SCHOOL OF
LAW

Comments to Washington Department of Ecology
Proposed Revisions to Water Quality Standards for the State of Washington
Chapter 173-201A WAC

Please accept these comments regarding the Department of Ecology's (Ecology) proposed revisions to the Water Quality Standards for Surface Waters of the State of Washington, Chapter 173-201A WAC [hereinafter proposed WQS]. These comments reflect the views of the author. Although they raise concerns about the impacts of Washington's proposed WQS on tribes, they do not purport to represent the perspective of any tribe; those perspectives must be obtained directly from each tribe. Indeed, the author wishes to underscore the importance of working directly with the individual tribes affected, within the context of a government-to-government relationship, as committed to under the terms of the *Centennial Accord between the Federally Recognized Indian Tribes in Washington State and the State of Washington*.[1]

I. Introduction

Washington'sproposed water quality standards must be evaluated in light of their impacts on those affected, including impacts on tribes' rights and resources. This context is significant, because it constrains Ecology's rulemaking in important ways. Among other things, a consideration of Ecology's proposed rule must be framed and bounded by the relevant legal provisions, including treaties and other instruments securing tribes' fishing rights. As well, an evaluation of Ecology's rule must be made in light of governing statutory directives under the Clean Water Act (CWA).

Under the CWA, water quality standards are health-based standards. The touchstone for agencies' efforts is human health. Fish are the primary route of human exposure to PCBs, mercury, dioxins, and a host of toxic chemicals that are harmful to human health. Health-based water quality standards are set to ensure that humans can safely consume fish, without also being exposed to contaminants in harmful amounts. Pursuant to Environmental Protection Agency (EPA) guidance, agencies enlist quantitative risk assessment methods to set standards for both threshold and non-threshold contaminants. For threshold contaminants, standards are set so that contaminants don't exceed levels that are safe for humans. For non-threshold contaminants, including carcinogens, exposure to any non-zero amount has

[1] WASHINGTON GOVERNOR'S OFFICE OF INDIAN AFFAIRS, CENTENNIAL ACCORD BETWEEN THE FEDERALLY RECOGNIZED INDIAN TRIBES IN WASHINGTON STATE AND THE STATE OF WASHINGTON (1989), *available at* http://www.goia.wa.gov/Government-to-Government/Data/CentennialAccord.htm.

the potential to cause cancer; standards are set so that contaminants don't exceed a risk level determined to be "acceptable." In either case, agencies then work with the risk assessment equation to "solve" for the concentration of each chemical that will be permitted in the waters that support fish.

Washington's water quality standards will affect the rights, resources, and welfare of numerous tribes in the region. In fact, when the waters that support fish are allowed to be contaminated, tribes' interests are profoundly affected and tribal people disproportionately among the most exposed. It is therefore troubling that Ecology's proposed rule embraces only modest gains toward improved water quality by improving its fish consumption rate (FCR), but then promptly undercuts these gains by several devices. Among these, Ecology contemplates tolerating a tenfold greater level of cancer risk than Washington has in the past – just when studies have made clear that it is tribal people who would be the ones who disproportionately would have to bear this risk. Additionally, Ecology selectively embraces new science and local data when to do so suits the end of rendering the standards less protective, but ignores it otherwise. Remarkably, Ecology proposes to make no progress at all on standards for two of the contaminants of greatest concern – methylmercury and PCBs – contaminants that are the cause of the raft of fish consumption advisories that currently blanket the state's waters. And Ecology proposes to issue standards that are more lenient for a third contaminant, arsenic. Despite this work to fashion standards that do little or nothing to enhance the quality of the state's waters or to ensure that fish are fit for human consumption, Ecology additionally proposes several mechanisms, termed "implementation tools," that enable delayed compliance with the standards – perhaps for years.

The first two parts of these comments set forth the relevant legal landscape. Part II of these comments discusses tribes' unique rights to harvest and consume fish – rights that are protected by treaties and other sources of law.[2] Part III outlines the relevant stattuory provisions under the CWA. Then, in Part IV, these comments evaluate the various aspects of Ecology's proposed WQS in light of this legal landscape.

