

# **Department Recommendations: Equity and Relief Provisions for the Salmon, Steelhead and Bull Trout Riparian Rulemaking**

## **SUMMARY**

In February 2016, the Riparian Rule Advisory Committee (RRAC) was convened at the direction of the Board of Forestry (Board) to address a number of topics associated with their decision to modify riparian protection standards for small and medium streams where salmon, steelhead or bull trout (SSBT) are present (November 2015 meeting). The modified protection standards apply to the Coast Range, South Coast, Interior, and Western Cascades Forest Practices Act (FPA) geographic regions. The committee's charter included the following work topic for members to consider:

“Definition / verification of a parcel, and definition, determination of encumbrance, and equity [and] relief.”

At their meetings, the RRAC discussed at length how to determine encumbrance, equity and relief; however, they were not able to reach a consensus on this topic. They did agree on the meaning of parcel and generally agreed with the approach for determining additional encumbrances. The RRAC generally agreed that the Board intended to provide relief to some landowners. However, there were different perspectives about the degree of encumbrance that should trigger relief, how to weigh relief with reduced protection for a portion of SSBT streams, and what constitutes appropriate relief. The RRAC discussions informed the department recommendation on this topic.

Because the RRAC did not achieve consensus on the application of an equity policy for the proposed rule, the department conducted a trade-off analysis and developed a recommendation for determining the most logical inflection point that establishes qualification for equity relief. The department recommendation selects an encumbrance level that balances percent of parcels granted relief against the percent of stream miles that receives the relief prescriptions. At an eight (8) percent encumbrance threshold for relief, 14 percent of encumbered parcels are eligible for relief. These parcels contain six (6) percent of the small and medium SSBT streams. The department also recommends that the relief prescription include relief for both the passive management (no cut) and active management (variable retention) prescriptions.

## **RECOMMENDATIONS**

The department recommends that the Board:

- (1) Adopt a level of eight (8) percent additional encumbrance as the level that sets eligibility for relief.
- (2) Define relief as the reduction of the width of the riparian management area by ten (10) feet for prescriptions 1 (no cut) and 2 (variable retention), with the basal area and conifer tree retention targets adjusted to maintain the same per acre targets.

## **BACKGROUND**

At their November 2015 meeting, the Board adopted a final riparian prescription package for small and medium fish streams in western Oregon. The package described the elements that need to be included in rule language. One of the elements stated,

Equity...for any landowner: If the rules encumber more than 10 percent of the total ownership of any parcel, the landowner may implement 50- and 70-foot no cut buffers for small and medium streams, respectively.

During discussion, the Board member proposing the relief element indicated that the Board did not understand the economic impacts of the proposed riparian prescription package and that intent was the most important aspect; that the Board wanted to find a way to mitigate excessive encumbrances and economic impact where it occurs.

Equity refers to fairness or justice in the way people are treated. The Board discussion indicates that fairness refers to excessive additional encumbrance on a parcel. The Board's November 2015 decision proposed that landowners who had ten percent or more of their parcel encumbered by the new rules were receiving an unfair outcome. Relief refers to the removal or reducing of something unpleasant. The Board's discussion indicated that they wanted to mitigate or reduce excessive economic impact. The Board's November 2015 decision, defined relief as the option to implement 50- and 70-foot no cut buffers for small and medium SSBT streams, respectively. While equity and relief are defined separately, the two are interrelated in the discussion of what is fair when it comes to regulatory encumbrance and some form of mitigation.

At their meetings, the RRAC discussed at length how to determine encumbrance, equity, and relief; however, they were not able to reach a consensus on this topic. The department completed the analysis on policy choices for equity and relief and held additional discussions with a subset of RRAC members to discuss comments and concerns about equity provisions and see if there was opportunity for consensus. The discussions indicated that different fundamental views about the Board's policy decisions on SSBT protection prevented further movement toward consensus (see Attachment 4 for more details on the RRAC discussion). The analysis and RRAC discussions informed the department recommendation on this topic.

## **ANALYSIS**

The department conducted an analysis to support RRAC discussions regarding equity and relief. The department included all parcels two acres and larger in the four geographic regions affected by the rule. The department aggregated tax lots into parcels based on the RRAC consensus decision of a parcel and calculated percent additional encumbrance for all parcels that had riparian management areas for small and medium SSBT streams. The department produced summary tables, distribution of acres by encumbrances, detailed distributions of parcels and SSBT stream miles by encumbrance category, and a tradeoff curve. The discussion below includes key summary points for each section of the analysis to provide a framework for understanding the detailed tables and analyses.

