

THE WASHINGTON FARM FORESTRY ASSOCIATION WESTERN WASHINGTON ALTERNATE PLAN TEMPLATE

A SUMMARY COMPARISON OF ADAPTIVE MANAGEMENT PROGRAM SCIENCE FINDINGS

Prepared by:

Washington Farm Forestry Association

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The Washington Farm Forestry Association (WFFA) Alternate Plan Template (hereafter *Westside template*) proposal initiation document and supporting scientific justification was submitted to the Forest Practices Board on February 10, 2015. At that meeting, the Forest Practices Board recommended acceptance of the proposal as submitted with explicit instruction that it be evaluated by the Adaptive Management Program (AMP). That evaluation was to include both an evaluation of the science and an evaluation by the AMP Policy Committee. After significant delays, we are happy to report that the scientific review has been completed. That evaluation included an external scientific assessment of the WFFA scientific justification, and an additional independent scientific review by external scientists at the University of Washington using the Independent Scientific Panel Review (ISPR). The external scientific assessment was awarded to Cramer Fish Sciences with Mark Teply, M.S., completing the work for that consulting firm. That assessment was conducted through a contract from the Department of Natural Resources. The additional ISPR process evaluated the work conducted by Mark Teply, M.S., at Cramer Fish Sciences, thus completing a review of a review of the WFFA ‘best available science’ justification. In total, 7 PhD’s and a Riparian Scientist (MS) (see **page 6** for a full listing), have developed and/or evaluated the best available science included in the WFFA Westside template using 117 unique scientific papers (see **page 7** for a full listing) that span the breadth of available science on the subject. With this level of scrutiny, we can be confident that the likely impact to public resources when implementing prescriptions from the Westside template would fall within the values as shown in the summary tables included in this document.

The WFFA Template Proposal - Scientific Justification used [Washington Department of Ecology Models](#) to compare the relative effectiveness of the Westside template proposal to the Forest Practice Rules with summary results shown in **Table 2**. The Cramer Fish Sciences/Mark Teply Consulting’s ISPR-reviewed “Small Forest Landowner Alternate Plan Template Review, April 28, 2019” used different approaches to conduct the same analysis and came up with relative effectiveness parameters as shown in **Table 3**. With relatively minor differences, both science reviews reached essentially the same conclusions regarding the relative effectiveness of the proposal as shown in **Table 1**. We assert that details provided herein provide a solid basis for discussing a key element of the *Alternate Plan Approval Standard*: namely the degree to which the Westside template proposal is **“equal in overall effectiveness”** from the perspective of best available science.

Table 1: A comparison of “equal in overall effectiveness” from Martin (Westside Template Proposal) and Teply (Cramer Fish Sciences review of Westside template proposal) (**bold** are likely significant differences in overall effectiveness). As the original tables from Martin and Teply are ordered differently, LWD and Shade values for each table are highlighted with unique color codes. Differences are Alternate-FPR prescription.

Relative Effectiveness of WFFA Proposal vs Forest Practice Rules							
Proposal vs rule differences found by Martin (Table 3) and Cramer Fish/Teply (Table 8)							
Prescription	Stream	BFW	RMZ	Potential LWD CHANGE		Potential Shade CHANGE	
No. (Simplified)	Type			Martin	Teply	Martin	Teply
1 (A)	Fish	> 15'	75' no cut	+/- 2%	+/- 2%	0 to + 6%	+/- 5%
7 (A part thin)	Fish	> 15'	75' Thin outer 25'	-1%	-1%	No change	-5% to 0%
2 (B)	Fish	5-15'	50' no cut	up to -6%	-2 to 6%	up to -6%	up to -8%
8 (B part thin)	Fish	5-15'	50' thin outer 25'	up to -6%	up to -6%	+1%	up to -5 to 8%
3 (C)	Fish	< 5'	25' no cut	up to -22%	up to -18 to 22%	up to -5%	up to -5 to 13%
4 (D 1st bullet)	Np	> 5'	25' full length				
			1st 300' NC:	up to -16%	up to -16%	No change	-5%
			Above 300' thin:	more than +19%	up to +19%	+43%	+85%
5 (D 1st bullet)	Np	< 5'	25' full length				
			Thin 1st 300':	up to -72%	up to -72%	-53%	-5%
			Thin above 300':	more than +19%	up to +19%	up to -16%	+85%

Footnote: Differences among riparian function estimates of less than 15% are within the range of measurement error of the various resource data. Further, when evaluating tradeoffs, consideration needs to be given to what can be estimated versus what is biologically meaningful.

