August 21, 2014

Clearwater Paper Corporation
601 West Riverside, Suite 1100
Spokane, WA 99201

Paula Wilson
IDEQ State Office
Attorney General's Office
1410 N. Hilton
Boise, ID 83706

RE: Docket No. 58-0102-1201 - Negotiated Rulemaking
Idaho's Fish Consumption Rate
Anadromous Fish

Dear Ms. Wilson:

Clearwater Paper is pleased to offer this comment letter on the subject rulemaking. We appreciate the Idaho Department of Environmental Quality's (IDEQ) work on this very important matter and look forward to participating as this rulemaking proceeds.

Clearwater Paper has reviewed the comment letters of the Idaho Association of Commerce & Industry (IACI) and the J.R. Simplot Company (Simplot) and strongly supports the content and conclusions contained in their letters.

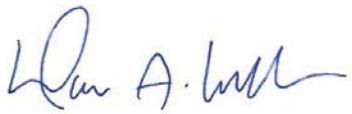
Please note the attachment to this letter which is a technical memorandum prepared by ARCADIS for Clearwater Paper and the J.R. Simplot Company. ARCADIS is a nationally recognized consulting firm having significant expertise in the ecological sciences, human health toxicology and risk assessment. ARCADIS's work summarizes the state of the science regarding toxics found in Anadromous fish relative to their migration patterns during their life cycle.

As pointed out in the IACI and Simplot letters, there is compelling scientific evidence that indicates Anadromous fish receive the vast majority of their contamination from ocean waters and not local waters as they migrate to and from the ocean.

Clearwater Paper believes that policy choice No.3 – not including Anadromous fish in Idaho's fish consumption rate determination – is consistent with the best available science and EPA's policy of not including "marine" species in fish consumption rate determinations.

On behalf of Clearwater Paper, we appreciate the opportunity to provide comments on this important matter and look forward to participating with IDEQ as this rulemaking goes forward. Please contact me at 509-344-5956 or marv.lewallen@clearwaterpaper.com with questions.

Sincerely yours,



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MEMO

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From:
Paul Anderson
Michele Buoanduci

Date:
August 18, 2014

ARCADIS Project No.:
ME000232.0000

Subject:
Comments on the Idaho Fish Consumption Rate and Human Water Quality Criteria-Discussion Paper #5 Anadromous Fish Presented at the July 23, 2014 Negotiated Rulemaking Meeting

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ARCADIS staff participated by webinar in the July 23, 2014 Negotiated Rulemaking Meeting hosted by the Idaho Department of Environmental Quality (IDEQ) concerning the fish consumption rates to be used to derive Idaho water quality criteria (WQC) for the protection of human health. Since that time, ARCADIS has reviewed both the slide presentation given by IDEQ concerning Fish Consumption Rates in Idaho Water Quality Criteria for Human Health during the July 23 Negotiated Rulemaking Meeting and Discussion Paper #5 on Anadromous Fish presented at the Meeting. ARCADIS has also reviewed the discussion paper on the life history of salmon in the Northwest prepared by NCASI.

As IDEQ has described in Discussion Paper #5, anadromous species include salmon and steelhead. These species spend only a small portion of their life cycles in Idaho waters so that the majority of body burden is acquired outside of Idaho waters and outside of regulatory control. IDEQ has posed three policy choices to stakeholders: (1) include anadromous fish in the Idaho fish consumption rate (FCR) developed by the Idaho fish consumption survey; (2) include anadromous fish in the Idaho FCR on a discounted basis (the basis for the discounting to be determined); or (3) exclude anadromous fish from the Idaho FCR. This memorandum provides comments in response to IDEQ's request for feedback on the above three policy choices presented in Discussion Paper #5.

Source of chemicals in anadromous fish. The substantive aspect of this question is where anadromous fish acquire the majority of their contaminants of concern; that is, those chemicals for which human health water quality criteria (HHWQC) are being developed. This is of specific relevance to anadromous fish because, unlike true freshwater species, they spend a substantial fraction of their life in marine or ocean

environments that are outside the jurisdiction of Idaho. If a substantial fraction of the chemical-specific body burden (mass per fish) found in returning adult salmon is acquired during time spent in the ocean, there is effectively nothing Idaho will be able to do to reduce risks to humans resulting from exposure to chemicals in the salmon they eat. Thus, the ultimate question is what fraction of the final chemical burden in Idaho's returning adult salmon is acquired in Idaho vs. in the ocean.