Summary of Parcels, Acres, Average Encumbrance, SSBT Stream Miles by Parcel Size

The department summarized information about the effect of the rules for the four geographic regions to which the proposed rule applies (Table 1). Key points from the summary include:

- The four regions contain 5.8 million acres, in 73,963 parcels, with 66,892 owners.
- 3.4 million acres, in 7,885 parcels, with 6,850 owners are affected by the rule.
- The 7,885 parcels contain 2,355 miles of small and medium SSBT streams.
- The average encumbrance per acre is 0.5 percent.
- Average per acre encumbrance decreases with increases in parcel size, ranging from 6.1 percent for parcels 2-10 acres to 0.3 percent for parcels greater than 5000 acres.

As shown in Table 1, the four geographic regions contain approximately 5.8 million acres of forestland in 74,000 parcels two acres and larger, with 67,000 owners. About 11 percent of all parcels (7,885 parcels and 6,850 owners, representing 3.4 million acres) are affected by the proposed rule. These parcels (acres) contain 2,355 miles of small and medium SSBT streams, resulting in an average encumbrance of 0.5 percent of acres.

Table 1. Number of owners, parcels, acres, number of encumbered parcels, owners, acres, average encumbrance, and number of small and medium SSBT stream miles by parcel size summarized for the four geographic regions covered by rule.

Parcel Size (Acres)	Number of Owners	Number of Parcels	Acres	Number of Encumbered Owners	Number of Encumbered Parcels	Percent of Parcels Encumbered	Acres in Encumbered Parcels	Encumbered Acres	Average Encumbrance (percent)	Stream Miles
2-10	39,875	41,906	197,694	2,452	2,508	6.0%	12,695	776	6.11%	120
10-20	10,427	10,929	157,468	1,003	1,022	9.4%	14,893	552	3.71%	84
20-50	9,258	10,270	328,955	1,368	1,423	13.9%	46,487	1,180	2.54%	177
50-100	3,834	4,607	325,862	768	832	18.1%	59,819	1,040	1.74%	152
100-500	2,982	4,962	1,010,185	958	1,374	27.7%	304,087	2,995	0.98%	431
500-5000	470	1,136	1,360,664	261	605	53.3%	824,695	4,105	0.50%	586
>5000	46	153	2,437,479	40	121	79.1%	2,184,700	5,704	0.26%	806
Total	66,892	73,963	5,818,306	6,850	7,885	10.7%	3,447,376	16,353	0.47%	2,355

In all cases, “Acres” refer to forested acres, and does not include non-forested areas in the parcel. Average encumbrance is calculated for encumbered parcels only (encumbered acres divided by acres in encumbered parcels).

The average encumbrance is not evenly distributed. Average per acre encumbrance decreases with increases in parcel size, ranging from 6.1 percent for parcels 2-10 acres to 0.3 percent for parcels greater than 5000 acres. The amount of encumbrances also varies within parcel groups. Six (6) percent of 2-10 acre parcels are encumbered by the rule; 79 percent of 5000+ acre parcels are encumbered by the rule. The percent of parcels encumbered by the rule increases with parcel size, since larger parcels have a greater probability of containing an SSBT stream.

Distribution of Encumbered Acres and SSBT Stream Miles by Additional Encumbrance

The department analyzed the distribution of acres by additional encumbrance category and parcel size, and the number of small and medium SSBT streams by encumbrance category (Table 2). Key points from the analysis include:

- A key tradeoff in considering the encumbrance threshold to be eligible for relief is the relationship between acres eligible for relief and the miles (or percent) of SSBT stream length contained in those acres.

- 3.1 million acres or 90 percent of encumbered acres have less than 1.0 percent additional encumbrance due to proposed rule.
- These 3.1 million acres or 90 percent of encumbered acres only contain 53 percent of SSBT streams.
- The upper ten (10) percent of encumbered acres (encumbrance greater than 1.0 percent) contain 47 percent of SSBT streams.
- The upper three (3) percent of encumbered acres (encumbrance greater than 2.2 percent) contain 27 percent of SSBT streams.

The department used percentile bins to show the distribution. The department calculated values focusing on the top ten (10) percent of encumbered acres (Table 2). The department also calculated the acre distribution by parcel size and calculated number of stream miles by encumbrance category.

Table 2 shows the distribution of encumbered acres by encumbrance category and parcel size, and the number of small and medium SSBT streams by encumbrance category. The first column, 0-1.0% additional encumbrance, contains 90 percent of the encumbered acres; the remaining ten columns represent the 91 to 100 percentiles in one percent increments. The shaded bars illustrate the distribution of acres by parcel size within an encumbrance category. For example, the majority of acres in the 0-1.0% additional encumbrance are in >5000 acre parcels; the majority of acres in 4.0-33.7% bin are in 20-50 acre parcels.