WFFA Alternate Plan Template Proposal – Science Justification for Equal in Overall Effectiveness (Martin - Table 3)

Table 2: Comparison of riparian function potential between proposed and Forest Practices Rule (FPR) prescriptions. In FPR type F streams, function effectiveness is evaluated for both the “no inner zone” and “thin from below” options for Site Class 3, respectively. See Table 2 caption for description of prescription codes. (Martin).

Prescription No.	Stream Type	Riparian function potential										Riparian function potential							
		BFW (ft)	RMZ (ft)	Prescript.	Shade	LW	Sed.	Litter	Invert	Long. Cont.	BFW (ft)	Prescript.	Shade	LW	Sed.	Litter	Invert	Long. Cont.	
		Standard Prescription										FPR Prescriptions							
1	F	>15	75	75/nc	max	> 96%	H	H	L	Y	>10	105/nc ^c	max	> 98%	H	H	L	Y	
											>10	50/nc, 105/hth	> 94%	> 94%	H	H	L	Y	
2	F	5-15	50	50/nc	> 94%	> 91%	H	H	L	Y	<10	93/nc	max	> 97%	H	H	L	Y	
											<10	50/nc, 93/hth	> 94%	> 93%	H	H	L	Y	
3	F	<5	25	25/nc	> 95%	> 75%	H	H	L	Y	<10	93/nc	max	> 97%	H	H	L	Y	
											<10	50/nc, 93/hth	> 96%	> 93%	H	H	L	Y	
4	Np	>5 ft	25	25x300/nc 25/tha	> 94% 43% ^a	> 75% > 19% ^b	H H	H H	L H	Y Y	NA	50x50%/nc 50%/cc	> 94% >0	> 91% slash	H M	H L	L M	Y N	
5	Np	<5 ft	25	25/tha	43% ^a	> 19%	H	H	H	Y	NA	50x50%/nc 50%/cc	> 96% 59% ^d	> 91% slash	H M	H L	L M	Y N	
6	Ns	NA	0	30/elz	>0	slash	M	L	M	N	NA	30/elz	>0	slash	M	L	M	N	
		Thinning Prescription										FPR Prescriptions							
7	F	>15	75	50/nc, 75/hth	> 94%	> 93%	H	H	L	Y	>10	50/nc, 105/hth	> 94%	> 94%	H	H	L	Y	
8	F	5-15	50	25/nc, 50/mth	> 95%	> 87%	H	H	L	Y	<10	50/nc, 93/hth	> 94%	> 93%	H	H	L	Y	
^a Shade in upper portion of Np reach based on cms stands (i.e., 25% density)																			
^b Assume 75% supply potential for a 25-ft buffer which is reduced by 25% stand density (i.e., 0.25 x 0.75 = 0.19)																			
^c Top and bottom cell Rx's are no-inner-zone-harvest and thin-from-below, respectively																			
^d Base on mean canopy cover for headwater streams with slash (see Appendix A).																			

Results from ISPR reviewed Small Forest Landowner Alternate Plan Template Review April 28, 2019 (Teply/Cramer Fish Sciences) (Teply - Table 8)

Table 3: Comparison of riparian function potential predicted from WFFA template prescriptions to Forest Practices rule prescriptions based on findings of the independent function evaluations in the Review section. See “WFFA Template Proposal – Scientific Justification” for a complete explanation of WFFA and Forest Practices rules prescriptions.

Rx No.	Stream Type	WFFA Riparian Function					FPR Riparian Function				
		LWD	SHD	LIT ¹	SED ²	SB ³	LWD	SHD	LIT ¹	SED ²	SB ³
1	F	<96%	95%	a	b	a	<94% - <98%	90% - 100%	a	a - a/c	a
2	F	<91%	90%	a	c	a	<93% - <97%	90% - 98%	a	b - b/c	a
3	F	<75%	85%	b	d	b	<93% - <97%	90% - 98%	a	b - b/c	a
4	Np	<75% / <19%	85% / 85%	b	d	b	<91% / 0%	90% / 0%	a/c	c/e	a/c
5	Np	<19%	85%	b	d	b	<91% / 0%	90% / 0%	a/c	c/e	a/c
6	Ns	>0%	>0%	c	e	c	>0%	>0%	c	e	c
7	F	<93%	90% / 95%	a	b/c	a	<94%	90% / 100%	a	a/c	a
8	F	<87%	85% / 90%	a/b	c/d	a/b	<93%	90% / 98%	a	b/c	a

