

# NORTHWEST ENVIRONMENTAL ADVOCATES



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**Re: Columbia River Cold Water Refuges Plan, DRAFT (Oct. 2019)**

Dear John:

Approximately a quarter century after the Oregon 1992–1994 triennial review that ended in 1996—the first triennial review in which the importance of thermal refugia was first identified as a key part of providing designated use protection—the U.S. Environmental Protection Agency (EPA) has issued a purported plan to ensure that such refugia offset the hazards salmonids face in migrating through the increasingly hot waters of the Columbia River. Two lawsuits against EPA later; two lawsuits against the National Marine Fisheries Service (NMFS) later; two NMFS biological opinions later, two EPA Region 10 temperature guidance documents later . . . EPA has finally issued a draft plan to identify, evaluate, and possibly protect thermal refugia in the Columbia River. EPA, *Columbia River Cold Water Refuges Plan, DRAFT (Oct. 2019)* (hereinafter “Plan”).

In our opinion, while the scientific information about salmonids’ use of refugia is impressive and generally easy to understand, the “plan” aspect of this plan is so seriously lacking as to not exist. Plan: “a method of achieving an end.” Merriam-Webster, *available at* <https://www.merriam-webster.com/dictionary/plan>. Plan: “An orderly or step-by-step conception or proposal for accomplishing an objective” or “[a] proposed or intended course of action.” The American Heritage Dictionary of the English Language, 5<sup>th</sup> Edition, *available at* <https://www.wordnik.com/words/plan>. This EPA plan is not a plan. It is a very nice report that contains a conclusion—that there are likely sufficient refugia now but will not be in the future—and that cites many other plans and makes such tepid recommendations that one is fearful of calling them recommendations. Certainly recommending that someone, somewhere, at some time, follow some other group of plans is not a plan itself. It’s a dodge. It is EPA failing to do anything at all to generate a sense of urgency to state governments that they must take actions to address their failing nonpoint source control programs (and other related failings, such as water flow management, dams, etc.), and to set out the actions that EPA and other federal agencies must take or should take. In a plan that relies heavily on statements about protecting riparian

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vegetation, remarkably EPA says absolutely nothing about its own role in ensuring that states protect and restore forested riparian vegetation. In fact, this plan says very little about changing fundamental aspects of the regulatory status quo under the Clean Water Act and state legal authorities even in those instances when EPA hints broadly at it.

Prior to jumping into the first section on the regulatory background, this document should give a short discussion of why temperature is an important water pollution issue to address, why the Columbia is of particular importance, why EPA believes that thermal refugia offer relief from a 20° C criterion but not warmer temperatures, the role of uncertainty in EPA's beliefs, and briefly discuss that which is rather obliquely referred to later in the document, namely the 2015 death of sockeye that EPA describes as "the use of CWR [cold water refugia] is seen as an ineffective migration strategy for these fish." *Plan* at 24.

## **I. Page by Page Review**

### 1.1 REGULATORY BACKGROUND

Page 2 – This page includes what is purportedly a quotation from Oregon's water quality standards that says "the Lower Columbia River: 'must have coldwater refugia that's sufficiently distributed so as to allow salmon and steelhead migration without significant adverse effects from higher water temperatures elsewhere in the water body.'" Despite its having quotation marks, this is not an accurate quotation because Oregon's water quality standards are not grammatically incorrect and do not include contractions. Also, there should be a citation added: OAR 340-041-0028(4)(d). In addition, EPA should include information about the designated uses in the Columbia River as designated by the State of Washington. *See* WAC 173-201A-602. Instead, EPA focuses only on those waters that are covered by the Oregon narrative criterion, as if the designated uses on their own—which presumably are identical or near identical in both states—do not demand the same protection to salmonids as that provided by the Oregon narrative criterion, namely the ability to migrate through the Columbia River to their natal streams. EPA should make clear that its analysis meets Washington's water quality standards as well as the Reasonable and Prudent Alternative set out in the NMFS Biological Opinion that caused EPA to issue the plan. *See* NMFS, *Endangered Species Act Biological Opinion on the Environmental Protection Agency's Proposed Approval of Certain Oregon Water Quality Standards Including Temperature and Intergravel Dissolved Oxygen* (Nov. 3, 2015) (hereinafter "NMFS Biological Opinion").

The same is true with regard to Oregon's definition of cold water refugia, which requires only that the refugia be "at least 2 degrees Celsius colder than the daily maximum temperature of the adjacent well mixed flow of the water body." While the NMFS Biological Opinion did not find that this definition jeopardizes salmonids, it is obvious that at some set of elevated temperatures that are two degrees Celsius from each other, this definition no longer protects the designated

uses even if the lower of the temperatures poses less of a threat. Given that EPA finds that Lower Columbia River temperatures “reach peak temperatures of about 22°C in mid-August,” *Plan* at 24, and EPA has also found that two degrees less than 22° C, namely 20° C, causes “significant disease risk,” *Plan* at Table 4-1, the definition is already inconsistent with facts in the water. As EPA goes on to predict rising temperatures in both the Columbia River and the tributaries that provide the thermal refugia, EPA’s failure to discuss the definition, as if it were set in regulatory stone, is a significant misstep. These increased temperatures are in the range of very high deleterious effects, as demonstrated by the summary of those effects in Table 4-1. Elsewhere, as in Recommendation No. 26 part c, EPA mentions that steps might be taken under the Clean Water Act to provide more protection so it is not as if EPA considers such matters as outside the scope of this document. *See Plan* at 161 (“Consider special designations, antidegradation policies, and/or narrative water quality criteria as appropriate to prevent warming above current temperatures and maintain existing flows in the 12 priority CWR tributaries.”).

Page 2 – We humbly suggest that EPA should cite the name of the case that invalidated the Endangered Species Act consultation that led to this plan. The citation for that case is: *Northwest Environmental Advocates v. U.S. E.P.A.*, 855 F.Supp.2d 1199, 1128 (2012). Note that the original NMFS Biological Opinion listed cold water refugia as a mitigating factor for the adverse effects of the EPA-approved water quality standards on salmonids. *Id.* In fact, three of the six mitigating factors were about refugia. *Id.* (“To support its conclusion, the NMFS listed six mitigating factors, including: . . . (3) the provision for cold water refugia, (4) consideration of aspects of water temperature cycles and refugia, (5) the narrative criterion protecting migration without significant adverse effects[.]”). But for this NWEA lawsuit, NMFS would not have developed any analysis demonstrating that the State of Oregon was ignoring this key provision of the EPA-approved water quality standards. But for this lawsuit, EPA would not have developed any analysis of whether the cold water refugia are and will be in the future sufficient to protect migrating salmon in the Lower Columbia River.

Page 3 – It is unclear why EPA makes reference to NMFS’s having concluded that “evidence in the record” indicated the refugia narrative criterion was not being implemented. There was no “record” other than what NMFS compiled in the course of its evaluation.

Page 3 – This EPA plan should make reference to the Willamette and what is or is not happening with that corollary plan but the word literally is not to be found in this document.

## 1.2 TYPES OF COLD WATER REFUGES

Page 3 – The discussion of refugia in stratified reservoirs mentions that fish may reside in “cooler water at depth.” It does not state whether this cooler water may be impaired in other ways, such as lack of dissolved oxygen, that would render it unsuitable for salmonids.

### 1.3 OVERVIEW OF THE COLUMBIA RIVER COLD WATER REFUGES PLAN

Pages 3–5 – EPA states that the geographic scope of its plan is “focused on the Lower Columbia River between the mouth and river mile 309 (Oregon-Washington border), where the Oregon cold water narrative criteria applies (Figure 1-1).” EPA’s plan is inadequate as it suggests a lack of a legal requirement to protect the migrating salmon from the 20° C criterion in Washington State based on the lack of a similar refugia-specific narrative criterion. The Clean Water Act is clear that designated uses must be protected regardless of the criteria. *PUD No. 1 of Jefferson Cnty. v. Wash. Dept. of Ecology*, 511 U.S. 700 (1994). We agree that EPA should have, as it says it did, extended its analysis to the Snake River even though the rationale—“since the Snake River entry at river mile 325 is near the Oregon-Washington border”—is flawed. Based on the current August mean water temperature reported by EPA, *Plan* at Fig 2-1, and Washington’s designated uses, EPA should have included the portion of the Columbia River in Washington State.

Pages 9–10 – Figures 2-5 and 2-6 are of significant importance and should be available for the public and various agencies to see with the kind of detail that cannot be achieved in a print format, or at least the print format that EPA offers here. Specifically, EPA should offer the reader the ability to access these figures online with the ability to zoom in on details and/or it should print portions of the overall map at a scale that allows the details to be read. Without the details, the information is not useable. Likewise, Figure 2-7 should be prepared with an on-line version that labels all of the tributaries.

Page 25 – EPA shows on Figure 3-1 that the “[r]efuge use” is during the period of time in which temperatures at Bonneville Dam exceed 20° C. However, the text and Figure 3-2 say something different: “As shown in Figure 3-2, migrating steelhead begin to use CWR when the Columbia River temperature reaches 19°C, and when temperatures are 20°C or higher approximately 60-80% of the steelhead use CWR.” Therefore, the indication of refugia use on Figure 3-1 is incorrect because it does not reflect the use of refugia when temperatures reach 19° C and it purports to include steelhead.