Table 2: Distribution of encumbered acres by percent of additional encumbrance and parcel size (acres) and number of small and medium SSBT stream miles by additional encumbrance.

Parcel Size (Acres)	Additional Encumbrance											Total Acres
	0-1.0%	1.0-1.0%	1.0-1.1%	1.1-1.2%	1.2-1.3%	1.3-1.5%	1.5-1.8%	1.8-2.2%	2.2-2.8%	2.8-4.0%	4.0-33.7%	
2-10	2,422	112	106	228	128	338	241	339	706	1,100	6,975	12,695
10-20	4,235	187	208	232	150	368	381	824	1,144	1,654	5,509	14,893
20-50	17,661	566	604	768	661	1,756	1,909	2,141	3,349	5,964	11,109	46,487
50-100	25,971	767	805	1,669	1,619	2,071	2,835	3,701	6,648	6,998	6,735	59,819
100-500	184,059	7,328	6,986	9,789	9,415	13,319	14,766	19,094	18,551	16,641	4,139	304,087
500-5000	701,768	19,562	13,546	21,754	22,476	16,660	14,498	8,232	4,148	2,051	0	824,695
>5000	2,168,198	5,295	11,208	0	0	0	0	0	0	0	0	2,184,700
<b>Total Acres</b>	<b>3,104,315</b>	<b>33,817</b>	<b>33,463</b>	<b>34,441</b>	<b>34,449</b>	<b>34,512</b>	<b>34,629</b>	<b>34,331</b>	<b>34,545</b>	<b>34,407</b>	<b>34,467</b>	<b>3,447,376</b>
<b>Percent of acres</b>	<b>90%</b>	<b>1%</b>	<b>100%</b>									
<b>Stream Miles</b>	1,244	48	51	56	62	71	81	96	122	167	357	2,355
<b>% of Stream Miles</b>	<b>53%</b>	<b>2%</b>	<b>2%</b>	<b>2%</b>	<b>3%</b>	<b>3%</b>	<b>3%</b>	<b>4%</b>	<b>5%</b>	<b>7%</b>	<b>15%</b>	<b>100%</b>

Note: the additional encumbrance columns are percentile bins, with the first column being the 1-90 percentile, and the remaining columns being one (1) percentile representing the 91-100 percentiles.

Table 2 illustrates a key tradeoff in considering the additional encumbrance threshold at which relief would be offered, the relationship between acres eligible for relief and the miles (or percent) of SSBT stream length contained in those acres. While 90 percent of encumbered acres had less than 1.0 percent additional encumbrance by parcel, these acres only contain 53 percent of SSBT stream miles. The remaining ten percent of encumbered acres contain 47 percent of the stream miles. The upper three (3) percent of encumbered acres (encumbrance greater than 2.2 percent) contain 27 percent of SSBT streams (see the three rightmost encumbrance columns in Table 2).

The RRAC was presented preliminary analysis results on the number and size of parcels and the distribution of additional encumbrance at their May and June 2016 meetings. RRAC members were unable to come to consensus but agreed that the department should provide additional information on economic and ecological comparisons between different options for equity and relief and to discuss the results with interested individuals and then bring the concept back to the committee. Discussions with RRAC members helped to focus the equity discussion in the upper three percent of acres where 27 percent of SSBT stream miles are concentrated (Table 2 additional encumbrance range; 2.2-33.7 percent).

#### Detailed Distribution of Encumbered Parcels and SSBT Stream Miles by Additional Encumbrance for the Upper Three Percent of Encumbered Acres

The department developed more details on tradeoffs between encumbrance thresholds, number of affected parcels, and associated stream miles for the upper three percent of encumbered acres (Tables 3 and 4). Key points include:

- The upper three percent of encumbered acres are contained in 3,560 parcels or 45 percent of encumbered parcels.
- These parcels have an additional encumbrance greater than 2.1 percent and contain 28 percent of SSBT streams.
- Discussion with RRAC members narrowed the decision space on the eligibility threshold to between 4.0 and 10.0 percent additional encumbrance.
- At a 4.0 percent threshold, 2,323 parcels or 29 percent of encumbered parcels would be eligible for relief prescription; these parcels contain 361 miles or 15 percent of SSBT streams.
- At a 10.0 percent threshold, 760 parcels or 10 percent of encumbered parcels would be eligible for relief prescription; these parcels contain 102 miles or 4 percent of SSBT streams.