Notes:

- 1- Leaf and litterfall:
 - a. would likely be greater than or equal to that from unharvested stands
 - b. has not been observed for buffers smaller than 10 m
 - c. would be measurable, but less than that from 10 m buffers
- 2- Sediment:
 - a. filtration would generally be 80 percent and delivery would likely be zero
 - b. filtration would generally be less than 80 percent and delivery would likely be zero
 - c. filtration would be less than that from a 75-ft buffer and the buffer would likely have very low soil disturbance
 - d. filtration or delivery effectiveness has not been observed for 25-ft buffers
 - e. filtration would be less than that provided by a 25-ft buffer and delivery would be significantly greater than that from buffered treatments
- 3- Streambank stability:
 - a. is likely protected with fixed-width buffers 50 feet and wider
 - b. has not been observed with use of 25-ft fixed-width buffers
 - c. would likely have no protection as deep-penetrating roots decay

AUTHORS, PARTICIPANTS, AND REFERENCES USED IN THE SCIENCE REVIEW PROCESS

Template Authors:

1. Richard Miller, PhD, retired USFS soil scientist and small forest landowner.
2. Elaine Oneil, PhD, Executive Director, Washington Farm Forestry Association.

Template Supporting Scientific Assessment:

3. Douglas Martin, PhD

Dr. Martin is the Principal of Martin Environmental as well as an Affiliate Professor at the School of Environmental and Forest Sciences, University of Washington and a graduate student advisor at both Portland State and Michigan State Universities. As well as working in various capacities within Washington's Adaptive Management Program over the past 2 decades, Dr. Martin also serves as a co-principal investigator of a science-based, landscape scale, community forest approach to watershed planning for rural communities of Southeast Alaska with the overall goal to achieve a measurable and sustainable balance of timber, salmon and deer production, local economic diversification and improved watershed health. In this role Dr Martin works in collaboration with Sealaska Corporation, Hoonah Indian Association, Tongass National Forest, Alaska Department Fish and Game, and The Nature Conservancy.

DNR Contracted Reviewer of the Template for the TFW Policy Adaptive Management Program:

4. Cramer Fish Sciences with review led by Mark Teply, M.S.

Mr. Teply has extensive experience in modeling forest riparian conditions including serving as the riparian Scientist, for the Upper Klamath River Basin Riparian Flow Assessment, as a TWIG member for the Eastside Type N Riparian Effectiveness Monitoring Project, and as lead scientist for a number of DNR projects including the Hardwood Conversion Study Report and the Eastside Modeling Effectiveness Project, the Idaho streamside management rule revision, the Oregon riparian forest practices rule revision, and the I-5 Corridor Reinforcement Project for the Bonneville Power Administration. Prior to working with Cramer Fish Sciences Mr. Teply was the research manager for DNR's Olympic Experimental State Forest. Mr. Teply worked at Cramer Fish Sciences while doing this review for the Dept. of Natural Resources, however the post ISPR review final document was published by Mark Teply Consulting.

Independent Science Peer Review Associate Editor & Reviewers:

5. Dr. Derek Booth - Associate Editor for Independent Scientific Peer Review Committee and Affiliate Professor, Dept. of Earth & Space Science, University of Washington
6. Through the Independent Scientific Peer Review Committee (ISPR) of the University of Washington, a peer review was conducted of the Cramer Fish Sciences' *Small Forest Landowner Alternate Plan Template Review* (dated September 30, 2018). Three peer reviewers were chosen by ISPR to conduct the peer review. This was a 'blind' peer review where only Dr. Derek Booth knows the reviewers identity. Dr Booth shared in the ISPR report:

"The **three** reviewers bring a diversity of technical and professional backgrounds, with all having extensive experience in Pacific Northwest forestry issues. Both **R1** and **R2** are or have been university professors; **R2** and **R3** both have served in public or tribal resource agencies; and all have extensive private consulting experience. **R1** has a particular focus on statistical methods and analyses; **R2** is an extensively published forest hydrologist with long-standing research interests in stream buffers and stream temperature; **R3** is an aquatic ecologist with many decades of Pacific Northwest experience in forest management issues from both technical and policy perspectives."

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Note: 22/73 references in common with WFFA analysis (in **bold**)

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