCP-specified functions in and along Type F/N streams on a statewide scale, and how are conditions changing over time?

CMER Work Plan Program Research Critical Questions

- What is the distribution of maximum summer stream temperature and 7-day mean maximum daily water temperature on FP HCP lands, and how is the distribution changing over time as the forest practices prescriptions are implemented?

FP HCP performance targets and resource condition objectives being achieved on a landscape scale over time). These measures can then be used to determine the degree to which progress is meeting expectations.”

² TFW Policy directed CMER to consider cost efficient add-ons, specifically such as amphibian presence/eDNA in their April 2022 memo, which the project team describes here as ‘desired habitat conditions’.

- What proportion of stream length, at the landscape scale, on FP HCP lands meets specific benchmarks for water temperature, and is this proportion changing over time as the forest practices prescriptions are implemented?
- What are current riparian stand attributes on FP HCP lands, and how are stand conditions changing over time as the forest practices prescriptions are implemented?

8. CMER RULE GROUP AND PROGRAM

Rule Group	Type-N, Type-F, Wetlands
Description	Extensive Riparian Status and Trends Monitoring– Riparian Vegetation and Stream Temperature
Rule Context	WAC 222-30
Program	Extensive Riparian Status and Trends Monitoring

9. PROJECT DELIVERABLES AND PROJECT TIMELINE

Task	Deliverable	Responsible Team Member	Estimated Completion Date
1. Charter			
1.1 RSAG. Charter for RSAG approval	RSAG approved Charter	Project Team /PI	10/2023
1.2 CMER. Charter for CMER approval	CMER approved Charter	Project Team /PI	11/2023
1.3 TFW Policy. Charter for TFW Policy approval	Policy approved Charter	Project Team /PI	01/2024
2. Scoping Document			
2.1 RSAG. Scoping Document for RSAG approval	RSAG approved Scoping Document	Project Team /PI	<i>10/2024</i>
2.2 CMER. Scoping Document for CMER approval	CMER approved Scoping Document	Project Team /PI	<i>12/2024</i>
2.3 TFW Policy. Scoping Document for TFW Policy approval	TFW Policy approved Scoping Document	Project Team /PI	<i>02/2025</i>
3. Prospective Six Questions			
3.1 RSAG. Prospective Six Questions for RSAG approval.	RSAG approved Prospective Six Questions	Project Team /PI	<i>04/2025</i>
3.2 CMER. Prospective Six Questions for CMER approval.	CMER approved Prospective Six Questions	Project Team /PI	<i>06/2025</i>
3.3 TFW Policy. Prospective Six Questions for TFW Policy review.	TFW Policy reviewed Prospective Six Questions	Project Team /PI	<i>08/2025</i>

**Italicized dates are preliminary targets.*

10. BUDGET

Budget/Cost Items	Estimated Budget by Fiscal Year*				
	FY24	FY25	FY26	FY27	FY28
Scoping	\$50,000	\$50,000	-	-	-
Study Design	-	-	\$300,000	-	-
Implementation	-	-	-	\$250,000	\$250,000

**Budgets beyond FY24 are estimates only. CMER staff are utilized in all phases of the project but cost for their time is not included in budget estimates. Estimated budgets do not reflect estimated need, due to undetermined project scope. Preliminary budget estimates will be determined in the Scoping Document.*

11. PROJECT TEAM ROLES AND RESPONSIBILITIES

Name, Title, Affiliation, Contact Info	Roles and Responsibilities
<p>Project Manager (PM): Alexander Prescott Alexander.Prescott@dnr.wa.gov WA Department of Natural Resources</p>	<ul style="list-style-type: none"> • Monitor project activities and the performance of the Project Team. • Communicate progress, problems, and problem resolution to the Adaptive Management Program Supervisory Project Manager and Administrator (AMPA), and CMER. • Work with RSAG/CMER, and Project Team to help develop Project Charters and Project Plans, and keep them updated as needed over time. • Work with RSAG, CMER, and Project Team (including PI, contractors, and other Team members) to resolve problems and build consensus. • Work with PI and Project Team members to develop interim and final reports. • Ensure communication between all team members is clear, concise, and consistent. • Maintain contact and process access agreements once site access is granted. • Ensure coordination between RSAG/CMER, Project Team and landowners. • Coordinate all technical reviews and responses in a timely fashion. • Facilitate archiving of all data and documents. • Work with the AMPA, RSAG/CMER, and Project Team to develop and review proposals, RFPs or RFQs, review contractor proposals, monitor contract performance, and provide input on budgeting, schedule, scope changes, and contract amendments. • See that contract provisions are followed. • Provide direction and support to the Project Team to achieve clear and specific scopes of work, schedules, and budgets within approved contracts. • Communicate and/or authorize communication with all project-related contractors. • Maintains sole responsibility for all aspects of project management even if other individuals are completing or helping complete parts of the project.