Tables 3 and 4 display more details on tradeoffs between an encumbrance threshold, number of affected parcels, and associated stream miles for the upper three percent of encumbered acres. The additional encumbrance columns represents one percent increments of additional encumbrance starting with 2.1 percent, except for the last column, which includes all encumbrances greater than 20 percent. The first row below the parcel size rows shows the totals within a single column. For Table 3, the bottom two rows show the cumulative number and percent of parcels eligible for relief, i.e., the sum and percent of all parcels with encumbrances greater than that column. For Table 4, the bottom two rows show the miles and percent of SSBT streams with relief prescription, i.e., the sum and percent of all miles on parcels with encumbrances greater than that column.

Table 3: Distribution of encumbered parcels by percent of additional encumbrance (>2.1%) and parcel size.

Parcel Size (Acres)	Additional Encumbrance																		Total # of Parcels	
	2.1-3%	3-4%	4-5%	5-6%	6-7%	7-8%	8-9%	9-10%	10-11%	11-12%	12-13%	13-14%	14-15%	15-16%	16-17%	17-18%	18-19%	19-20%		>20%
2-10	187	154	160	143	150	122	120	99	87	90	81	81	71	48	47	41	20	22	77	1,800
10-20	100	89	80	68	66	52	32	18	17	14	10	9	9	5	3	0	3	2	1	578
20-50	142	153	104	92	43	40	24	16	12	7	7	1	1	0	1	0	0	0	1	644
50-100	123	72	52	26	12	2	2	3	1	0	0	0	0	0	0	0	0	0	0	293
100-500	131	76	19	5	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	235
500-5000	8	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10
>5000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Number of Parcels</b>	<b>691</b>	<b>546</b>	<b>415</b>	<b>334</b>	<b>273</b>	<b>218</b>	<b>178</b>	<b>136</b>	<b>117</b>	<b>111</b>	<b>98</b>	<b>91</b>	<b>81</b>	<b>53</b>	<b>51</b>	<b>41</b>	<b>23</b>	<b>24</b>	<b>79</b>	<b>3,560</b>
<b>percent of parcels eligible for relief prescription</b>	<b>3,560</b>	<b>2,869</b>	<b>2,323</b>	<b>1,908</b>	<b>1,574</b>	<b>1,301</b>	<b>1,083</b>	<b>905</b>	<b>769</b>	<b>652</b>	<b>541</b>	<b>443</b>	<b>352</b>	<b>271</b>	<b>218</b>	<b>167</b>	<b>126</b>	<b>103</b>	<b>79</b>	<b>Total Encum. Parcels</b>
	45%	36%	29%	24%	20%	16%	14%	11%	10%	8%	7%	6%	4%	3%	3%	2%	2%	1%	1%	<b>7,885</b>

The additional encumbrance columns represents one percent increments of additional encumbrance starting with 2.1 percent, except for the last column, which includes all encumbrances greater than 20 percent. The first row below parcel size rows shows the totals within a single column. The bottom two rows shows the cumulative number and percent of parcels eligible for relief, i.e., the sum of all parcels with encumbrances greater than that column.

Table 4: Distribution of miles of small and medium SSBT streams by percent of additional encumbrance (>2.1%) and parcel size.

Parcel Size (Acres)	Additional Encumbrance																		Total Miles	
	2.1-3%	3-4%	4-5%	5-6%	6-7%	7-8%	8-9%	9-10%	10-11%	11-12%	12-13%	13-14%	14-15%	15-16%	16-17%	17-18%	18-19%	19-20%		>20%
2-10	3	5	6	6	8	7	8	7	7	7	7	9	7	4	5	5	2	2	9	116
10-20	6	7	8	9	9	9	6	4	4	3	3	3	3	1	1	0	1	1	0	76
20-50	17	27	25	24	13	13	9	6	6	4	3	1	1	0	1	0	0	0	1	150
50-100	33	26	24	14	8	1	1	3	1	0	0	0	0	0	0	0	0	0	0	112
100-500	84	60	21	5	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	176
500-5000	15	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25
>5000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>SSBT Miles</b>	<b>158</b>	<b>134</b>	<b>83</b>	<b>59</b>	<b>40</b>	<b>33</b>	<b>24</b>	<b>20</b>	<b>17</b>	<b>14</b>	<b>14</b>	<b>13</b>	<b>11</b>	<b>6</b>	<b>7</b>	<b>5</b>	<b>3</b>	<b>3</b>	<b>10</b>	<b>653</b>
<b>Cumulative miles and percent of streams with relief prescription</b>	<b>653</b>	<b>496</b>	<b>361</b>	<b>278</b>	<b>219</b>	<b>180</b>	<b>147</b>	<b>123</b>	<b>102</b>	<b>85</b>	<b>71</b>	<b>57</b>	<b>45</b>	<b>34</b>	<b>28</b>	<b>22</b>	<b>17</b>	<b>14</b>	<b>10</b>	<b>Total SSBT Miles</b>
	28%	21%	15%	12%	9%	8%	6%	5%	4%	4%	3%	2%	2%	1%	1%	1%	1%	1%	0%	<b>2,355</b>

The additional encumbrance columns represents one percent increments of additional encumbrance starting with 2.1 percent, except for the last column, which includes all encumbrances greater than 20 percent. The first row below parcel size rows shows the totals within a single column. The bottom two rows shows the miles and percent of SSBT streams with relief prescriptions, i.e., the sum of all miles on parcels with encumbrances greater than that column.