Page 28 – EPA needs to discuss the ramifications for its conclusion that some salmonids are not using cold water refugia to mitigate their exposure to high water temperatures. EPA’s approval of the Oregon 20° C criterion was based on the narrative criteria that accompany it. If some species of salmonids are being harmed by or are not protected by the 20° C criterion and do not use the thermal refugia to mitigate that harm, then Oregon’s water quality standards are not performing the function for which they were adopted and approved by EPA. Specifically, EPA finds that sockeye “are most susceptible to warm temperatures with limited mortality at 19-20°C and significant mortality at 20-21°C.” *Plan* at 45. Sockeye do not appear to use refugia. *Id.* at 54. Yet, in 2015, “Lower Columbia river temperatures were significantly warmer than average during the June-July sockeye run, reaching 20°C (68°F) at the peak of the run, in late June.” *Id.*

at 55; *see also id.* Fig 4-7. EPA recounts the results that year:

In early June when river temperatures were below 19°C, survival between the two dams was high (90-100%). During week 4 in Figure 4-8 (June 22–28), when river temperature climbed above 20°C, survival dropped to 70% for Columbia River sockeye and 50% for Snake River sockeye (10% for Snake River sockeye transported as juveniles). In weeks 5-8, when river temperatures exceeded 21°C, survival was very low (0-20%). Because most of the Snake River sockeye migrated in late June and July, the overall survival for Snake River sockeye between Bonneville Dam and McNary Dam was only 15% in 2015 (FPC 2015).

*Id.* at 55. EPA’s own conclusion demonstrates that Oregon’s temperature standards do not protect sockeye. Either new numeric criteria that correspond to the runs of species that are not using the river during the very highest temperatures but that are affected by high temperatures during their period of river use need to be adopted or some other solution must be found in the water quality standards. The fact that this plan finds that the refugia do not provide mitigation to all salmonids migrating through the Lower Columbia River means that this plan must set out a solution to that regulatory problem. It does not, however, even engage in the topic.

### 3.4 STEELHEAD USE OF COLD WATER REFUGES

Pages 30–35 – EPA explains how it has calculated the number of steelhead using the refugia and the estimated density. It does not mention here that the density in combination with the temperatures to which the fish are exposed increase adverse impacts of fish disease. Later in the plan, we see that EPA has identified the carrying capacity of the refugia as an issue that needs research. *Plan* at 157 (“high densities of adult fish are known to contribute to the spread of disease.”). Nonetheless, EPA should address the issue to the best of its ability without the benefit of the research it has flagged is needed. The very heart of the question of whether there are sufficient refugia, as the plan is required to address, involves whether use of the refugia identified are sufficient to harbor fish, including without increasing their risk of disease from proximity. Instead, the plan’s only references to disease, other than in the context of the needed research, is the disease caused by higher temperatures.

### 3.5 FALL CHINOOK USE OF COLD WATER REFUGES

Pages 35–37 – Same comment as immediately above.

Pages 38–39 – EPA concludes that salmonids did not historically rely on cold water refugia to the degree that they do now, with the higher river temperatures. Again, this suggests that EPA should discuss the impact of fish disease and the metabolic effects of holding in refugia on this reliance.

#### 4.1 ADVERSE TEMPERATURE EFFECTS TO MIGRATING ADULT SALMON AND STEELHEAD

Page 45 – In the first paragraph, EPA states that Oregon and Washington have a 20° C maximum water quality criterion for the Columbia River, which is consistent with EPA’s recommended criteria. This is incorrect. First, as EPA knows, Oregon’s standard includes additional narratives—one of which is the subject of this very document—because 20° C is not sufficiently protective. Second, EPA Region 10’s recommendations to states on water quality standards for temperature mirror EPA’s belief that the 20° C criterion is not sufficiently protective:

To protect this use, EPA recommends a 20°C maximum 7DADM numeric criterion plus a narrative provision that would require the protection, and where feasible, the restoration of the natural thermal regime. EPA believes that a 20°C criterion would protect migrating juveniles and adults from lethal temperatures and would prevent migration blockage conditions. However, EPA is concerned that rivers with significant hydrologic alterations (e.g., rivers with dams and reservoirs, water withdrawals, and/or significant river channelization) may experience a loss of temperature diversity in the river, such that maximum temperatures occur for an extended period of time and there is little cold water refugia available for fish to escape maximum temperatures.

In this case, even if the river meets a 20°C criterion for maximum temperatures, the duration of exposure to 20°C temperatures may cause adverse effects in the form of increased disease and decreased swimming performance in adults, and increased disease, impaired smoltification, reduced growth, and increased predation for late emigrating juveniles (e.g., fall chinook in the Columbia and Snake Rivers). Therefore, in order to protect this use with a 20°C criterion, it may be necessary for a State or Tribe to supplement the numeric criterion with a narrative provision to protect and, where feasible, restore the natural thermal regime for rivers with significant hydrologic alterations. Critical aspects of the natural thermal regime that should be protected and restored include: the spatial extent of cold water refugia (generally defined as waters that are 2°C colder than the surrounding water), the diurnal temperature variation, the seasonal temperature variation (i.e., number of days at or near the maximum temperature), and shifts in the annual temperature pattern. The narrative provision should call for the protection, and where feasible, the restoration of these aspects of the natural temperature regime. EPA notes that the protection of existing cold water refugia should already be provided by the State’s or Tribe’s antidegradation provisions or by the cold water protection provisions discussed in Section V.2 below. Thus, the new concept introduced by the narrative provision EPA recommends here is the restoration of the natural thermal regime, where feasible.

EPA, *EPA Region 10 Guidance For Pacific Northwest State and Tribal Temperature Water Quality Standards* (April 2003) at 29.

#### 4.5 ENERGY LOSS AND PRE-SPAWNING MORTALITY OF FALL CHINOOK SALMON FROM EXPOSURE TO WARM MIGRATION TEMPERATURES

Page 54 – The paragraph on the likely effects of climate change (“Under simple temperature increases of . . .”) on timing of and survival after increased temperatures is oddly placed in the document. We do not object to its being here so long as the information is also repeated later on in the document where climate change is discussed.

#### 4.6 INCREASED MORTALITY AND SHIFT IN RUN TIMING OF SOCKEYE AND SUMMER CHINOOK FROM WARM MIGRATION TEMPERATURES

Page 54 – Discussing the hazards to sockeye of delaying migration by using cold water refugia omits any statement as to whether the timing of their migration is the same as it was historically or it is altered. This is relevant information that should be included one way or the other. What EPA describes in this section is sockeye that are stuck between a “rock and a hard place.” On one hand, if they use the refugia and delay, they will be harmed by warmer upstream temperatures and by not using the refugia they are harmed by the downstream temperatures.

Page 55 – Fig. 4-7 should have temperatures converted or added to reflect the Celsius temperatures used throughout the document. The same is true of Fig. 4-11 on page 59 and possibly other figures.

Pages 56–57 – The information set out in this section supports the need for EPA to interpret the designated uses and existing uses, as protected under the antidegradation policies of the states consistent with federal rules, of the Columbia as requiring protection, as discussed above. For example, EPA states that, “[o]ver time, because the June sockeye migrants are more successful, the genetic traits of the June migrants increase as a percentage of the population, contributing to the shift in migration timing (Crozier et al. 2011).” And, EPA says that “Figure 4-10 shows how increasing July river temperatures at Bonneville Dam (Panel B) over the past 60 years has resulted in earlier migration of Columbia River sockeye salmon.” Likewise, EPA states that, “much like the sockeye salmon run, the summer Chinook run has also shifted to earlier in the year, likely in response to rising July temperatures.” *Plan* at 59. EPA is silent on protection of these species as existing uses even though they are protected by state water quality standards. *See, e.g.,* OAR 340-04100004(1); *Northwest Environmental Advocates v. U.S.E.P.A.*, 855 F.Supp.2d 1199, 1220-1222 (D. Or. 2012).

## 5.1 HISTORIC TEMPERATURE CONDITIONS OF THE LOWER COLUMBIA RIVER

Page 61 – When “EPA notes that flow regulation, land use changes, natural variability, and other factors likely influenced the observed changes, and increased water temperatures may not be ascribed solely to anthropogenic climate change influences,” EPA should also note that it is long overdue to prepare a temperature Total Maximum Daily Load (TMDL) for the Columbia River, pursuant to section 303(d) of the Clean Water Act, a regulatory document in which this refugia information must be included.

## 5.2 FUTURE TEMPERATURE CONDITIONS OF THE LOWER COLUMBIA RIVER AND ITS TRIBUTARIES

Pages 64–67 – EPA concludes:

It is therefore likely that fewer salmon and steelhead will migrate in the Lower Columbia River during mid-July through August in the future under these warming trends, resulting in a change in the timing of salmon and steelhead runs. Adult sockeye salmon and summer Chinook will likely continue to migrate earlier as already observed, with very few migrants in July. Adult fall Chinook are likely to migrate later with minimal migrants in August, and those that do migrate then will likely need to use CWR to have sufficient energy to successfully spawn. Steelhead may use CWR for longer duration to avoid peak temperatures, or they may not be able to use CWR over the mid-summer like they currently do because mainstem temperatures are too warm in late July/early August for steelhead to reach the CWR in the Bonneville reach. If the latter proves true, this may result in a bi-modal migration pattern for steelhead with early summer and late summer runs. However, whether these species can shift their migration timing to adapt to the rate of warming, and whether such shifts can be done successfully without disruption to their full freshwater life cycle, is uncertain (Crozier et al. 2011 and Keefer & Caudill 2017).

*Plan* at 64. On page 66, EPA goes on to say that

Temperatures in the tributaries to the Lower Columbia River, including the 23 tributaries that currently provide CWR, are also predicted to increase due to climate change. Table 5-1 displays the predicted increase in August mean temperatures for the 23 CWR tributaries (12 primary CWR highlighted in blue) using the NorWeST SSN model (Appendix 12.17). August mean temperatures for the CWR tributaries are predicted to increase by 1.2–1.5°C by 2040 and by 2.1–2.7°C by 2080 relative to current baseline (1995–2011).