It is to be expected that if salmon spend time in both freshwater and saltwater habitats, they will accumulate contaminants in both types of habitats. The scientific literature (e.g., Johnson et al. 2007a,b) shows that juvenile salmon caught in freshwater contain some mass of persistent bioaccumulative toxins [PBT; i.e., chemicals such as polychlorinated biphenyls (PCBs)] prior to outmigration to the ocean. However, unless these observations are paired with measurements of PBT burdens in returning adults, the relative significance of the mass accumulated by juveniles in freshwater cannot be assessed. Thus, standalone measurements in juvenile fish are not directly relevant to the central question of where adult salmon accumulate their cumulative PBT body burdens.

A review of the scientific literature shows only a handful of studies providing results relevant to this question, with the work of O'Neill, West, and Hoeman (1998), West and O'Neill (2007), and O'Neill and West (2009) constituting the most thorough examination of the issue. O'Neill and West (2009) found that PCB levels in adult Chinook salmon (fillets) collected from a wide range of geographic locations are relatively uniform except for fish taken from Puget Sound, which show three to five times higher levels of PCBs than fish taken from other locations. As discussed by the authors, these data can be interpreted as indicating accumulation of PCBs in Puget Sound and/or along the migratory routes of these fish, which, depending on the specific runs, can pass through some highly contaminated Superfund sites (e.g., Duwamish Waterway). Ultimately, however, O'Neill and West (2009) concluded that, on average, greater than 96% of the total body burden (mass) of PCBs in these Puget Sound Chinook was accumulated in the Sound and not in natal river(s) based on a comparison of PCB concentrations and body burdens in out migrating Chinook smolts collected from the Duwamish River and adults returning to the Duwamish.

Even the most contaminated out migrating smolts contained no more than 4% of the body burden (mass) of PCBs found in returning adults. Thus, greater than 96% of the PCB mass (burden) found in the returning adults was accumulated in marine or ocean waters (including Puget Sound). Even allowing for an order of magnitude underestimate in the body burden of out migrating smolts, O'Neill and West (2009) concluded that accumulation in freshwater would account for less than10% of the average PCB burden ultimately found in adults returning to the Duwamish River. By extension, this analysis supports the conclusion that Chinook salmon passing through uncontaminated estuaries during out migration accumulate a dominant fraction of their ultimate PCB body burdens in the open ocean. Other researchers have also reached this conclusion using their own data, and Cullen et al. (2009) concluded that 97% to 99% of the body burdens of various PBT chemicals were acquired during the time at sea (based on measurements in out-migrant juvenile and returning adult Chinook from multiple natal rivers).

Overall, measurements support the position that, as a general rule, the predominant fraction of the ultimate PBT burden found in harvested adult salmon, even salmon passing through highly contaminated

fresh and estuarine waters during out migration, is accumulated while in the ocean phase of their life cycle (e.g., Cullon et al. 2009; O'Neill and West 2009). This conclusion is supported by modeling as well (Hope 2012).

The United States Environmental Protection Agency (USEPA) has recently made proposals implicitly acknowledging that the body burden of PBTs in harvested (non-farmed) adult salmon is acquired predominantly in the ocean or marine phase of their life history.

First, as part of a recent proposal to increase the national default FCR from 17.5 g/d to 22 g/d, USEPA (USEPA 2014a) affirmed that it considers salmon to be marine fish. Although USEPA also decided to include salmon in the updated FCR at a discounted rate, this was a policy decision unrelated to the issue of where salmon accumulate PBTs. Thus, USEPA decided to include 4% of salmon consumption in the recommend FCR based on NOAA data showing that 4% of salmon consumed in the US was caught in fresh and estuarine waters[1].

Second, as part of guidance on implementing the proposed aquatic life tissue residue criterion for selenium (USEPA 2014b), USEPA specifically states that anadromous fish should not be used to assess compliance. Thus, (see Section 1.2.1. in Appendix I of the draft criteria document):

> *States and tribes should target nonanadromous species (species that do not migrate from salt water to spawn in fresh water), because selenium exposure and subsequent bioaccumulation occurs over a relatively long period of time through consumption of locally contaminated aquatic organisms.*

Thus, for the reasons described above, this statement applies to other bioaccumulative chemicals, and argues for excluding consumption of all anadromous fish from the FCR used to derive Idaho HHWQC.