For example in Table 3, the first encumbrance column (2.1-3%), includes 691 parcels, with 187 parcels 2-10 acres in size, 100 parcels 10-20 acres in size, ... , 131 parcels 100-500 acres in size, and 8 parcels 500-5000 acres in size. If the equity threshold was set at 2.1 percent additional encumbrance, 3,560 parcels would be eligible for relief (45 percent of encumbered parcels). The corresponding column in Table 4 shows the distribution of the 158 miles of SSBT streams found on parcels with (2.1-3%) additional encumbrance. If the equity threshold was set at 2.1 percent additional encumbrance, 653 miles of SSBT streams would have the relief prescription (28 percent of SSBT miles).

The department shared versions of Tables 3 and 4 with members of the RRAC to see if there was opportunity to bring a consensus recommendation to the full RRAC. The Oregon Stream Protection Coalition (OSPC) recommended an additional encumbrance threshold of ten percent. The Oregon Small Woodlands Association (OSWA) recommended a four percent threshold.

At a ten percent encumbrance threshold (column 10-11% in Tables 3 and 4), an estimated 769 parcels would be eligible for relief or ten (10) percent of encumbered parcels. These parcels contain an estimated 102 miles or four (4) percent of the SSBT stream miles. At a four percent encumbrance threshold (column 4-5% in Tables 3 and 4), an estimated 2,323 parcels would be eligible for relief or 29 percent of encumbered parcels. These parcels contain an estimated 361 miles or 15 percent of the SSBT stream miles.

The RRAC members representing these groups were not willing to move from the recommendations. A fundamental policy disagreement emerged during the discussion, as illustrated by a summary of statements from these groups.

The OSPC offered the following statements:

- The Board's ten (10) percent encumbrance value came from a much more robust riparian rule proposal, Package 1. The rule concept as approved is significantly weaker than the 90-foot buffers presented in Package 1. OSPC is thus less comfortable with any significant portion of the stream network being granted reduced standards, or significant changes to the rule for those areas that are granted reduced standards.
- OSPC finds the proposed rule concept already has an unacceptably high risk of not meeting the PCW, so providing lower standards for even four (4) percent of the stream network is discomfiting and offering lower standards to more of the network is definitely unacceptable.
- Regarding relief itself, OSPC does not support including a pro-rated basal area target in a reduced buffer, given that, even the reduced no touch is a source of concern.

OSWA offered the following statements:

- OSWA believes an encumbrance threshold should be based on how much economic value is appropriate to take from a forest owner relative to the environmental benefits associated with that taking in regard the water temperature standard in question. OSWA believes this standard was based on a flawed stream temperature theory that ignored the conclusive science about the effects of minor stream temperature changes on fish species in Oregon's forested streams.
- OSWA believes the Board recognized this dilemma when they added a relief component to the new riparian rules. OSWA also believes the Board was not fully aware of the

outcomes of the 10 percent threshold for encumbrance or the relief itself. OSWA believes if they had known the 10 percent threshold greatly limits the number of landowners eligible for relief and the ten-foot reduction in riparian area provides no practical relief, when compared to the basal area options in the new rules they would have selected a different set of numbers.

- OSWA also believes when the board selected the 50 and 70 foot no-touch buffers as relief they assumed 20 percent less basal area on a small stream and 14 percent less basal area for a medium stream would be reasonable relief. OSWA supports providing an option that counts basal area per acre at the same ratio as the in the proposed SSBT rules without relief.
- At the four percent threshold,
  - Only 2,323 parcels (29%) would be eligible for relief. That means 71% of the affected landowners will get no relief and be encumbered by riparian rules for fish that are not supported by fish science.
  - Only 1.2% (28/2,323) will be larger than 100 acres and the average size would be 15 acres (35075/2323).
- These 2,323 parcels do have 361 miles of SSBT streams. On average, there would be 0.16 miles or 820 feet of SSBT stream on each parcel. With the patchwork of parcels and activity timing on 2,323 parcels, with different landowner objectives, at any given time, it is unlikely more than a very small number of the SSBT streams would be harvested and be getting landowner relief. All studies show that under the old riparian rules, within five years of a harvest any minor stream temperature increases from a harvest will dissipate back to the original temperatures. The overall impact to any stream temperature increases using a 4% threshold is so small, it makes no sense to cause economic harm to large number of landowners who depend on the value of their forestland to meet future financial needs, just like many Americans who depend on their 401K for future financial needs. OSWA believes the 4% threshold is the proper balance between environmental protection and causing unnecessary economic harm to landowners.