Of significant concern are those primary CWR tributaries that are predicted to have August mean temperatures that exceed 18°C. Tributary temperatures exceeding 18°C, although still serving as CWR if more than 2°C cooler than the Columbia River, are at levels associated with increased risk of disease and energy loss. For instance, by 2040, the Deschutes, Lewis, and Sandy Rivers are predicted to exceed 18°C, temperatures that will diminish their CWR function. By 2080, the Cowlitz, White Salmon, and Klickitat Rivers are predicted to have August mean temperatures exceeding 18°C, diminishing their CWR function.

*Id.* at 66. So how does EPA conclude that there are sufficient thermal refugia to meet the standard?

#### 6.1 CWR SUFFICIENCY ASSESSMENT FRAMEWORK

Page 67 – EPA complains that evaluating whether the existing refugia are sufficient to meet the requirements of the Oregon water quality standards that it approved is “complex” because Oregon does not have “quantitative metrics to define what is sufficient.” This lack of clarity is a reflection of EPA’s own disinterest in the role of the refugia in real life. Oregon clearly, by its inaction that was highlighted by the NMFS BiOp, was only interested in tacking on the cold water refugia narrative criterion in order to get EPA to approve a temperature criterion of 20° C that it knew was not protective of salmonids. At the time of the EPA approval, EPA was well aware that Oregon had no plan and no intention to implement this criterion, including because Oregon claimed that it would do so through NPDES permits, which was an obviously false assertion. EPA’s complaints come across as whining when instead the agency should reflect on its own shortcomings in approving the provision in the first place, when it knew that it was just a paperwork exercise. Only by being honest about its failings can the agency not repeat its mistakes in the future.

Page 67 – EPA should include the source for the statement: “mortality of caught and released fish” in cold water refugia. We believe that EPA has obtained information from NMFS on this topic and that it should reveal the source because it would be useful for the fish and wildlife agencies in pursuing restrictions on fishing in the cold water refugia where without restrictions the fish cannot, in fact, obtain refuge.

Page 67 – We appreciate EPA’s recognition that “although CWR can help mitigate adverse effects to migrating salmon and steelhead when Columbia River temperatures exceed 20°C, the CWR narrative standard should not be interpreted to ‘allow for’ or to ‘fully compensate for’ Columbia River water temperatures higher than the 20°C numeric criterion.” Note that this is not what EPA argued in its briefs to the court. *See, e.g., Nw. Env’tl. Advocates v. EPA*, Civil No. 05-1876-HA, United States’ Memorandum in Support of United States’ Cross-Motion for Partial Summary Judgment on Clean Water Act Claims and in Opposition to Plaintiff’s Motion for

Partial Summary Judgment on Clean Water Act Claims (Jan 14, 2011) at 29. We believe that this point should be made in any summaries of EPA's findings and recommendations so as to not leave the wrong impression with readers that the presence of refugia somehow means there are no problems with temperature in the Columbia nor hazards associated with the 20° C criterion.

Page 68 – We fully support EPA's evaluation of the sufficiency of refugia in the three time frames. However, it is unclear on what basis EPA stops at 2040, especially in light of its own predictions that temperatures will dramatically rise in both the Columbia River and the tributaries that provide thermal refugia by the year 2080. *See Plan* at 66, Table 5-1.

Page 74 – On this page, EPA concludes that,

the lack of CWR in the nearly 100 miles between the Deschutes River and McNary Dam, including the John Day reservoir which has the highest temperatures in the Lower Columbia River, is of concern. This nearly 100-mile reach poses the greatest risk from warm temperatures for migrating salmon and steelhead. Thus, it is difficult to conclude that CWR distribution is sufficient based solely on locations. In addition, there is very little opportunity to restore CWR in this reach, and even under natural conditions there were likely only a few small tributaries (e.g. Willow Creek, Rock Creek) and the Umatilla River that provided CWR.

While it does little or nothing for the fish themselves, this conclusion leads to the result that EPA must revisit its approval of the Oregon 20° C criterion for this stretch of the Columbia River. In addition, EPA should reconcile this conclusion with its other conclusion that there are, in fact, sufficient thermal refugia. The facts should guide the conclusion, not the desire to justify EPA's approval of the water quality standard.

Page 74 – EPA concludes that “[t]he strongest line of evidence that the current amount of CWR is sufficient under current Columbia temperatures is the adult survival rates from Bonneville Dam to McNary Dam. As discussed in Section 4.4, the adult survival rate after accounting for harvest and straying for Snake River steelhead and fall Chinook is over 90%.” EPA then cites NOAA's conclusion that it “does not view adult migration conditions in this river segment as ‘substantially impaired’ for upper Columbia and Snake River steelhead and Snake River fall Chinook.” Frankly, this is an odd conclusion. First, it fails to address the species that do not rely on refugia and are, nonetheless, adversely affected by the 20° C criterion, e.g., sockeye. Second, this statement only applies to the already and admittedly severely depressed populations of steelhead and Chinook. Were the species' populations to increase, would the refugia be sufficient? Presumably the desired goal of the Clean Water Act is not to maintain salmonid populations at a level at which they are defined as at risk of extinction, known as “threatened” and “endangered” under the Endangered Species Act. Third, is the definition of a protective

water quality standard one that does not cross a line that is defined as “substantially impaired”? That is not how we read the Clean Water Act and EPA’s implementing regulations. 40 C.F.R. § 131.11(a) (“the criteria shall support the most sensitive use”). Fourth, having estimated that the same survival rate applies to both hatchery and wild Snake River fall Chinook, Plan at 50, did EPA calculate the effect of that rate on the wild fish population? Fifth, after citing the assertion that temperature-related mortality is not currently “substantially impairing” the recover of Snake River steelhead and fall Chinook, did EPA combine this less-than-substantial loss with other losses to consider that species on the verge of extinction do not necessarily need to owe their status to any single adverse impact on their populations? And, finally, given that to have the in-the-water effect of protecting, enhancing, and/or restoring thermal refugia—which EPA confirms are essential elements to Oregon’s water quality standards and salmonid survival of Columbia River migration—the extraordinarily slow wheels of regulation must begin to move, the trees must be protected and planted, the best management practices for nonpoint sources must be implemented—that is to say there is zero time to waste to get ready for a hotter future—how does EPA draw any conclusion that suggests the problem of inadequate thermal refugia is not upon us now? EPA cannot turn a switch on twenty years down the road to protect the fish; that switch must be turned on now.

Page 75 – EPA concludes that, “primarily because there does not appear to be capacity limitations on the use of CWR in the Lower Columbia River, and adult steelhead and fall Chinook migration survival rates exceed 90% in this reach, EPA’s assessment is that the current amount of CWR is sufficient under current Columbia River temperatures.” This statement is not supported by EPA’s failure to evaluate capacity limitations, particularly with regard to disease. The finding rests on an extremely flimsy basis of something not appearing to be a problem about which nothing is known. In addition, EPA concluded that “the lack of CWR in the nearly 100 miles between the Deschutes River and McNary Dam . . . is of concern. *Plan* at 74.

Page 76 – On this page, EPA summarizes the uses of thermal refugia and concludes that the spatial and temporal extent “appears to be sufficient” now but “may not be in the future.” First, how is it that EPA can conclude it “may” not be in the future when EPA has predicted very high temperatures under future conditions? And on the same page conclude that “there is significant risk that the Lower Columbia River adult migration survival rates for steelhead and fall Chinook will decrease in the future”? There doesn’t seem to be any “may” about it. Second, there is a lot of science in this report that is titled a plan. How is it that EPA comes to a conclusion that it “appears” there are sufficient refugia? It seems more likely that EPA has concluded that the refugia that exist are all that are there rather than they are sufficient. Because EPA in this very document states that historically refugia were not the critical key to salmonid survival than they are today. Since EPA goes on to conclude that by 2040, “there is significant risk that the current amount of CWR will not be sufficient to minimize the risk to migrating salmon and steelhead,” EPA should draw a single conclusion: that there are not sufficient refugia. When EPA approves a water quality standard, it is not approving it for a limited period of time but, rather, based on the

science it has before it. Instead, EPA divides the future into periods for which it draws different conclusions, and then fails to sound the alarm, an alarm that might have led to a plan that called for urgent action rather than the tepid response laid out in the remainder of this document.

## 7 ACTIONS TO PROTECT & RESTORE COLD WATER REFUGES

Page 77 (and Appendix 12.20) – In this opening to the beginning of the plan aspect of the plan, EPA starts with its conclusion from the analysis part of the plan that there are sufficient refugia. As we stated immediately above, that is a problem. EPA establishes zero sense of urgency in any of its proposals. Then, EPA highlights two refugia in addition to the 12 primary tributaries: the Umatilla River and Fifteenmile Creek. As EPA points out, the Umatilla is “the only significant opportunity for increased CWR in the warm 93-mile reach between the Deschutes River CWR and McNary Dam.” It errs, however, when it chooses to lean on the TMDLs that have been completed “indicating the potential for decreased summer temperatures in the river (Appendix 12.20).” To the extent that EPA is relying on completed TMDLs for predicted temperatures, this is in error. TMDLs, seeking to meet the now-vacated natural conditions criterion that allowed purportedly natural conditions to supersede the numeric criteria, modeled purported natural temperatures. The problem with these temperatures is that they did not remove all anthropogenic impacts in the modeling process. In fact, many of them are quite explicit as to what anthropogenic impacts remain. One of the more obvious impacts that remain in the purportedly natural temperatures is the heat from the majority of streams miles in a basin. As Oregon generally only modeled the mainstem rivers, assumptions had to be made about what to use for tributary inputs. These assumptions ranged from the use of current temperatures to the numeric criteria. Some TMDLs and their extensive appendixes state this piece of information clearly and others do not. As a result of using an assumption that does not reflect the removal of current anthropogenically-influenced conditions such as existing lack of vegetation, lack of tributary flows, dams, wide channels, width:depth ratios, loss of groundwater inputs, and loss of channel complexity, the modeling outputs predicted temperatures that could not have been “natural.” As NWEA detailed in a brief to a successful federal court challenging EPA’s approval of numerous Oregon TMDLs, and citing the administrative record in that case:

Anthropogenic influences that were omitted from determinations of purportedly natural criteria are set out at: AR00005 at 63 (Rogue, Applegate; channel armoring and wetland draining), *id.* at 90 (current tributary temperatures and flows); AR0034 at 1131 (Snake: upstream sources, impoundments, changes in flow, channel straightening, diking, and removal of riparian vegetation); AR0085 at 4203 (Umatilla, Walla Walla: channel armoring, wetland draining, urbanization); AR0086 at 4329 (Umatilla, Walla Walla: mainstem and tributary flows); AR0108 at 4913 (Willamette: some dams, tributary temperatures), *id.* at 4914 (dams, flow, simplified channel), *id.* at 4915 (loss of channel complexity, velocities); *id.* at 4918 (deepening, bank armoring, dike construction, aggregate

mining, wetlands and floodplain reclamation); AR0166 at 10598 (Umatilla, Willow Creek: channel conditions, hydrology); AR0182 at 11137 (Umpqua: floodplain connectivity, large woody debris, channel complexity), *id.* at 11118 (dam reservoirs); AR0218 at 12760 (Rogue, Bear: loss of off-channel areas, natural stream widths), *id.* at 12764, (irrigation activities); AR0253 at 13720 (Molalla-Pudding: tributary temperatures and flows); AR0283 at 14427 (Rogue: stream location, hydrology), *id.* at 14434 (58 dams); AR0309 at 15505 (Middle Columbia, Miles Creeks: dams), *id.* at 15527 (estimated tributary natural conditions); AR0319 at 15782 (Lower Grande Ronde: channel width and bank stability); AR0342 at 16825 (Malheur: all changes except riparian vegetation); AR0371 at 17823 (John Day: groundwater and sinuosity); AR0373 at 18071 (John Day: current tributary temperatures).

*Nw. Env'tl. Advocates v. EPA*, Plaintiff's Motion for Summary Judgment on Clean Water Act and Endangered Species Act Claims, Civil No. 3:12-cv001751-AC (Nov. 25, 2014) at 19–20, fn 16. It is highly inappropriate for EPA to cite to the so-called natural temperatures that come from these TMDLs because they do not represent the lowest temperatures that could be achieved.

The cited appendix is a memorandum that includes a discussion of the Umatilla TMDL that states: “significant restoration needs to be completed on the Umatilla before it becomes a viable cold water refuge. The TMDL identifies improved water use efficiency and riparian vegetation to restore floodplain connectivity as well as improving water quality to col water temperatures[.]” Appendix 12.20 at 2. EPA notes about Fifteenmile Creek that “the Fifteenmile Creek TMDL, which models temperatures under fully restored conditions and describes actions needed to restore the watershed. The modeling analysis in the temperature TMDL for this creek indicates that if flow and shade were restored to near “natural” conditions, the summer river temperatures could be significantly reduced and flow restored to the point that a CWR could be formed at the creek’s confluence with the Columbia River.” *Id.* at 4. Naturally, it is not rocket science that increasing flows and shade would lead to cooler waters. That is an early view of one of the primary problems with this plan.

EPA concludes that in the absence of analysis, i.e., TMDLs, completed for “the other 10 non-primary CWR tributaries and potentially other tributaries to the Lower Columbia River,” it can only conclude that these “may have the potential to be restored to provide additional CWR. Restoration activities, such as riparian planting, bank stabilization, or water efficiency improvements in the other 10 non-primary CWR tributaries may increase the quality and quantity of their CWR. The EPA had limited information to quantify temperature improvements after restoration, so this Plan focused on areas with temperature TMDLs and other available information to select the two “restore” tributaries as described above.” *Id.* at 4. Thus, in Table 1 of this appendix, EPA identifies eight potential refugia tributaries —Skamokawa Creek, Mill Creek, Abernethy Creek, Germany Creek, Bridal Veil Creek, Wahkeena Creek, Oneonta Creek,

Rock Creek—for which there is “no information on restored natural temperatures,” the basis for not identifying them as priorities for restoration. This is a poor basis upon which to reject any potential refugia. First, the impacts of climate change and the uncertainty of the carrying capacity issue suggest that this is an emergency and the definition of an emergency is to do everything possible. Second, the results of the TMDL modeling exercises are inherently flawed so waiting on them seems pointless. Third, the TMDLs do not, in fact, guide any activities that are aimed at controlling nonpoint source pollution, the primary source of stream warming. EPA is pointlessly letting a technicality stand in the way.

Unless a tributary is simply not able to provide any benefit to migrating salmonids, it seems foolish to eliminate it from consideration for a lower priority restoration. In a warming world in particular, it should be true that all potential refugia be treated to the treatment EPA proposes for the 12 primary tributaries plus the Umatilla and Fifteenmile Creek, namely “to: 1) avoid human actions that could increase temperatures of the tributary, and 2) restore the tributary to cool temperatures to potentially partially or fully counteract predicted warming from climate change” or “to restore . . . watersheds to provide additional CWR.” The only reason to treat a less useful tributary differently is the allocation of restoration funding. However, all regulatory actions that should be taken, most of which are not discussed in this so-called plan, do not require such funding.

On page 7 of this appendix, there is note to the author to “cite memo” for “Factors influencing temperature: riparian vegetation” that you probably would like to fix.

Pages 81–82 – Table 7-1 includes only four “Actions to Protect and Restore CWR,” namely to restore stream morphology, limit new water withdrawals, maintain/restore riparian shade, and to address sedimentation at the mouth. Again, this is not rocket science. This plan falls well short of explaining how these changes are going to come about, step by step. Needless to say, each of these identified refuges includes a check mark on riparian shade protection and all but one includes stream morphology. Repeating what scores of other plans and reports have to say is not itself a plan to protect, enhance, and restore cold water refugia.

Pages 83–152 – Comments set out below pertaining to subsections 7.3 through 7.16 are both specific to those subsections and apply generally to all of the subsections. For example, the comment pertaining to page 83 below that discusses ambiguities in EPA’s language applies to all such use of language in describing the same information for the other refugia. In another example, the comment pertaining to Figure 7-4 on page 85 applies to all such figures in the subsections. We have attempted to refrain from repeating ourselves when it would serve no purpose other than to increase the length of these comments.

### 7.3 COWLITZ RIVER (RIVER MILE 65) – PROTECT AND ENHANCE

Page 83 – EPA states:

The lower portion of the Cowlitz River is designated for salmonid spawning, rearing, and migration by the Washington Department of Ecology, which assigns a water quality criterion of 17.5°C for maximum water temperatures. The maximum water temperature modeled for the Cowlitz River is 21°C (1993-2011) (Appendix 12.18). Based on actual maximum temperature readings, the lower Cowlitz River is on the 303(d) list for temperature impaired waters.

It is unclear, from the U.S. Forest Service website cited in the Appendix 12.18, what “maximum temperatures” are being modeled. These presumably are not the modeled natural temperatures that could be achieved if flows, vegetation, channel morphology and the like were restored. So, what are they? And why are they relevant? EPA does not say. EPA also does not say why a waterbody described as violating water quality standards currently is under a title termed “protect and enhance.” Enhance seems to be a lesser level of effort than “restore,” the word used for the two non-primary refugia that are in worse shape. It is inconsistent and misleading to use different words and, at the very least, EPA should explain why one 303(d) listing is of better quality than another 303(d) listing such that some waters do not warrant being labeled for restoration by EPA.

Page 84 – The fact that this refuge is the equivalent of “approximately 622 Olympic-sized swimming pools” is not any kind of explanation of crowding that might take place and cause disease-related problems. Perhaps it helps to visualize it but it’s not particularly helpful. It would be more helpful if one is trying to make relative comparisons to put the information into a table.

Page 85 – EPA states that “[t]he riparian forests along the lower 20 miles of the Cowlitz River have been severely degraded through industrial and commercial development, and channelization in these areas limits potential for recovery.” This is a rather important area, as it is the refuge area, and therefore, even if, say, the river is too wide to be shaded (this information is not given), making it more fish-friendly would seem to be a priority. Concluding that its potential for “recovery,” a vague term, does not state what really might be able to be accomplished. It is unclear what the point of a plan is when it seems to give up pretty readily, rather than to really dive in and see if something could be done or it is completely hopeless.

EPA also states that “[r]estoration of riparian shade on private forestlands, which cover much of the lower Cowlitz basin, is expected to improve through time and implementation of Washington’s State Forest Practice Rules.” This is the first of many references to the states’ logging rules. Remarkably, EPA does not distinguish between the better Washington rules and

the really terrible Oregon rules that we will discuss below. But the Washington logging practices are not fully protective of designated uses, as Ecology can attest to, and EPA knows full well. See, e.g., Washington Department of Ecology, *2009 Clean Water Act Assurances Review for Washington's Forest Practices Program 3* (July 15, 2009) (“After ten years, no studies have been completed or data collected that provide an indication of whether or not the forest practices rules are improving water quality or maintaining forested waters in compliance with the water quality standards.”); Memorandum from Mark Hicks, Ecology, to Forest Practices Board, Re: *Clean Water Act Milestone Update* (April 22, 2019) (“It has been almost 20 years since the Assurances were first granted, but the effectiveness of the rules remains largely untested.”); William Ehinger and Stephanie Estrella, Ecology, and Greg Steward, Northwest Indian Fisheries Commission, *Type N Hard Rock Study Stream Temperature/Shade*, presentation to the TFW Committee Meeting (Oct. 5, 2017). Therefore, in what appears to be an emergency setting—will there be sufficient thermal refugia to support migrating salmon throughout the entire Columbia River basin?—a mention of the existing logging practices without any corresponding mention of how they must be improved is stunning. What kind of plan is this that just says “OK, people, just keep doing whatever you’re doing”? The Washington logging practices are not adequate. What does EPA think should happen with these logging practices to address a current or imminent emergency bearing in mind that trees that have been cut take many years in which to grow and provide full shade (and protect streams from sedimentation etc.)? The answer to that would be the start of a real plan.