II. The Tribes' Unique Political and Legal Status and Rights to Fish

Tribes comprise distinct *peoples* with inherent rights. Tribes' status as self-governing, sovereign entities pre-dated contact with European settlers. This status, nonetheless, was affirmed by the nascent United States. Among other things, the U.S. viewed the Indian tribes as sovereigns, capable of entering into treaties.[3] Today, tribes are recognized to have a unique political and legal status – a status that sets them apart from every other "subpopulation" or group that might warrant particular consideration in decisions about environmental standards.[4] Tribes' rights and interests, moreover, are protected by a

[2] The discussion in Part II and elsewhere is drawn from my article, Catherine A. O'Neill, *Fishable Waters*, 1 AMERICAN INDIAN L. J. 181 (2013) available at http://www.law.seattleu.edu/Documents/ailj/Spring%202013/O'Neill-Fishable%20Waters.pdf. [hereinafter, O'Neill, *Fishable Waters*].
[3] Worcester v. Georgia, 31 U.S. (6 Pet.) 515 (1832).
[4] *See, e.g.,* United States v. Mazurie, 419 U.S. 544, 557 (1977) (rejecting lower court's characterization of tribe as mere association of U.S. citizens and finding, instead, that "Indian tribes are unique aggregations possessing

constellation of laws and commitments that are unique among groups affected by federal, state, and other decisions. These include protections secured by treaties, laws, and executive orders that speak to the rights of tribes and their members.

The starting place for an analysis of tribal fishing rights is a recognition that, prior to European contact, fishing, hunting, and gathering were vital to the lives of Indian people. Indians' aboriginal title to this land included the right to engage in these practices.[5] When tribes entered into treaties and agreements ceding lands to the United States, they often nonetheless reserved a suite of important rights, including their aboriginal fishing rights.

The Treaty of Point Elliott provides that "[t]he right of taking fish at usual and accustomed grounds and stations is further secured to said Indians in common with all citizens of the Territory...."[6] Although the precise language of the fishing clause varies somewhat in the different treaties with the tribes of the Pacific Northwest, U.S. courts have interpreted these provisions similarly to secure to the tribes a permanent, enforceable right to take fish throughout their fishing areas for ceremonial, subsistence and commercial purposes.[7] For its part, upon entering into treaties and agreements with the various tribes, the U.S. bound itself and its successors to protect the tribes' right to take fish in perpetuity. The treaties, moreover, have the status under the Constitution of "supreme law of the land."[8]

Importantly, all of the rights not expressly relinquished by the tribes were retained. This is a crucial tenet of federal Indian law.[9] As affirmed by the U.S. Supreme Court, the treaties represent "not a grant of rights to the Indians, but a grant of rights *from* them – a reservation of those not granted."[10] Treaty-reserved fishing rights are akin to pre-existing servitudes that burden and "run with" off-reservation lands.[11] The Court has held, for example, that implicit within the treaties' specific reservation of the right to "take fish" are rights of access, including over state or privately owned land.[12] "This principle

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attributes of sovereignty over both their members and their territory …"); *see also* Williams v. Lee, 358 U.S. 217 (1959); Morton v. Mancari 417 U.S. 535 (1974).

[5] FELIX COHEN, HANDBOOK OF FEDERAL INDIAN LAW 1154-56 (2012 ed.).

[6] Treaty with the Duwamish, Jan. 22, 1855, U.S.-Duwamish, art. V, 12 Stat. 927 (1859).

[7] *See, e.g.,* Confederated Tribes of the Umatilla Indian Reservation v. Alexander, 440 F. Supp. 553 (D. Or. 1977) (finding that a proposed dam on Catherine Creek would infringe rights guaranteed to the Umatilla tribe by the Treaty with the Walla Walla and stating "[f]urther, while the 1855 treaty spoke only of 'stations,', it is clear that the government and the Indians intended that all Northwest tribes should reserve the same fishing rights. 'It is designed to make the same provision for all the tribes and for each Indian of every tribe. The people of one tribe are as much the people of the Great Father as the people of another tribe; the red men are as much his children as the white men.'" (quoting Governor Stevens)).