While the RRAC members did not reach consensus, they did narrow the decision space for the additional encumbrance threshold to between four and ten (4 and 10) percent. The department continued analysis in order to make a recommendation to the Board on the equity threshold and associated relief.

#### Tradeoff Analysis between Eligible Parcels and SSBT Stream Miles

The department plotted a tradeoff curve from the information contained in Tables 3 and 4, using the percent of streams with full SSBT protections versus the percent of encumbered parcels eligible for relief (Figure 1). Tables 5 and 6 also displays the information in Tables 3 and 4 for the narrowed decision space (between a 4 and 10 percent encumbrance threshold). Key points include:

- The tradeoff curve does not provide a clear inflection point (change in slope) to use in selecting the encumbrance threshold.
- The curve indicates a slight change in slope at the 4 or 5 percent encumbrance threshold, but in the decision space between 5 and 10 percent thresholds, the slope depends on how many points are used to calculate it.

- The number of parcels eligible for relief and number of SSBT miles included increases as the encumbrance threshold decreases (i.e., the distance between points on curve).
- At the eight percent encumbrance threshold, there is a weak break point where every one percent decrease in the encumbrance threshold includes a greater percentage of stream miles and parcels.

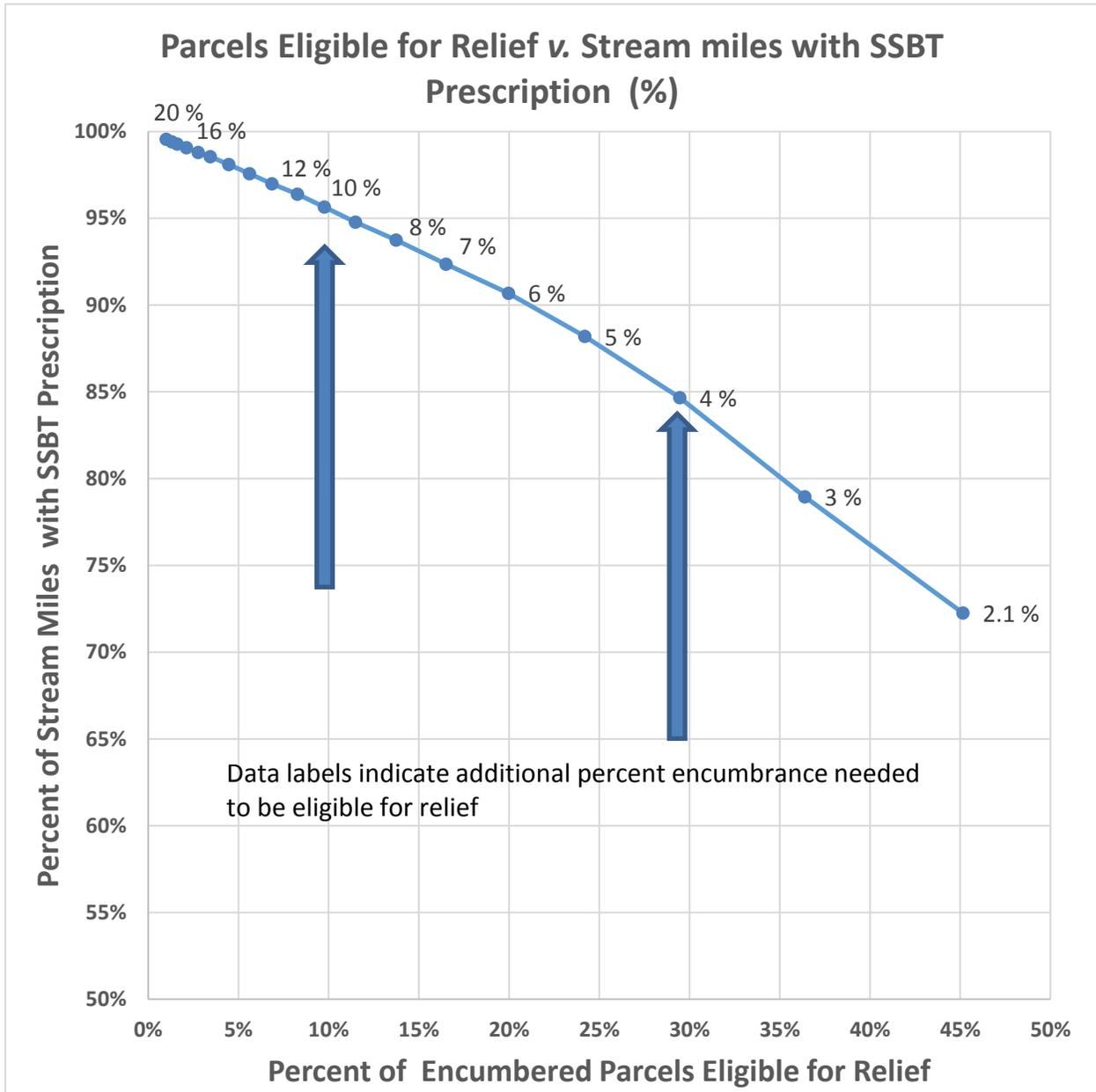


Figure 1: Trade off surface between percent of streams with SSBT protections v. percent of encumbered parcels eligible for relief. The data labels indicate the percent of additional encumbrance needed to be eligible for relief prescriptions. Arrows indicate the range between proposed encumbrance thresholds from stakeholder groups (4-10%).

The tradeoff curve in Figure 1 illustrates two aspects related to selecting an encumbrance threshold. One, the curve does not indicate a clear inflection point where the increase in percent of stream miles with the full SSBT prescription levels off as the percent of encumbered parcels eligible for relief decreases. There is a slight change in slope at the 5 or 4 percent encumbrance threshold, but in the decision space