<p>Principal Investigator(s) (PI): To be determined</p>	<ul style="list-style-type: none"> • Oversees the technical aspects of the project including protocol refinement, site selection, data collection, analysis, and reporting. • Works with PM and field manager in overseeing data collection by field crew. • Oversees and conducts data analysis and QA/QC of data provided by field staff. • Leads in developing, writing, and preparation of the final report. • Lead author of findings report. • Responds to comments by reviewers of reports. • Prepares quarterly summary and progress reports of project status, as needed. • Presents technical findings to RSAG, CMER, TFW Policy, and the Board as necessary. • Communicates concerns or issues that arise with PM. • Attends RSAG and Project Team Meetings.
<p>Project Team Members: Jenelle Black jblack@nwifc.org CMER Scientist</p>	<ul style="list-style-type: none"> • Provides technical support, participates in document development/writing, and conducts document review as needed. • Attends monthly RSAG and bi-weekly Project Team Meetings.
<p>Hans Berge hans.berge@fishsciences.net Cramer Fish Sciences</p>	<ul style="list-style-type: none"> • Provides technical support, participates in document development/writing, and conducts document review as needed. • Attends monthly RSAG and bi-weekly Project Team Meetings.
<p>Mark Meleason ConsultMeleason@outlook.com Washington State Association of Counties</p>	<ul style="list-style-type: none"> • Provides technical support, participates in document development/writing, and conducts document review as needed. • Attends monthly RSAG and bi-weekly Project Team Meetings.
<p>Aimee McIntyre aimee.mcintyre@dfw.wa.gov Washington Department of Fish and Wildlife DFW</p>	<ul style="list-style-type: none"> • Provides technical support, participates in document development/writing, and conducts document review as needed. • Attends monthly RSAG and bi-weekly Project Team Meetings.
<p>Douglas Martin doug@martinenv.com Martin Environmental</p>	<ul style="list-style-type: none"> • Provides technical support, participates in document development/writing, and conducts document review as needed. • Attends monthly RSAG and bi-weekly Project Team Meetings.

<p>Ash Roorbach aroorbach@nwifc.org Northwest Indian Fisheries Commission</p>	<ul style="list-style-type: none"> • Provides technical support, participates in document development/writing, and conducts document review as needed. • Attends monthly RSAG and bi-weekly Project Team Meetings.
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12. AUTHORIZATION

The Washington Forest Practices Board (Board) has empowered the CMER committee and the TFW Policy committee to participate in the Adaptive Management Program (AMP) (WAC 222-12-045(2)(b)). CMER is responsible for completing technical information and reports for consideration by TFW Policy and the Board. CMER has been tasked with completing a programmatic series of work tasks in support of the AMP; these tasks are outlined in CMER’s biennial work plan approved by TFW Policy and the Board.

13. RECOGNITION OF SUPPORT

Committee	Date of Acceptance	Reference
Project Team	10/02/2023	meeting minutes
RSAG	10/11/2023	meeting minutes
CMER	10/24/2023	meeting minutes
TFW Policy	11/02/2023	meeting minutes

14. REFERENCES

- Cooperative Monitoring, Evaluation and Research (CMER) Committee. 2023–2025 Biennium CMER Work Plan. January 2023.
- Jawad, Saboor. TFW Policy Request to Scope Extensive Monitoring Project. April 2002.
- Monitoring Design Team (MDT), Monitoring Design for the Forestry Module of the Governor’s Salmon Recovery Plan, July 2002.
- Timber, Fish and Wildlife (TFW) Policy Committee. Meeting Minutes. March 2023.
- Washington State Department of Natural Resources (DNR). Forest Practices Habitat Conservation Plan. December 2005.