[8] *Worcester*, 31 U.S. (6 Pet.) at 519 (1832) ("The constitution [declares] treaties already made, as well as those to be made, the supreme law of the land . . .").

[9] COHEN, *supra* note 5, at 1156-57.

[10] United States v. Winans*,* 198 U.S. 371, 381 (1905) (emphasis added).

[11] *Id.* (stating "[t]hey imposed a servitude upon every piece of land as though described therein").

[12] *Id.* (observing that "[n]o other conclusion would give effect to the treaty").

ensures that reserved treaty rights are not rendered a nullity by shifting patterns of property ownership and development."[13]

Additionally, under federal Indian law, unique canons guide courts' construction of the treaty language.[14] According to the canons, treaties should be construed liberally in favor of Indian tribes; they should be construed as the Indians would have understood them; and any ambiguities should be resolved in the tribes' favor.[15]

The historical record, from both sides, is very clear on the point that protections for the Pacific Northwest tribes' pre-existing fishing rights were crucial to obtaining tribes' assent to the treaties. U.S. courts have recognized this understanding on the part of the treaty negotiators:

> It is perfectly clear … that the Indians were vitally interested in protecting their right to take fish at usual and accustomed places, whether on or off the reservations, and that they were invited by the white negotiators to rely and did in fact rely heavily on the good faith of the United States to protect that right.[16]

Accordingly, for more than a century, the courts have regularly interpreted the fishing right to encompass not only the right to harvest but also the subsidiary rights necessary to render it of continued relevance for tribal fishers. Among the facets of the treaty guarantees affirmed by the courts are the points that: (1) "The treaty clauses regarding off-reservation fishing . . . secured to the Indians rights, privileges and immunities distinct from those of other citizens."[17] (2) The rights secured to tribes by treaty are permanent, such that "[t]he passage of time and the changed conditions affecting the water courses and the fishery resources in the case area have not eroded and cannot erode the right secured by the treaties . . ."[18] (3) "[N]either the treaty Indians nor the state . . . may permit the subject matter of these treaties [i.e. the fisheries] to be destroyed."[19] (4) The treaty fishing rights encompass the right to fish in all areas traditionally available to the tribes, and "[agencies] ... do not have the ability to qualify or limit the Tribes' geographical treaty fishing right (or to allow this to occur ...) by eliminating

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[13] COHEN, *supra* note 5, at 1174; *accord* Grand Traverse Bay of Ottawa & Chippewa Indians v. Dir., Michigan Dept. of Natural Resources, 141 F.3d 635, 641 (6th Cir. 1998) (finding that tribe's reserved fishing rights in Lake Michigan entitled the tribe to mooring access at two municipally owned marinas, given the necessity of using large boats for safety reasons and the fact that the marinas occupied the only harbors within reasonable distance of the reserved fishing locations).

[14] COHEN, *supra* note 5, at 113-19, 1156. ("The canons have quasi-constitutional status; they provide an interpretive methodology for protecting fundamental constitutive, structural values against all but explicit congressional derogation."); *id.* at 118-19.

[15] *See, e.g.,* Minnesota v. Mille Lacs Band of Chippewa Indians, 526 U.S. 172, 194, 196, 200 (1999).

[16] Washington v. Washington State Commercial Passenger Fishing Vessel Ass'n, 443 U.S. 658, 667 (1979) (holding that the treaty fishing clause guarantees to the tribes not merely access to usual and accustomed fishing sites and an "equal opportunity" for Indians, along with non-Indians, to try to catch fish, but instead secures to the tribes a right to harvest a share of each run of anadromous fish that passes through tribal fishing areas).