Page 85 – Figure 7-4 and others like it in this document, are not explained and could, just conceivably, be the most important contribution from this document. Who did the analysis; where can it be found in more granular detail and better color differences; how was “maximum potential shade” identified; what is the width of the riparian area that constitutes “maximum potential shade”; how does this area relate to forest and agricultural practices; which areas of greatest difference between potential maximum and current shade would require new regulation or funding to address (e.g., are on agricultural lands versus are replanted areas that were logged); what are the temperature ramifications of the various shade differences; what types of land use are most causing the shade differences; why does EPA conclude in its discussion of these results that “[r]estoration of riparian shade on private forestlands, which cover much of the lower Cowlitz basin, is expected to improve through time and implementation of Washington’s State Forest Practice Rules”; in what timeframe does EPA believe that what percentage of this undershaded watershed will be remedied under current regulations; how does EPA factor in “higher potential for restoration” to achieving protection, enhancement, and restoration of thermal refugia? In short, how does EPA suggest that the data and findings reflected in Figure 7-4 (and similar maps for other refugia) be used and why does it not provide any recommendations specifically to use them?

Page 86 – EPA’s conclusion that climate change will “exacerbate low summer flows in the mainstem Cowlitz River, because of lower snowpack melt in the summer” points to the need for



recommendation on flows. There is nothing. EPA's conclusions about the effects of climate change here, as throughout this document, should point to the need for immediate actions yet there is nothing urgent in the "plan" aspects of the plan. Since one primary attribute of a watershed that is capable of maintaining the coldest possible waters is forested riparian areas, and forested riparian areas can only come about if they are fully protected as they exist or they are given the longest possible timeframe in which to grow before temperatures rise, it is difficult to understand why EPA has not identified as an urgent priority maintaining or restoring buffers of a sufficient width, density, and height to protect maximum shade and the other attributes of a waterbody that maintains colder water (e.g., channel morphology). While logging and farming are not the only incursions into a future with full forested riparian buffers, EPA does not address these two sources of stream warming. If EPA's conclusion is that we should just give up in our attempt to keep water at temperatures appropriate for cold water salmonids—which to all appearances it has already done—it should just come out and say so. This continued appearance of talking about temperature standards and temperature TMDLs without any concurrent action that actually provides protection to the fish is hypocritical and unseemly. Finally, EPA should make clear that under the circumstances it has identified with regard to climate change, the water quality goal for this refuge is not to meet existing water quality standards. It should be to exceed them to the maximum extent possible. This goal should be reflected in Washington's (and Oregon's) water quality standards, which should be revised. Anything else is merely acquiescence in the warming that will occur, warming that will reduce the efficacy of this waterbody's acting like a thermal refuge from the ever-increasing temperatures of the Columbia River. EPA should make recommendations for different approaches that could be used to effect that goal, and not a goal that shows up merely on paper. For example, Washington could make all or parts of the watershed a Tier III Outstanding Natural Resource Water. However, stopping with that designation, rather than spelling out specifically how it would be implemented, would be a meaningless gesture as ONRW status has no implications for nonpoint sources in the absence of specific and deliberate actions. ONRW status also does not address restoration needs.

Page 87 – EPA recommends that someone (passive voice) should “[i]mplement under Washington State Forest Practice Rules for riparian management on state and private forest lands.” *See* comments for page 85 above.

Page 87 – EPA's "plan" to "protect and enhance" this cold water refuge is to implement plans that have already been written or are being drafted; we count four such plans for this particular refuge. Big picture, what is EPA doing here? What value added is there to EPA's enumerating these plans and implying, without any apparent review, that they are sufficient to protect and enhance this refuge? Why if the lower part of this refuge is violating water quality standards, does EPA say nothing about the need to "restore" it? The NMFS Biological Opinion stated that the purpose of this plan was to "adequately interpret the narrative criterion to allow for implementation of the criterion through DEQ's Clean Water Act authorities" and to "identify and prioritize potential actions by DEQ and/or other parties to protect, restore or enhance CWR."

*NMFS Biological Opinion* at 270-271. Yet, nothing in the EPA recommendations for this refuge identifies any priorities for potential action other than to say that two of the existing watershed management plans “detail key priorities contributing to recovery and mitigation in the basin, such as managing regulated stream flows through the hydropower system and restoring floodplain and riparian function.” EPA does not even state that the priorities already identified in those plans are key to protecting the coldest possible water in this refuge. EPA does not even assert that the cited plans are consistent with the goal of protecting this cold water refugia. Although one might assume that to be the case, there is no basis for concluding it is so. Such watershed plans could, for example, be more focused on spawning habitat. There is no discussion anywhere in the plan that discusses, in general, Ecology’s or DEQ’s Clean Water Act authorities, a discussion that could and should be the jumping off point for EPA’s recommendations as to specifically which of those authorities could be used in what specific fashion to accomplish the end desired for this refuge or any of the identified refugia. There is nothing in this Washington refuge recommendations that explains what EPA or Oregon DEQ could do to obtain improvements by Washington using its Clean Water Act or other authorities.

With regard to Oregon’s authorities, for example, in this plan EPA does not recognize that EPA itself has concluded that Oregon’s logging practices are inadequate to meet water quality standards. EPA/ National Oceanic and Atmospheric Administration, *NOAA/EPA Finding that Oregon has Not Submitted a Fully Approvable Coastal Nonpoint Program* 4 (Jan. 30, 2015) (“the State has not identified or applied additional management measures that fully address the program weaknesses the federal agencies noted in the January 13, 1998, Findings for Oregon’s Coastal Nonpoint Program. Specifically, the State has not implemented or revised management measures, backed by enforceable authorities, to (1) protect riparian areas for medium-sized and small fish-bearing (type “F”) streams and non-fish-bearing (type “N”) streams; (2) address the impacts of forest roads, particularly on so-called “legacy” roads; (3) protect high-risk landslide areas; and (4) ensure adequate stream buffers for the application of herbicides, particularly on non-fish-bearing streams.”). EPA is also well aware that Oregon DEQ has authority over logging practices in several ways, one of which is by having the DEQ’s Environmental Quality Commission petition the Board of Forestry if it believes the state Forest Practices Act rules are not adequate for achieving water quality standards. *Id.* at 3 – 4. Another is that DEQ has the authority to develop and implement load allocations for forestlands in TMDLs. *See* Memorandum from Larry Knudsen, Senior Assistant Attorney General, Natural Resources Section, Oregon Department of Justice, to Neil Mullane, Water Quality Division Administrator, Oregon DEQ, Re: *DEQ Authority to Develop and Implement Load Allocations for Forestland Sources* 2 (July 2, 2010) (“If the BOF [Board of Forestry] does not adopt basin-specific BMPs or if the DEQ finds that the BOF’s BMPs are not as protective as the safe harbor BMPs, the DEQ will require the forestland owner to comply with the safe harbor BMPs [developed by DEQ to be adequate to meet the load allocation in a TMDL], or to develop its own BMPs and submit them to the DEQ for review and approval.”). Rather than to suggest that DEQ should continue to defer to the Oregon Board of Forestry on logging practices that according to EPA do not meet

water quality standards, let alone load allocations in TMDLs, EPA could specifically recommend the steps that DEQ could and should take to achieve the goal of protecting and enhancing, and possibly even restoring, thermal refugia. Or, perhaps, logging practices are not the top priority for a specific refuge, in which case EPA should identify the priorities, whether they are for agricultural practices, instream water flows, dam operation, etc. and then spell out specifically what steps need to be taken and by whom.

Going back to Washington, although EPA states that “[t]he Cowlitz River watershed is one of the most intensely farmed basins in western Washington,” *Plan* at 86, the recommendations include precisely zero actions that any Washington agency could take to address riparian buffers along waters that move through farmland. The section instead, discusses water rights and water consumption, an obviously highly important issue to achieving sufficient and sufficiently cold water in the refuge. *See id.* Notwithstanding an EPA conclusion in the text that, given the absence of instream flow rules and the lower mainstem’s being open to new water rights, “[l]imiting additional water use will help maintain CWR plume volumes and colder water temperatures,” EPA does not include any reference to water rights in its recommendations. There is no sense from the text whether EPA reviewed the other plans to which it defers to see if they are based on science or based on compromise (e.g., fail to mention riparian vegetation needed on agricultural lands), whether they are consistent with the protection and restoration of this water as a thermal refugia, whether the priorities are consistent with that aim, and whether there is anything in the plans that are specific and clear. For all we know, these plans are as vague as the EPA draft plan we are looking at here, a plan that, for example, says to implement logging practices established by the states that EPA knows are not sufficient to provide the maximum thermal protection. In short, as a plan, this is a travesty.

#### 7.4 LEWIS RIVER (RIVER MILE 84 ) – PROTECT AND ENHANCE

Page 88 – *See* comments for page 83 of the Plan above with regard to the discussion of the applicable criteria, the “maximum water temperature,” and 303(d) listing.

Page 90 – *See* comments for page 85 above with regard to Figure 7-8 and accompanying text.

Page 90 – On what basis is this helpful: “Further, the East Fork Lewis is currently listed as impaired for temperature. Having already developed a Quality Assurance Project Plan, Washington Department of Ecology is scheduled to develop a watershed action plan for temperature for the East Fork Lewis in 2019.” Please explain why this future plan will lead to actual actions that will protect and enhance—to say nothing of restore—temperatures in this refuge. *See* comments for pages 83–87 above.