Consistency with Oregon. As part of the IDEQ slide presentation at the July 23, 2014 meeting concerning Fish Consumption Rates in Idaho Water Quality Criteria for Human Health Negotiated Rulemaking Meeting, IDEQ indicated that a benefit of including consumption of anadromous fish at the full rate (Option 1 in Discussion Paper #5) is that such a decision would be consistent with the approach used by Oregon and is more protective of human health.

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[1] As reported by EPA, NOAA's landing data indicate that 96%, 3.5%, and 0.5% of salmon are caught in marine, estuarine, and freshwaters, respectively, and EPA ultimately included salmon in the recommended FCR at a discounted rate (4% of total consumption) reflecting catch in estuarine and fresh waters. If Idaho chooses to follow EPA's lead on this, including 0.5% of total salmon consumption (reflecting catch in freshwater only) in an FCR would be more appropriate considering that Idaho has no estuarine waters. In any case, to be clear: apportionment based on catch location does not accurately account for where salmon accumulate chemicals, so this decision on EPA's part was truly a matter of policy, not science.

Unlike Oregon which is a coastal state, Idaho Water Quality Standards (WQS) can't regulate estuarine and marine waters and, thus, cannot influence concentrations of chemicals present in such waters or the accumulation of chemicals by fish from such waters. The different geographic settings of Idaho and Oregon, the latter being a coastal state and Idaho an inland state, present a sound basis for Idaho excluding anadromous fish from the FCR used to derive HHWQC. We realize excluding anadromous fish from the FCR would differ from Oregon but believe such exclusion recognizes and accounts for clear geographic differences between the two states. In this instance, consistency with Oregon or any other coastal state is an inappropriate and scientifically unsupportable reason for including anadromous fish in the FCR used to derive to Idaho HHWQC.

Protection of public health. Discussion Paper #5 and the slides presented by IDEQ at the July 23, 2014 Negotiated Rulemaking Meeting indicate that including anadromous fish, either at a full or discounted rate, leads to greater protection of public health. This is not correct, at least as it applies to anadromous fish. For the reasons described above, namely that essentially all of the concentrations of chemicals in anadromous fish are accumulated outside of waters of Idaho, lowering Idaho HHWQC (i.e., making them more stringent) will not change the concentration of chemicals in anadromous fish caught in Idaho. Therefore, it will not improve public health by decreasing risks associated with chemicals in anadromous fish.

It is true that including anadromous fish in the FCR used to derive HHWQC will lower the HHWQC (i.e., make them more stringent) and that may, in turn, be more protective of public health by reducing exposures from sources other than consumption of anadromous fish (i.e., consumption of native fish, ingestion of drinking water). However, more stringent HHWQC do not necessarily translate directly to greater protection of public health for several reasons.

First, HHWQC for some chemicals may be so low as to be below common analytical detection limits regardless whether anadromous fish are included or not. For such chemicals, inclusion of anadromous fish does not increase public health protection because the lower HHWQC cannot be measured.

Second, lower HHWQC lead to the implementation of fish consumption advisories on some Idaho waters that would not have been posted otherwise and Idahoans catching and eating fish from such waters will be deprived of the opportunity to enjoy fish from local waters. More importantly, if they were to consume a source of protein other than fish (e.g., beef or chicken), they would be deprived of the demonstrated benefits of consuming fish (Comments on Toxicology 2002, Kris-Etherton et al. 2003, Sidhu 2003). Ironically, if they were to go to the market and buy wild caught anadromous salmon, they might be exposed to higher levels of chemicals than if they caught and ate local fish, but they are prevented from eating such local fish by the inclusion in HHWQC of the very fish they are buying at the market.

Third, if implementation of more stringent HHWQC increases water treatment costs for local utilities, those utilities are likely to pass such costs onto Idahoans. That will increase the cost of living for those residents (and as noted above, with little or no measurable benefit) (HDR 2013). Increases in cost of living can lead to decreased socioeconomic status unless a concomitant increase in income occurs. Little reason exists

to think that changes in HHWQC will lead to increases in income. In fact, the opposite may happen, if compliance costs rise substantially, companies with facilities in Idaho that provide jobs to Idahoans may choose to relocate, further lowering the socioeconomic status of some Idahoans. Thus, the costs of more stringent HHWQC seem unwarranted in the absence of clear public health benefits that outweigh the potential costs.