[17] United States v. Washington, 384 F. Supp. 312, 401 (W.D. Wash. 1974).

[18] *Id.*

[19] United States v. Washington*,* 520 F.2d 676, 685 (9th Cir. 1975).

a portion of an Indian fishing ground …," except as necessary to conserve a species.[20] (5) The treaty fishing rights encompass all available species of fish found in the treating tribes' fishing areas, "[b]ecause the 'right of taking fish' must be read as a reservation of the Indians' pre-existing rights, and because the right to take *any* species, without limit, pre-existed the Stevens Treaties."[21] These features of tribes' rights are important in part because they continue to inform tribes' aspirations for and entitlements to a future in which their exercise of their rights is robust, and tribal members' consumption and use of the resources on which they have historically depended is restored.

The U.S. courts' most recent affirmation of the treaty guarantees is of a piece with these previous cases. In what is known colloquially as the "culverts" case,[22] the court addressed a threat to the tribes' treaty rights posed by environmental degradation. The culverts case is an outgrowth of *United States v. Washington*, in which Judge Boldt divided the questions before the court into two "phases." In Phase II, the district court considered "whether the right of taking fish incorporates the right to have treaty fish protected from environmental degradation." [23] The court in 1980 held that "implicitly incorporated in the treaties' fishing clause is the right to have the fishery habitat protected from man-made despoliation….The most fundamental prerequisite to exercising the right to fish is the existence of fish to be taken."[24] On appeal, the district court's opinion was vacated on jurisprudential grounds.[25] The Ninth Circuit found its "general admonition" inappropriate as a matter of "judicial discretion" and stated that the duties under the treaties in this respect "will depend for their definition and articulation upon concrete facts which underlie a dispute in a particular case."[26] So, in the culverts case, filed in 2001, the tribes brought to the court's attention such a set of concrete facts. Specifically, the tribes cited evidence that the state of Washington had improperly maintained culverts around the state, with the result that miles of salmon habitat were blocked, contributing to a decline in salmon numbers and thus an erosion of tribes' ability to exercise their treaty-guaranteed right to take fish. Thus, the district court in the culverts case considered the question "whether the Tribes' treaty-based right of taking fish imposes

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[20] *See, e.g.,* Muckleshoot v. Hall, 698 F. Supp. 1504, 1513-14 (W.D. Wash. 1988) (enjoining construction of a marina in Elliott Bay that would have eliminated a portion of the tribes' usual and accustomed fishing areas); *see also* United States v. Oregon, 718 F.2d 299, 305 (9th Cir. 1983) (holding that "the court must accord primacy to the geographical aspect of the treaty rights").

[21] United States v. Washington, 873 F. Supp. 1422, 1430 (W.D. Wash. 1994) (emphasis in original).

[22] Culverts Order, 2007 WL 2437166 (W.D. Wash.); Culverts Decision, No. 9213RSM, Subproceeding 01-1, slip op. (W.D. Wash. 2013).

[23] United States v. Washington, 506 F. Supp. 187, 190 (W.D. Wash. 1980) (Phase II) *vacated by* United States v. Washington, 759 F.2d 1353 (9th Cir. 1985).

[24] United States v. Washington, 506 F. Supp. at 203.

[25] The procedural history of Phase II is discussed at greater length by Judge Martinez in the Culverts Order. *See* Culverts Order, 2007 WL 2437166, at *4-*5. Notably, although the State had argued that the Ninth Circuit's vacatur ought to be understood broadly, as a rejection of the tribes' position, the court disagreed. "The [appellate] court's order did not contain broad and conclusive language necessary to reject the idea of a treaty-based duty in theory as well as in practice. … [its] ruling, then, cannot be read as rejecting the concept of a treaty-based duty to avoid specific actions which impair salmon runs. The court did not find fault with the district court's analysis on treaty-based obligations, but rather vacated the declaratory judgment as too broad, and lacking a factual basis at that time. The court's language, however, clearly presumes some obligation on the part of the State …" *Id*.