Page 91 – EPA states: “The Washington Department of Ecology is developing a watershed plan to address high levels of coliform bacteria and temperature in the East Fork Lewis River. Both

plans provide excellent analysis and recommendations for prioritized restoration actions in the watershed. The 2010 plan meets Endangered Species Act and state habitat and salmon recovery requirements. Recommended actions include mitigating the effects of diking and channelization, increasing water discharge from dams in times of low flow, and increasing riparian protections.” *See* comment for page 90; *see also* comments for pages 83–87 above.

Page 92 – EPA states that someone should “[i]mplement Washington’s Forest Practice Rules on state and private forests on the lower Lewis River, as noted in the Washington Lower Columbia Salmon Recovery and Fish and Wildlife Subbasin Plan appendix on the Lewis River. This includes road maintenance and bank stabilization to reduce sediment build-up at the confluence.” *See* comments for pages 83–87 above. EPA also states that riparian shading would be particularly helpful in river miles 0 – 15 but fails to identify the steps to make that happen. EPA also states that a future plan for the East Fork Lewis River should include actions “that maintain high flows and cold temperature downstream.” This is not helpful; it’s stating the obvious. EPA should explain the steps needed to make this outcome take place.

#### 7.5 SANDY RIVER (RIVER MILE 117) – PROTECT AND ENHANCE

Page 95 – EPA states that: “[w]ater quality modeling in ODEQ’s Sandy River Basin TMDL (2005) predicted a temperature increase of approximately 0.5°C with maximum potential vegetation under low flow conditions. Increased riparian shade can help to reduce sedimentation and maintain CWR volumes and temperatures.” *See* comments for page 77 (and Appendix 12.20) above about relying on TMDLs.

Page 97 – EPA recommends that someone should “[i]mplement Oregon’s Forest Practices Act on state and private forest lands throughout the watershed.” *See* comments for pages 77, 83–87 above.

#### 7.6 TANNER CREEK (RIVER MILE 141) – PROTECT AND ENHANCE

Page 102 – EPA states that “[a]ctions to protect and enhance the Tanner River CWR include: . . . [c]onsider[ing] special designations, antidegradation policies, and/or narrative water quality criteria as appropriate to prevent warming of the creek above current temperatures and maintain existing flows.” *See* comments for pages 83–87 above. EPA’s suggestion is so vague as to be meaningless. Even if EPA elaborated a little more, to suggest for example that Tier III of the antidegradation policy could be applied, it could still be as meaningless to the fish. For a plan to have meaning to the designated uses, it must explain how precisely an action will be helpful. In that example, a Tier III status would not be helpful absent specific policies intended to protect water quality from nonpoint sources.

#### 7.7 EAGLE CREEK (RIVER MILE 143) – PROTECT AND ENHANCE

Page 103 – *See* comments for page 83 of the Plan above with regard to the discussion of the applicable criteria and the “maximum water temperature.”

Page 107 – EPA urges someone to “[i]mplement Oregon’s Forest Practices Act at the mouth of Eagle Creek” as well as the generic “[c]onsider[ation of] special designations, antidegradation policies, and/or narrative water quality criteria as appropriate to prevent warming of the creek above current temperatures and maintain existing flows.” *See* comments for pages 83–87, 102 above.

#### 7.9 HERMAN CREEK (RIVER MILE 147.5) – PROTECT AND ENHANCE

Page 112 – Once again, EPA offers up the generic actions to protect and enhance Herman Creek and Herman Creek Cove to include consideration of “special designations, antidegradation policies, and/or narrative water quality criteria as appropriate to prevent warming of the creek above current temperatures and maintain existing flows.” *See* comments for pages 83–87, 102 above.

#### 7.9 WIND RIVER (RIVER MILE 151) – PROTECT AND ENHANCE

Page 113 – *See* comments for page 83 of the Plan above with regard to the discussion of the applicable criteria, the “maximum water temperature,” and 303(d) listing.

Page 115 – EPA states that “[w]ater quality modeling in Washington Department of Ecology’s Wind River Watershed Temperature TMDL (2001) predicted that maximum potential vegetation could decrease water temperatures at the mouth from 18°C to 14°C under average flow conditions.” It is likely that this undercalculates the temperature that could be achieved but EPA cannot know without examining the assumptions that Ecology used in its modeling calculations. *See* discussion about Oregon TMDLs for page 77 (and Appendix 12.20) above.

Pages 115–116 – EPA states that “[w]ater rights are heavily allocated for agricultural uses” and “[b]ecause water use is high and supply is limited, more water use may reduce the CWR plume volume and increase temperatures in the CWR,” but offers nothing more than a tepid recommendation to “[c]onsider additional SWSLs and instream flow rules, given current limited stream flows.”

Page 116 – EPA states, without any useful comment, that “[f]urther, there currently exists a temperature TMDL, developed in 2002.” It would be useful if EPA told us how much that TMDL has accomplished in the 17 years since it was completed. That would set the foundation for any recommendations EPA might make about the states’ using their 303(d) programs and

authorities to actually protect and restore thermal refugia. Instead, EPA is silent. Evaluation of the science without a concurrent evaluation of the regulatory structure that either works is not working to protect and restore refugia should be key to this plan. *See* comments for pages 83–87 above.

Page 117 – EPA recommends that someone “[i]mplement Washington’s Forest Practice Rules on state and private forest lands on the middle and lower Wind River” along with “actions in the mainstem Wind River, Panther Creek, and Upper and Lower Trout Creek noted in the Wind River Habitat Restoration Strategy and Wind River Temperature TMDL.” EPA does not explain what “actions” are set out in the cited TMDL, whether they are adequate, whether there is any history of acted on the actions, and whether the purported actions are specific and clear enough to rely on. EPA merely tells the reader this is a plan to implement a plan the sufficiency of and ambiguity in which we have not bothered to investigate. Further, despite noting that “[w]ater rights are heavily allocated for agricultural uses,” *Plan* at 115, the recommendations are silent on what might be necessary to ensure shading of streams traversing agricultural lands.

#### 7.10 LITTLE WHITE SALMON RIVER (RIVER MILE 158.7) – PROTECT AND ENHANCE

Pages 118–122 – *See* comments for pages 83–87 above.

#### 7.11 WHITE SALMON RIVER (RIVER MILE 165) – PROTECT AND ENHANCE

Pages 123–127 – *See* comments for pages 83–87 above.

#### 7.12 HOOD RIVER (RIVER MILE 166) – PROTECT AND ENHANCE

Pages 128 –132 – *See* comments for pages 83–87 above.

#### 7.13 KLICKITAT RIVER (RIVER MILE 177) – PROTECT AND ENHANCE

Pages 133–137 – *See* comments for pages 83–87 above.

Page 137 – EPA recommends that someone “[i]mplement Little Klickitat River Temperature TMDL targets for increased riparian shade in the Little Klickitat River.” Published in 2002, roughly 17 years ago, EPA should evaluate whether anybody has, in fact, implemented anything in this TMDL since it was published. Such analysis would inform EPA as to the degree that it can or should rely on states’ 303(d) programs and what kind of recommendations are required that are more than simply citing to other plans as the solution to the problem. What does EPA mean by implementing “TMDL targets for increased riparian shade”? The TMDL showed that “an increase in effective shade from riparian vegetation buffers have the potential to significantly decrease the water temperatures in the mainstem of the Little Klickitat River.” *Ecology, Little*

*Klickitat River Watershed Temperature Total Maximum Daily Load* (July 2002) at 51. It also showed that “[d]ecreasing the channel average wetted W/D ratio decreases the water temperature further, with the exception of the section below Bloodgood Creek which has a low W/D ratio due to mechanical channelization.” *Id.* No offense to the modelers who did this work but the impact of shade and width:depth ratio is not rocket science and it does not instruct as to what actions must be taken to meet water quality standards. The TMDL goes on to make essentially the same observations about various prongs of the Little Klickitat River. *See id.* at 53. The TMDL sets out “effective shade targets” in Table 10 and summarizes the load allocations for nonpoint sources as the need for effective shade and, in some instances, a width:depth ratio. *Id.* at 58–59. It then wraps up with a laundry list of what one might call allusions to BMPs, or pre-BMPs, namely vague references to various types of best management practices without any quantification, without any clarity of what implementation is necessary or required. So when EPA says in this plan that someone should implement the TMDL targets for increased riparian shade, it first ignores the other random list of non-quantifiable actions the TMDL seemingly recommends. Second, EPA cites only to a set of effective shade targets that, while expressed numerically, are not translated into anything clear. What do these shade targets mean for not cutting down trees or the need to plant trees? Specifically, they have not been translated into the height, width, and density of riparian buffers that are needed to be maintained on lands used for farming and logging. It is not clear that Ecology has used these shade targets in any of its work. And third, would the effective shade targets once translated into numeric riparian buffers also control sediment such that the width:depth ratios could be restored or protected from degradation? In short, in its plan EPA cites to a plan that, while being a TMDL, is similarly meaningless and without teeth or substance and certainly does not readily translate into any meaningful actions on the ground or in the water.

#### 7.14 FIFTEEN MILE CREEK (RIVER MILE 188.9) – RESTORE

Page 138 – *See* comments for page 83 of the Plan above with regard to the discussion of the applicable criteria, the “maximum water temperature,” and 303(d) listing.

Pages 139–142 – EPA states:

Fed by snow-melt runoff and groundwater contributions, Fifteenmile Creek could potentially deliver cold water down to the confluence, providing additional CWR for migrating salmonids with continued water quantity and riparian habitat restoration. However, agriculture is vital to the local economy, valued at roughly \$22 million per year. Agricultural land types include orchards, vineyards, and pasture. Primary agricultural products include wheat, cattle, and cherries.