Hello again Board members,

I wasn't planning on coming today to give testimony, but after yesterday's tour I felt compelled to come share my thoughts about what I saw on the tour.

Yesterday, I attended 3 funerals. 3 horrible, awful, no good and unnecessary funerals. Using APs to salvage charcoal sticks of no value, either monetary or functional. That's not my definition of success.

If we had been able to have a 42 person discussion yesterday, I would have taken you all into the unburned RMZ at the last stop. And then, I would have pointed out the distressed forest that I saw there. Dead, cramped, stagnant...all competing for the same limited resources.

As Eric Keller pointed out more than once, when all the trees are removed, there's more water in the stream. Silly me, I thought water was pretty much the most important thing to a fish.

Let me ask you...how do you like your fish? Smoked? Par-Boiled? Or Blackened? Because, under the current no touch buffer, blackened is the only shameful result we can expect.

Eastern Washington has been under forest practice rules that are not only unsuited the fire dependent ecosystem, but historically abnormal. Tribal people used fire the way we might use a Roomba today...Set it and forget it. We deserve forestry practices that encourage fire resilience. Not the largest 21 trees of any old type or no cut buffers. This is not just for SFLOs. It's for ALL eastside forests because we're different.

As board members, you are being asked to implement a 50 foot buffer around NPs. That's a 50 foot buffer of big, thirsty biological straws. Seems counterproductive to me, if the intention is to support fish.

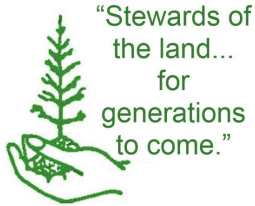
Here are my specific asks: Please, do not impose a 50 foot treed buffer on NPs in Eastern Washington. Please, do not adopt the PHBs that rely on technology so old (a clinometer? Really?) when every person has a super computer in their pocket and most of us have recreational drones for videotaping our grandkids out waterskiing.

Now, I'm sure there will be a lot of hand-wringing about this..."It seems so radical." "Better not upset the apple cart." "But we've always done it this way." But, I want you to remember the 3 funerals you attended yesterday. I ask you to be courageous members and resist the "gotta make rules" for rules sake, because my forests depend on it.

Thank you,

Patti Playfair

[REDACTED]



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May 9, 2024

Re: Public Comment – 3 “Eastside” Points

Washington State Forest Practice Board

Chairman Young and members of the Forest Practices Board:

For the record I’m Ken Miller, co-representing Washington Farm Forestry Association and small forest land owners (SFLOs) on the TFW Policy Committee. I enjoyed the tour yesterday and appreciate Steve & Eri’s efforts & guidance to help SFLOs.

I’d like to make 3 “Eastside” points in my 3 minutes:

1. DNR has a Fire Salvage AP “Template” in their heads – We need to get it formalized to get more benefits to SFLOs, ID Teams, and the resource like we are doing on the westside.
2. Last year the Board updated the AP Board Manual with a special section for SFLOs, and added a section about forest health, particularly for the eastside. **Next year** we should have a similar tour of eastside alternate plans intended to Firewise our important eastside RMZs:
 - a. The Legislature has provided the direction for DNR to help SFLOs to “develop”, “implement”, and “facilitate” SFLO Alternate Plans with the ID Teams, **AND** they have provided the \$ for “Regulation Assistance Foresters” to do that work, like DNR was doing before the 2008 recession.
 - b. The unburned upstream stand at our last stop was classic overstocking and with the wrong species in the RMZ.
 - c. It’s way past time to be actually managing our eastside RMZs before they burn!. Manage them for functionality and fire resilience – not timber!
 - d. Many SFLOs are highly motivated to do the right thing for their RMZs.
 - e. Alternate Plans are intimidating for SFLOs If DNR is as helpful with Firewise APs as they are with Fire Salvage APs we could create a real paradigm shift for eastside forest health.
3. DNR/NRCS and others have some great cost share programs for Firewise and Fuels Reduction! On the other hand, we have rules &/or rule interpretations that conflict with Firewise. Landowners tell me they do want to do Firewise/Fuels reduction (without any commercial for-profit log sales), but confusing department guidance often precludes effective Firewise treatments! Saboor is looking into this issue, so we are hopeful for more clarity at some point.

Thank you for your attention,

Ken Miller