[26] United States v. Washington, 759 F.2d at 1357.

upon the State a duty to refrain from diminishing fish runs by constructing or maintaining culverts that block fish passage."[27]

In 2007, the district court ruled in favor of the tribes' request for a declaratory judgment to this effect on cross-motions for summary judgment. In finding that the state indeed had the duty urged by the tribes, Judge Martinez considered carefully the intent of the parties to the treaties, in accordance with "well-established principles of treaty construction," citing U.S. Supreme Court precedent for the instruction that "the treaty must therefore be construed, not according to the technical meaning of its words to learned lawyers, but in the sense in which they would naturally be understood by the Indians."[28] Judge Martinez began his analysis by quoting the Court's earlier work in the *U.S. v. Washington* line of decisions, but highlighted language underscoring that among the points of "taking" fish was, ultimately and obviously, eating fish.

> Governor Stevens and his associates were well aware of the "sense" in which the Indians were l ikely to view assurances regarding their fishing rights. During the negotiations, the vital importance of the fish to the Indians was repeatedly emphasized by both sides, and *the Governor's promises that the treaties would protect that source of food and commerce were crucial in obtaining the Indians' assent.* It is absolutely clear, as Governor Stevens himself said, that neither he nor the Indians intended that the latter "should be excluded from their ancient fisheries," and it is accordingly inconceivable that either party deliberately agreed to authorize future settlers to crowd the Indians out of any meaningful use of their accustomed places to fish.[29]

Notably, Judge Martinez added the emphasis indicated to the material he quoted.

Judge Martinez quoted at length from expert testimony that focused explicitly on the role of the fish as food, forever – "for subsistence and for trade" – noting "[t]he significance of [the] right [to take fish] to the Tribes, its function as an incentive for the Indians to sign the treaties, and the Tribes' reliance on the unchanging nature of that right."[30] He recited from the declaration of historian Richard White:

> Stevens and the other negotiators anticipated that Indians would continue to fish the inexhaustible stocks in the future, just as they had in the past. Stevens specifically assured the Indians that they would have access to their normal food supplies now and in the future. At the Point Elliot Treaty, Stevens began by speaking of subsistence. "[A]s for food, you yourselves now, as in time past, can take care of yourselves." The question, however, was not whether they could now feed themselves, but rather whether in the future after the huge cessions that the treaties proposed the Indians would still be able to feed themselves. Stevens assured them

[27] Culverts Order, 2007 WL 2437166, at *3.
[28] *Id*. at *6 (quoting State of Washington v. Washington State Commercial Passenger Fishing Vessel Association).
[29] *Id*. at *7 (quoting State of Washington v. Washington State Commercial Passenger Fishing Vessel Association, internal citation omitted, emphasis added by Judge Martinez).
[30] *Id*. at *7-*8.

> that he intended that the treaty guarantee them that they could. *"I want that you shall not have simply food and drink now but that you may have them forever."*[31]

Judge Martinez noted the parties' likely understandings, given the reliability of the anadromous fishery resource in particular, the "abundance" of the fisheries in general, and their presumed "future 'inexhaustability.'"[32] These understandings, and Stevens' promises to the end that this would "forever" be the case, were what persuaded the tribes to sign the treaties. As Judge Martinez observed, "[i]t was not deemed necessary to write any protection for the resource into the treaty because nothing in any of the parties' experience gave them reason to believe that would be necessary." He then quoted historian Joseph Taylor:

> During 1854-55, white settlement had not yet damaged Puget Sound fisheries. During those years, Indians continued to harvest fish for subsistence and trade as they had in the past. Given the slow pace of white settlement and its limited and localized environmental impact, Indians had no reason to believe during the period of treaty negotiations that white settlers would interfere, either directly through their own harvest or indirectly through their environmental impacts, with Indian fisheries in the future. During treaty negotiations, Indians, like whites, assumed their cherished fisheries would remain robust forever.[33]

Thus, Judge Martinez concluded:

> [T]he representatives of the Tribes were personally assured during the negotiations that they could safely give up vast quantities of land and yet be certain that their right to take fish was secure. These assurances would only be meaningful if they carried the implied promise that neither the negotiators nor their successors would take actions that would significantly degrade the resource.[34]

Indeed, Judge Martinez observed, environmental degradation would not have been anticipated by the Indians not only because white settlement had not yet occasioned much by way of adverse environmental impacts, but also because the Indians regulated their own activities in order to prevent environmental harm and ensure the health of the fishery resource.[35] Thus, according to Judge Martinez, "[s]uch resource-degrading activities as the building of stream-blocking culverts could not have been

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[31] *Id*. at *9 (quoting Declaration of historian Richard White, emphasis added by Judge Martinez).
[32] *Id*.
[33] *Id*. (quoting Declaration of historian Joseph E. Taylor, III).
[34] *Id.* at *10. .
[35] *Accord, e.g.,* TROSPER *supra* note 45; Johnsen, *supra* note 44. In the earliest times, when the balance of power still favored Native people, settlers too in some cases had to observe indigenous rules for consumption and resource management. As Joseph Taylor recounts in the context of the Columbia River Basin, "Clatsop and Chinooks delivered canoe loads of fish …but aboriginal rules still shaped the exchange. During ceremonial periods Indians continued to restrict consumption …Non-Indians grudgingly obeyed as long as Indians could force compliance, but repeated epidemics undermined aboriginal control." TAYLOR, *supra* note 45, at 60.

anticipated by the Tribes, who themselves had cultural practices that mitigated negative impacts of their fishing on the salmon stocks."[36]

The significance of the culverts order is widely recognized. While the state, in the wake of the Ninth Circuit's vacatur of the Phase II decision, may have harbored questions about the vibrancy of its treaty-based duty to avoid actions that impair the health of the salmon, its existence was explicitly confirmed by the culverts order. This duty, as the court stated, exists "in theory as well as in practice." Although the parties attempted to settle upon a schedule for the state to fix its stream-blocking culverts in view of this duty, they were unsuccessful and a bench trial on the remedies was held in 2010. On March 29, 2013, Judge Martinez granted the tribes' request for a permanent injunction, and denied the state's request for reconsideration of the court's 2007 culverts order.[37] Judge Martinez incorporated his earlier ruling in its entirety, reiterating that "[t]he Treaties were negotiated and signed by the parties on the understanding and expectation that the salmon runs were inexhaustible and that salmon would remain abundant forever."[38]

The tribes brought their claim to the court in the context of a discrete set of facts and Judge Martinez decided the question in this particularized context, carefully avoiding a broad, acontextual pronouncement.[39] Yet the court's rulings and reasoning in the culverts case send an unmistakable signal. Given an appropriately concrete factual context, the culverts decision can fairly be read to confirm the point that, as successors to the negotiators, federal and state governments may be held to account for the actions they take – or permit others to take – that significantly degrade the treaty resource. Given the court's concern with the *function* of the treaty resource, moreover – its role in securing food and a livelihood for the tribes – governments may be held to account for actions that compromise the treaty resource whether by depletion or by contamination.

It should be noted that the tribes' fishing rights encompass geographical areas throughout the Pacific Northwest. In Washington, for example, tribes' adjudicated usual and accustomed or "U & A" areas have been determined to consist in virtually the entirety of the waters within the state's exterior