\* \* \*

There is a substantial area for additional riparian vegetation restoration in the lower watershed along the tributary streams and creeks on the mainstem (Figure 7-44). The lower watershed was widely denuded for use as agricultural land.

\* \* \*

The conversion of riparian areas to agricultural lands has resulted in the removal of tall grasses and small trees. Water quality modeling in ODEQ's Middle Columbia-Hood (Miles Creek) Subbasin TMDL (2008) predicted that maximum potential vegetation and increased flows could decrease water temperatures at the mouth from 25°C to 18°C under low flow conditions, a significant decrease.

Despite this description of the significant improvement in temperature that could be achieved and noting that agriculture is the primary reason why it is not, EPA recommends only that someone should:

Maintain the riparian restoration work done in previous years as noted in the Fifteen Mile Creek Basin Aquatic Habitat Restoration Strategy and Middle Columbia-Hood (Miles Creek) TMDL. . . . [and] [e]ncourage private landowners to enter riparian buffer programs. Fund fencing projects for pasture lands near riparian areas to minimize the impacts of grazing.

This is not a plan; it's a statement that if shade and other attributes that come from forested riparian buffers are not present, temperatures will remain high and if they are installed and protected, temperatures will decrease. This is mere musing by EPA and is not a plan to protect or restore cold water refugia to save salmon on the Columbia River and meet water quality standards. *See also* comments for pages 83–87 above.

What is really obnoxious about EPA's description of this watershed is its implied assumption that use of the land and water by agriculture means that nothing can or will be done. EPA says: "However, agriculture is vital to the local economy, valued at roughly \$22 million per year." "However" is like the "though" in the sentence "I would like you to do us a favor, though." "However" here means "nothing is going to happen here for salmon and in fact, we, the EPA, don't even think it should happen," just as "though" means a *quid pro quo*. From that statement likely springs the fact that EPA does not even recommend that the state consider regulating farmland to require riparian buffers, let alone actually use its legal authorities. Rather, it says, the state should encourage landowners to get paid to protect public waters from their private activities. EPA does not even recommend an additional funding program to make sure that cold water refugia exist for salmon in the future.



#### 7.15 DESCHUTES RIVER (RIVER MILE 201) – PROTECT AND ENHANCE

Page 143–147 – *See* comments for pages 83–87 above.

#### 7.16 UMATILLA RIVER (RIVER MILE 284.7) – RESTORE

Page 148 – *See* comments for page 83 of the Plan above with regard to the discussion of the applicable criteria, the “maximum water temperature,” and 303(d) listing.

Pages 149–150 – *See* comments for pages 77, 83–87, 137, 139–142 above.

Pages 151–152 – EPA’s comments that “[e]fforts to conserve and increase water flows will help to cool water temperatures and increase CWR volume” is really not helpful and not a plan. It’s merely a statement of the obvious. Citing other plans or general propositions that are laid out in other plans that may or may not be implemented—and EPA can be sure that the TMDLs are not implemented—also is not a plan. In this context, the least EPA could do is to identify the barriers to implementing TMDLs and other plans and make recommendations to address them. EPA could also state what it will do if the states fail to use their existing legal authority to make the needed changes.

#### 7.17 SUMMARY OF ACTIONS TO PROTECT AND RESTORE COLD WATER REFUGES

##### *Protect Through Regulatory Programs*

Page 153 – As explained above, an EPA plan that says keep on implementing, even if you aren’t, all the “existing programs and regulatory actions that help keep waters cool” is not a recipe for success and neither is using the “state forest practice regulations” that EPA knows are not adequate to meet water quality standards and therefore are not adequate to protect, enhance, or restore the thermal refugia upon which EPA has shown in this document the salmonids migrating in the Columbia River rely. Being silent on the lack of agricultural practices to protect water temperatures is not a plan. Reiterating that “minimizing additional water withdrawals will help” is not helpful or a plan. Neither is reiterating the extremely unhelpful and vague comment that “[w]ater quality standard updates, such as special designations, antidegradation policies, or narrative criteria could be a means for helping maintain current river temperatures in the primary CWR tributaries.” Yes, they “could be” but if EPA doesn’t explicitly recommend some changes that it thinks will be helpful, they probably won’t be. Moreover, EPA does not address the disconnect between water quality standards, millions of dollars of studies for TMDLs etc., and thousands of pages of all sorts of plans and . . . the fish. EPA does not even go so far as to recommend that state actually protect cold water at the temperatures current achieved. What is horribly missing from a section entitled “protect through regulatory programs” is any discussion of, you know, actual regulatory programs and how they might be made to work.

*Restore Riparian Shade, Stream Morphology, and Instream Flow*

This is more of the same that EPA has already spent scores of pages reiterating: it would be nice if someone implemented all the existing plans. EPA states that:

Restoration of the CWR in all primary and “restore” tributaries can be accomplished by the following actions, many of which are outlined in the salmon recovery plans and TMDLs:

- 1) Restoring riparian shade: Restoration of riparian shade should be targeted to those areas that have the greatest potential for increased shade in the watershed and are river reaches important for salmon habitat restoration.
- 2) Restoring stream morphology and complexity, including narrower channels and increased pools: Increasing the amount of instream large woody debris to create pools of cold water and trap sediment that would otherwise reach the river mouth will aid in keeping waters cool as they reach the tributary mouth and join the Columbia River.

But this is what every temperature TMDL says to one degree or the other. EPA has added absolutely nothing new to the equation. It has not set out any recommendation to take steps to actually implement the TMDLs. We reiterate: none of this material about how to protect and restore stream temperature is rocket science. Such basic statements by EPA cannot possibly be what NMFS had in mind when it instructed EPA to develop a plan to actually protect refugia for the salmonids that actually depend upon them to migrate through the hot temperatures of the Columbia River.

7.18 ACTION TO ADDRESS FISHING IN COLD WATER REFUGES

Page 154 – As we commented above, EPA should include the citation(s) regarding the data that show that “fishing in CWR reduces the survival of steelhead that use CWR compared to those that do not, offsetting the benefits to fish using CWR.” Hiding the ball here make it only harder to achieve the goal of updating the fishing regulations that EPA suggested “could be considered,” with emphasis on the word “could” because it would apparently be too extreme for EPA to say “should” even as it admits that would protect the fish, the designated use for which this entire exercise has been to support.

8 UNCERTAINTIES AND ADDITIONAL RESEARCH NEEDS

*Density Effects and Carrying Capacity of Cold Water Refuges*

Page 157 – EPA admits that “[t]here is no research on the carrying capacity of CWR for adult salmon or steelhead” and “[i]t is therefore fairly speculative as to what densities cause fish to

avoid or leave CWR.” Notwithstanding this conclusion, EPA has determined that there are sufficiently distributed refugia. Stunningly, while noting that “[a]lso, high densities of adult fish are known to contribute to the spread of disease.” EPA concludes only that “[t]his could be a concern for CWR that are colder than the Columbia River but are in the 18-20°C range, which are temperatures at which disease risk is elevated (e.g., Deschutes River).” It certainly is a concern and will increasingly be one. EPA’s conclusion that “[t]he extent to which CWR use at varying densities contributes to increase disease (and associated mortality) is unknown,” should be followed by the acknowledgment that in fact EPA does not know and on that basis cannot determine if there are currently sufficient refugia to mitigate the effects of a 20° C criterion let alone the actual temperatures in the Columbia River. The issue of disease has been well documented by EPA itself in the scientific papers that supported the Region 10 guidance for temperature standards. This should have been a major factor in its evaluation.

## 9 SUMMARY AND RECOMMENDATIONS

Pages 158–162 – Our comments on this section are short because we have said most of what is necessary above and do not choose to repeat it. That should not be read as an endorsement of the extremely thin recommendations found in this section, which are a reflection of those found throughout the document.

Pages 158–162 – EPA purports to set out the water quality standards for temperature for the Columbia River:

The water quality standard for the Lower Columbia River is 20°C, which is intended to minimize the risk of adverse effects to migrating salmon and steelhead from exposure to river temperatures that are warmer than 20°C.

As explained above, this is incorrect and should be fixed. A standard is not a criterion.

### *Sufficiency of Cold Water Refuges to Support Migrating Adult Salmon and Steelhead*

EPA concludes that “the spatial and temporal extent of existing CWR appears to be sufficient under current and 20°C Columbia River temperatures but may not be in the future.” We find this to be misleading. EPA found quite clearly that they would not be in the future and at best found that it cannot determine if there are sufficient refugia in the present. Moreover, “maintaining the current temperatures, flows, and volumes of the 12 primary CWR in the Lower Columbia River” is more than “important to limit significant adverse effects to migrating adult salmon and steelhead from higher water temperatures elsewhere in the water body,” it is critical to those adverse effects. That is EPA’s conclusion but its summary of its conclusion suffers from the same passive view and passive voice found throughout the entire document. EPA continues to say that “[a]dditional CWR in the Lower Columbia River may be needed due to the predicted

continued gradual warming of the Columbia River,” when it can only be concluded that, based on the climate change evaluation set forth in the document, there is no “may” about the need. Again, it is a necessity. Whether the fish will survive even if EPA and the states made their best efforts is another question. In that matter, EPA can afford to not be definitive and can tell us the truth: they may not survive although it is our legal and moral obligation to try to save them.

*Watershed Characteristics of 12 Primary Cold Water Refuges*

EPA makes the following observation regarding the importance of dams on four of the refuges:

Four of the primary tributaries (Cowlitz, Lewis, Sandy, Deschutes Rivers) have upstream storage dams that can influence summer temperatures by releasing water from cooler depth within the storage reservoir and by controlling summer release flows.