Relative source contribution. The slides presented by IDEQ at the July 23, 2014 Negotiated Rulemaking Meeting indicate that excluding anadromous fish from the consumption rate (Option 3) would require that the default relative source contribution (RSC) of 0.2 be retained. However, using the default RSC of 0.2 for all chemicals is an oversimplified approach that may lead to overly stringent criteria for many chemicals. The contribution of anadromous fish to overall exposure will vary by chemical because concentrations of chemicals, and therefore risks, are likely to vary between species. To assure that state-wide HHWQC are appropriately protective, the contribution of anadromous fish to overall exposure, if such exposure is assumed to exist, should be accounted for using the RSC on a chemical-by-chemical basis.

If Idaho ultimately decides to incorporate RSCs in the derivation of HHWQC, USEPA's default RSCs should not be used. Instead, as Florida has demonstrated, chemical-specific information to derive RSCs is available for many chemicals (FDEP 2014). Such data should be used regardless whether the State selects Options 1, 2 or 3 described in Discussion Paper #5 and the slides presented at the July 23, 2014 meeting. If data indicate that anadromous fish contain low or non-detectable concentrations of a chemical, then the RSC for the chemical would not change regardless which policy option is ultimately selected by IDEQ. If available data indicate that anadromous fish have detectable levels of a chemical, then the RSC may vary between the three policy options. However, no a priori reason exists to select the USEPA default RSC of 0.2 if anadromous fish are not included in the FCR. If the exposure to a particular chemical associated with consumption of anadromous fish comprises only a few percent of the daily allowable exposure set by USEPA, then an RSC substantially greater than the default of 0.2 is warranted (assuming other sources make a small contribution), regardless which anadromous fish option is selected.

Approval. The slides presented by IDEQ at the July 23, 2014 Negotiated Rulemaking Meeting indicate that excluding anadromous fish from the consumption rate (Option 3) might make it more difficult for USEPA to approve such HHWQC. Idaho has implemented a transparent, inclusive and rigorous process to establish HHWQC. To date that process has been driven by facts and science. We can only hope that the HHWQC that result from such a process, whatever the final concentrations, will be readily approvable. Regardless, because ultimate approval cannot be predicted, and the greatest assurance of approval should be HHWQC grounded in sound science and policy, we recommend that IDEQ continue the current HHWQC derivation process and not begin to make decisions based on beliefs about whether a particular parameter is more or less likely to lead to USEPA approval.

Summary. In conclusion, we recommend that IDEQ select Option (3) from the policy choices presented in Discussion Paper #5 and exclude anadromous fish from the fish consumption rate when developing HHWQC for Idaho. Including anadromous fish, even on a discounted basis, has greater potential to harm rather than improve the health of Idahoans for the reasons described above. Indeed, HHWQC could be

set to zero and human health risks associated with consumption of anadromous fish, assuming such risks are present, would remain unchanged. In short, Idahoans could be faced with substantially increased compliance costs and garner no benefit from such increased costs.

A subtle, but perhaps even more ramification should be considered as well. By including anadromous fish in the FCR, the State creates the impression that it can protect Idahoans from exposure to chemicals in anadromous fish using HHWQC. That is a false impression. Idaho HHWQC have essentially no effect on concentrations of chemicals in anadromous fish. If the State were to determine the concentrations of chemicals in anadromous fish were posing a risk to Idahoans, reducing those risks would need to occur through a program other than Idaho HHWQC because HHWQC have no effect on anadromous fish concentrations. An example of such a program might be the implementation of a fish consumption advisory recommending or directing Idahoans not to eat anadromous fish caught in Idaho waters because of chemicals accumulated by the fish prior to entering Idaho waters. Anadromous fish have great cultural importance in the Northwest and represent an important source of protein for many people. If chemicals in anadromous fish truly pose a public health risk, regulations should be adopted that will actually mitigate that risk and improve public health, not create false hope and misappropriate scarce public resources. We urge IDEQ not to mislead the public into thinking that HHWQC can affect the concentration of chemicals in anadromous fish[2].

In summary, data on and modeling of the accumulation of persistent bioaccumulative toxins in anadromous fish indicate virtually all of the body burden in adult salmon of chemicals classified as persistent bioaccumulative toxins is accumulated in the open ocean. Thus, as a matter of both science and policy, inclusion of anadromous fish in any FCR meant to protect Idaho residents from such chemicals in fish is unsupportable.

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[2] Note that this observation applies to market fish (the subject of Discussion Paper #4) as well. Because most market fish are not from Idaho, if the State were to determine that concentrations of chemicals in market fish posed a risk, to reduce those levels, regulations separate from HHWQC would need to be put in place to monitor and reduce those concentrations. HHWQC have no effect on concentrations of chemicals in market fish raised or caught outside of Idaho.

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