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[36] Culverts Order, 2007 WL 2437166, at *10 (citing Declaration of Robert Thomas Boyd).
[37] Culverts Decision, No. 9213RSM, Subproceeding 01-1, slip op. at 32 (W.D. Wash. 2013).
[38] *Id.*
[39] Culverts Order, 2007 WL 2437166, at*10. Thus, Judge Martinez assured the State of Washington that "[t]his is not a broad 'environmental servitude' or the imposition of an affirmative duty to take all possible steps to protect fish runs as the State protests, but rather a narrow directive to refrain from impeding runs in one specific manner." *Id*. Similarly, in the Culverts Decision, Judge Martinez stated that "[t]he State's duty to maintain, repair or replace culverts which block passage of anadromous fish does not arise from a broad environmental servitude against which the Ninth Circuit Court of Appeals cautioned. Instead, it is a narrow and specific treaty-based duty that attaches when the State elects to block rather than bridge a salmon-bearing stream with a roadbed. The roadbed crossing must be fitted with a culvert that allows not only water to flow, but which insures the free passage of salmon of all ages and life stages both upstream and down. That passage is best facilitated by a stream simulation culvert rather than the less-effective hydraulic design or no-slope culvert." Culverts Decision, slip op. at 35. Note, too, that the state of Washington has since appealed Judge Martinez' decision to the Ninth Circuit, where it remains at present; the parties have submitted briefs, but oral argument has not yet been heard by the court.

boundaries.[40] As a consequence, environmental standards applicable in this area – whether set by federal, tribal, or state governments – can affect tribes' rights and interests.

Although the discussion above is focused on tribal fishing rights secured by treaties, it bears noting that tribal fishing rights affected by Washington's WQS may enjoy legal protections under executive order, statute, or other sources of law.

Additionally, when the rights and resources of tribes and their members are affected by state and federal agencies' decisions, there is a particular constellation of laws and commitments that comes into play. This constellation is unique to tribes – it would not be relevant were only other groups' interests affected, but it must be considered given that tribes' rights are at stake. Although it is beyond the scope of these comments to discuss these laws and commitments, it is worth noting them here. In addition to the treaties and agreements between the U.S. and the Pacific Northwest tribes discussed above, numerous federal and state legal commitments recognize the unique duties owed to tribes and their members. Chief among these is the federal trust responsibility, under which doctrine the federal government is held to the heightened standards of a trustee in its decisions affecting tribal resources and rights. Although courts' recent interpretations of this trust responsibility in the context of agencies' environmental decisions have tended toward a narrow rather than robust understanding, the EPA at least has indicated its appreciation of a duty that flows from tribes' unique legal status under the Constitution, treaties, laws, executive orders, and court decisions and from the historical relationship between the federal government and tribal nations.[41]

Other obligations and commitments that are particular to tribes and their members stem from federal civil rights laws that prohibit recipients of federal funds (including state environmental agencies) from administering their programs in a way that discriminates against American Indians;[42] U.S. commitments under international law to protect the rights of indigenous peoples, including rights to traditional

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[40] This is not to suggest that tribes' rights are limited to the state's exterior boundaries; rather, it is to say that insofar as the state asserts environmental regulatory authority over "the waters of Washington," these waters are burdened by tribes' pre-existing rights. For state recognition of this point, *see, e.g.,* Washington State Governor's Office of Indian Affairs, "Map of Reservations and Ceded Lands," *available at* http://www.goia.wa.gov/tribal_gov/documents/Tribal_Cedres.pdf; *see also,* Washington State Department of Transportation, Model Comprehensive Tribal Consultation Process for National Environmental Policy Act, Appendix B (July 2008) *available at* http://www.wsdot.wa.gov/environment/tribal (summarizing adjudicated "usual and accustomed" areas for western Washington tribes) (last visited Apr. 20, 2013).

[41] *See* Memorandum from Lisa P. Jackson, Administrator, U.S. Environmental Protection Agency, to All EPA Employers (Jul. 22, 2009), *available at* http://www.epa.gov/tp/pdf/reaffirmation-memo-epa-indian-policy-7-22-09.pdf (last visited Apr. 20, 2013) (reaffirming EPA's 1984 Indian policy and explicitly acknowledging its trust responsibility to the tribes); U.S. Environmental Protection Agency, Policy for the Administration of Environmental Programs on Indian Reservations (Nov. 8, 1984), *available at* http://www.epa.gov/tp/pdf/indian-policy-84.pdf (last visited Apr. 20, 2013); *see generally*, COHEN, *supra* note 5, at 430-32. For a more expansive understanding of the federal government's trust responsibility regarding the ecosystems that support salmon, *see* NORTHWEST INDIAN FISH COMMISSION, TREATY RIGHTS AT RISK (2011) [hereinafter NWIFC, TREATY RIGHTS AT RISK].