But EPA fails to go beyond making this observation, namely to suggesting that it will itself, or ask some other agency to, take actual steps to order or negotiate changes in the operation of these dams. A “plan” should be a plan for action, not a set of musings. And then, EPA muses some more:

Although the 12 primary CWR tributaries are relatively cool, there are impacts within the watershed that can warm the tributary, including floodplain degradation, water withdrawals and reduced summer flow, sedimentation, and loss of riparian shade. Climate change has already warmed all tributaries to some extent and is predicted to continue to warm these tributaries in the future. Restoration of the anthropogenic impacts within the watershed can help offset predicted warming.

*Recommended Actions to Protect and Restore Cold Water Refuges*

This musing leads to some extremely limited comments on what could be done to protect, enhance, and restore the maximum amount of cold water available in these refuges. As its “Recommended Actions to Protect and Restore Cold Water Refuges,” EPA states that someone should:

26. Protect existing 12 primary CWR through the implementation of existing programs and regulatory actions that help keep waters cool.
  - a. Since extensive portions of the priority CWR tributaries include forest lands, important protective actions include continued implementation of U.S. Forest Service plans and State Forest practice regulations.

- b. Since additional water withdrawal during the summer can diminish the size and function of the primary 12 CWR tributaries, minimize additional water withdrawals that would decrease summer flows.
- c. Consider special designations, antidegradation policies, and/or narrative water quality criteria as appropriate to prevent warming above current temperatures and maintain existing flows in the 12 priority CWR tributaries.

In addition, EPA suggests that someone should:

- 27. Restore degraded portions of the 12 primary CWR watersheds to enhance the quality of the CWR and to counteract predicted future increases in tributary river temperature by: 1) restoring riparian shade, 2) restoring stream morphology and complexity, including narrower channels and increased pools, and 3) implementing watershed conservation measures to restore summer flows.

And then someone should act on the fact that,

- 30. [B]ased on information provided in completed temperature TMDLs, EPA identified the Umatilla River and Fifteenmile Creek as having the potential to provide increased CWR in the Lower Columbia River if thermally-degrading features of the watersheds were restored.

EPA is remarkably mealymouthed in this set of recommendations, the summary of which takes up less than one page in the document. The word “consider” and the overall use of the passive voice could not make these recommendations sound less urgent. The lack of specificity guarantees that they will be ignored, taking up more room on the bookshelves along with all of the other plans. We trust that by now in these comments we need not say more to make the point.

#### *Recommended Action Regarding Fishing in Cold Water Refuges*

This recommendation that information “could be considered” is more of the same, no urgency, no actual plan, just more musing. Instead, EPA should recommend that the fishing agencies make this a priority. There is certainly no point in taking all of the expensive, time-consuming and difficult actions proposed or hinted at throughout this plan and then letting recreational fishing people harass the very fish that are attempting to see “refuge” from dangerously high water temperatures.

## **II. What is Fundamentally Missing from EPA's Plan**

The comments above explain what is largely the problem with this plan, namely that it is not a plan. But here, we add a little bit more, certainly well short of writing a plan ourselves.

### **A. The Biological Opinion and the Reasonable and Prudent Alternative**

EPA had asserted to NMFS that it “expects the cold water refugia provision to be primarily considered in NPDES permits and TMDLs.” *NMFS Biological Opinion* at 173. As NMFS subsequently found, EPA was sadly and profoundly mistaken in its assumption, expectation, or general cop-out, whichever it was. In fact, NMFS found that:

Overall, the narrative criterion pertaining to CWR does not, to date, appear to be an effective means for minimizing the adverse effects likely to be experienced by migrating salmon and steelhead under the 20°C migration corridor criterion. In the Willamette River TMDL, the DEQ mentions only two specific streams as possibly providing refugia, even though substantial research on off-channel habitats that may provide such refugia has been done in this river. The John Day River TMDL does not even attempt to directly address the narrative criterion. Also, according to EPA, the state has not provided any analyses of or determinations as to the part of the narrative criterion that requires that CWR “are sufficiently distributed so as to allow salmon and steelhead migration without significant adverse effects from higher water temperatures elsewhere in the water body”. The DEQ apparently has not released any work on CWR in the Columbia River.

*Id.* at 176 (footnotes omitted). As a consequence, NMFS set out the primary intended outcome of the Reasonable and Prudent Alternative that required this plan: “The purpose of the CWR plan is to adequately interpret the narrative criterion to allow for implementation of the criterion through DEQ’s Clean Water Act authorities [including to] identify and prioritize potential actions by DEQ and/or other parties to protect, restore or enhance CWR.” *NMFS Biological Opinion* at 270–271 (emphasis added). Without the “implementation . . . through Clean Water Act authorities” specifically called for by NMFS, this would be like any other plan: much paper with no benefit to fish. But that is not what NMFS required. It is clear that EPA has not met the terms of the Reasonable and Prudent Alternative.

### **B. Some Suggestions**

In addition to addressing our comments set out above, EPA should:

- Drop the passive voice.

- Direct the states to rewrite all the relevant temperature TMDLs with specific direction that each establish clear, measurable actions, including quantitative BMPs, that are tied to meeting the TMDLs' load allocations. It is well past time to make sure that state agencies and private land owners are held accountable for the measures that are necessary to implement the TMDLs. They cannot be if the measures are not clear. For example, the ambiguity of the TMDLs precludes a pathway to their use to ensure adequate logging practices. It allows for the continued failure of states to regulate agriculture. It precludes a willing landowner from knowing what actions to take. A heavy reliance on TMDLs to protect and restore the refugia of the Columbia River by EPA points in one direction: TMDLs that do not need translation to understand what actions are required by whom in order to meet water quality standards.
- Require Oregon and Washington to meet the precise terms of the Clean Water Act section 319(b)(2), namely to identify the BMPs that are necessary to meet water quality standards (including load allocations), the programs through which those BMPs will be implemented, and a schedule with annual milestones for implementing them at the earliest possible date.
- Call for immediate forest practices rule changes to protect these refugia.
- Call for the states to use their legal authority to ensure that agricultural BMPs are put in place.
- Identify the means by which dam operations can be regulated to protect thermal refugia.
- Set out a list of actions that EPA will take if states fail to make schedules to implement nonpoint source controls and carry out that implementation including NPDES actions and withholding section 319 funds.
- Not use this document to count on TMDLs that are based on illegal and now vacated water quality standards and flawed analysis that fails to evaluate purely natural conditions when identifying the temperatures that could be achieved.
- Add page numbers to appendixes.
- Place more emphasis in its summary and conclusions on the uncertainty inherent in this exercise, such as the complete lack of knowledge about the carrying capacity and concerns about disease transmission within refugia.
- Express some modicum of urgency to its findings and recommendations.
- Distinctly call out the fact that the Columbia River water temperatures do not support healthy salmon populations including because some species do not use thermal refugia, because there is no assurance that the refugia are sufficiently well distributed, and because temperatures are not meeting water quality standards.
- Call out the fact that the sockeye require different criteria at different times of year than are currently in Oregon and Washington standards.
- Not leave the casual reader with the impression that there is no reason to be concerned about either the 20° C criterion or current water temperatures in the Columbia River because EPA has concluded that there appear to be sufficient cold water refugia created by the tributaries.

- Say something about the Willamette River.
- Note clearly that implementation of the Oregon temperature standards must mirror the basis for EPA's approval and NMFS's Biological Opinion of the numeric criteria for salmonid rearing—that are themselves the water quality goals for the thermal refugia in Oregon as tributaries—namely that those criteria would be met at the farthest point downstream where the uses are designated, *see e.g. NMFS Biological Opinion* at 193, and set out the ways in which this implementation must take place, for example in evaluating waters pursuant to 303(d), developing TMDLs, and in establishing BMPs for nonpoint sources.
- Provide some analysis of the other narrative provision associated with the Oregon 20° C criterion for the Columbia River, to the extent that EPA has developed information about it: “the seasonal thermal pattern in Columbia and Snake Rivers must reflect the natural seasonal thermal pattern.” OAR 340-041-0028(4)(d). While it is a separate criterion, it is also linked to the refugia criterion as the content of this plan shows. It would be helpful for that information to be pulled into a separate section. Note that EPA's extensive discussion of timing and use should explain the role of the existing use protection for designated uses provided by the antidegradation policy. In failing to address the intersection of migration timing and use of cold water refugia, EPA misses the boat because both criteria are required in order to protect the designated uses. One without the other leaves a two-legged stool that does not protect the uses.
- Recognize, discuss, and make recommendations pertaining to the fact that Oregon has a provision in its temperature standards that is intended to protect existing temperatures that are below numeric criteria called the Protecting Cold Water criteria. *See* OAR 340-041-0028(11).

In conclusion, EPA has a lot of work to do to turn this report into a plan that will allow for the implementation of the thermal refugia criterion through Oregon DEQ's Clean Water Act authorities.

Sincerely,



Nina Bell  
Executive Director

Attachments:

Washington Department of Ecology, *2009 Clean Water Act Assurances Review for Washington's Forest Practices Program* (July 15, 2009)



John Palmer  
November 19, 2019  
Page 33

Memorandum from Mark Hicks, Ecology, to Forest Practices Board, Re: *Clean Water Act Milestone Update* (April 22, 2019)

William Ehinger and Stephanie Estrella, Ecology, and Greg Steward, Northwest Indian Fisheries Commission, *Type N Hard Rock Study Stream Temperature/Shade*, presentation to the TFW Committee Meeting (Oct. 5, 2017)

Memorandum from Larry Knudsen, Senior Assistant Attorney General, Natural Resources Section, Oregon Department of Justice, to Neil Mullane, Water Quality Division Administrator, Oregon DEQ, Re: *DEQ Authority to Develop and Implement Load Allocations for Forestland Sources* (July 2, 2010)