between the 5 and 10 percent thresholds, the slope depends on how many points are used to calculate it. Two, the number of parcels eligible for relief and the number of SSBT miles included per one percent change in encumbrance threshold (i.e., the distance between points on the curve) increases as the threshold decreases. This change in parcels and stream miles included per one-percent threshold change can be seen in Tables 5 and 6.

Table 5: Distribution of encumbered parcels by percent of additional encumbrance (>4%) and parcel size.

Parcel Size (Acres)	Additional Encumbrance							Total # of Parcels
	4-5%	5-6%	6-7%	7-8%	8-9%	9-10%	>10%	
2-10	160	143	150	122	120	99	665	1,459
10-20	80	68	66	52	32	18	73	389
20-50	104	92	43	40	24	16	30	349
50-100	52	26	12	2	2	3	1	98
100-500	19	5	2	2	0	0	0	28
500-5000	0	0	0	0	0	0	0	0
>5000	0	0	0	0	0	0	0	0
<b>Total # Parcels</b>	<b>415</b>	<b>334</b>	<b>273</b>	<b>218</b>	<b>178</b>	<b>136</b>	<b>769</b>	<b>2,323</b>
<b>percent of parcels eligible for relief prescription</b>	<b>2,323</b>	<b>1,908</b>	<b>1,574</b>	<b>1,301</b>	<b>1,083</b>	<b>905</b>	<b>769</b>	<b>Total Encum. Parcels</b>
	29%	24%	20%	16%	14%	11%	10%	<b>7,885</b>

Table 6: Distribution of miles of small and medium SSBT streams by percent of additional encumbrance (>4%) and parcel size.

Parcel Size (Acres)	Additional Encumbrance							Total Miles
	4-5%	5-6%	6-7%	7-8%	8-9%	9-10%	>10%	
2-10	6	6	8	7	8	7	66	108
10-20	8	9	9	9	6	4	19	64
20-50	25	24	13	13	9	6	16	106
50-100	24	14	8	1	1	3	1	53
100-500	21	5	2	3	0	0	0	31
500-5000	0	0	0	0	0	0	0	0
>5000	0	0	0	0	0	0	0	0
<b>Total Miles</b>	<b>83</b>	<b>59</b>	<b>40</b>	<b>33</b>	<b>24</b>	<b>20</b>	<b>102</b>	<b>361</b>
<b>Cumulative miles and percent of streams with relief prescription</b>	<b>361</b>	<b>278</b>	<b>219</b>	<b>179</b>	<b>147</b>	<b>122</b>	<b>102</b>	<b>Total Stream Miles</b>
	15%	12%	9%	8%	6%	5%	4%	<b>2,355</b>

Changing from a ten to nine (10 to 9) percent thresholds adds 136 parcels and 20 SSBT miles; changing from a five to four (5 to 4) percent thresholds adds 415 parcels and 83 SSBT miles. At the eight (8) percent encumbrance threshold, there is a weak break point where each additional percent decrease in the threshold encompasses a greater percentage of stream miles and parcels.

## Amount and Type of Relief for Eligible Parcels

The part of analysis discusses the amount and type of relief for forestland owners who meet a specified encumbrance threshold. Though relief could take many forms, the Board's November 2015 decision focused on relaxation of the SSBT vegetation retention standards. Key Points include:

- Two options for relief were discussed during RRAC meetings.
  - Option 1: 50-foot no cut buffer on small streams, 70-foot no cut buffer on medium streams. (Equivalent to the Board November 2015 decision).
  - Option 2: allow a 10-foot reduction in the riparian management area for both the no cut prescription and variable retention prescription, with the same per acre vegetation retention standards.
- Option 1 would provide relief for those eligible owners who passively manage their riparian management areas, but not to those who actively manage.
- Option 2 would provide relief for both type of management choices.

The RRAC members provided a range of views during discussions on relief for landowners, including, but not limited to,

- The current Board proposal did not actually provide economic relief to landowners.
- 'Relief' should be for small woodland owners, not large industrial owners to avoid incentivizing parcelization.
- A desire that the relief provided to landowners would not come at the detriment of fish.
- The view that the Board did not only intend to give relief to small parcels, such as those 15 acres or less.
- The observation that there are other ways to provide relief to landowners, such as tax credits, or other monetary options and a desire for the committee to explore other options. Some options may need legislative action.
- A concern that there was not enough "room" to consider other options, such as the policy ideas suggested above (tax credits, etc.), and that this seems to be something that deserves more thought.

Though some RRAC members expressed interest in exploring other relief options, only relief from vegetation retention standards was explored in any depth. Two relief options were discussed during the RRAC meetings:

- Option 1: 50-foot no cut buffer on small streams, 70-foot no cut buffer on medium streams. (Equivalent to the Board November 2015 decision).
- Option 2: allow a 10-foot reduction in the riparian management area for both the no cut prescription and variable retention prescription, with the same per acre vegetation retention standards for the variable retention prescription.

For those forestland owners who normally choose to not enter their riparian management areas and qualify for relief, the passive management relief option is effectively a complete exemption of the new rules since the riparian management area widths are identical. Those owners who do not qualify for relief would have their unmanaged riparian management area expanded by ten feet and a corresponding decrease in available volume for harvest.

Owners who currently actively manage their riparian management areas to the basal area targets (variable retention) will see a 175 and 42 percent increase in basal area for small and medium SSBT streams, respectively under the proposed rule (Table 7). Under Option 2, those owners who qualify for relief would see a smaller (130 and 24 percent) increase in basal area for small and medium SSBT streams, respectively.

Table 7: Comparison of basal area (BA) per 1000 feet of stream for current fish-bearing (Type F) riparian vegetation prescriptions, salmon, steelhead and bull trout (SSBT) prescriptions, and SSBT relief prescriptions (Option 2).

Stream Size	Type F (BA/1000 feet)	SSBT Relief (BA/1000 feet)	SSBT (BA/1000 feet)	Increase BA/1000 feet with Relief	Increase BA/1000 feet without Relief
Small	40	92	110	52 (130%)	70 (175%)
Medium	130*	161	184	31 (24%)	54 (42%)

\* Used average of BA/1000 feet for included geographic regions ((120 BA/1000 feet + 140 BA/1000 feet) / 2 = 130 BA/1000 feet)

### Equity and Relief

The threshold at which regulatory encumbrance becomes unfair interacts with the type of relief considered necessary to remedy the inequity. In this case, it is also tied to environmental tradeoffs, such as the perceived point at which relief measures or the amount of stream miles and parcels afforded relief may negate the Board’s goal of meeting the protecting cold water criterion to the maximum extent practicable.

The department’s analysis indicates that approximately 90 percent of parcels (hence owners) will not be impacted by the proposed rule, although the majority of acres (59 percent) are in encumbered parcels. The majority of encumbered parcels (55 percent) have less than 2.1 percent additional encumbrance due to the proposed rules. A smaller number of parcels will have a greater encumbrance and a higher concentration of resource values within their ownership. At or around eight (8) percent additional encumbrance, each additional decrease in the percent encumbrance threshold encompasses a greater percentage of SSBT stream miles. At eight (8) percent additional encumbrance, approximately 14 percent of encumbered parcels (or 1,083 parcels) would be eligible for relief. The relief prescriptions above could be implemented on an estimated 147 miles (or 6 percent) of SSBT streams.

The relief prescriptions above for both passive management and variable retention prescriptions (Option 2) provide measureable relief to those who are eligible. Eligible owners who choose passive management of their riparian management areas effectively remain at existing Type F standards (no change in riparian management area width). Eligible owners who implement variable retention prescriptions will be expected to retain 16 and 12.5 percent less basal area than the full SSBT prescription on small and medium streams, respectively.