[42] Civil Rights Act of 1964 § 106, 42 U.S.C. § 2000d (2012); 40 C.F.R. § 7 (2012).

resources and to hunt, fish, and gather; [43] federal and state commitments to work with tribes on a government-to-government basis, in furtherance of tribal self-determination;[44] and federal and state commitments to further environmental justice, including specific mention of the need to protect subsistence fishing.[45]

III. The Clean Water Act's Goal of Fishable Waters

The Clean Water Act sets forth as its goal nothing less than "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters."[46] The CWA stands apart for its holistic vision. Indeed, Robert Adler argues that "in the opening sentence of the federal Clean Water Act, Congress articulated one of the broadest whole ecosystem restoration and protection aspirations in all of environmental law."[47]

The CWA establishes a federal structure that entrusts states (and tribes – but these comments are concerned with a state's, namely, Washington's actions so will refer only to "states" in this usage) with the responsibility for implementing the Act within their respective jurisdictions while providing for oversight by the EPA to ensure compliance with the Act. For water quality standards, the CWA sets a federal floor, while permitting states to depart from this minimum -- so long as their standards are at least as protective. Water quality standards are comprised of goals, articulated in the form of "uses" envisioned for each water body, and "water quality criteria," i.e., requirements designed to ensure that the uses are attained.[48] The CWA sets forth a national goal of "water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the

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[43] UNITED STATES MISSION TO THE UNITED NATIONS, ANNOUNCEMENT OF U.S SUPPORT FOR THE UNITED NATIONS DECLARATION ON THE RIGHTS OF INDIGENOUS PEOPLES 6, 8 (2011), *available at* http://usun.state.gov/documents/organization/153239.pdf (last visited Apr. 20, 2013) (acknowledging that the Declaration calls upon the U.S. to acknowledge the "interests of indigenous peoples in traditional lands, territories, and natural resources," and recognizing "that many indigenous peoples depend upon a healthy environment for subsistence fishing, hunting and gathering" and that various Declaration provisions address the consequent need for environmental protections).

[44] *See, e.g.*, WASHINGTON GOVERNOR'S OFFICE OF INDIAN AFFAIRS, CENTENNIAL ACCORD BETWEEN THE FEDERALLY RECOGNIZED INDIAN TRIBES IN WASHINGTON STATE AND THE STATE OF WASHINGTON (1989), *available at* http://www.goia.wa.gov/Government-to-Government/Data/CentennialAccord.htm (last visited Apr. 20, 2013).

[45] *See, e.g.*, EXECUTIVE ORDER 12,898: FEDERAL ACTIONS TO ADDRESS ENVIRONMENTAL JUSTICE IN MINORITY POPULATIONS AND LOW-INCOME POPULATIONS (Feb. 11, 1994) (singling out the issue of "subsistence consumption of fish and wildlife" in section 4-4, the only subject matter issue receiving specific mention in the Executive Order).

[46] Federal Water Pollution Control Act (Clean Water Act), 33 U.S.C. § 1251(a) (2012).

[47] Robert W. Adler, *The Two Lost Books in the Water Quality Trilogy: The Elusive Objectives of Physical and Biological Integrity*, 33 ENVTL L. 29, 29 (2003).

[48] 33 U.S.C. § 1313(c)(2)(A). The EPA's water quality standards regulation describes water quality standards as being comprised of four parts: designated uses, water quality criteria, an antidegradation policy, and implementation policies. 40 C.F.R. § 131.10 - 131.13 (2012).

water."[49] The EPA has interpreted this goal to require a minimum "use" of "fishable/swimmable" waters, to be met throughout the nation.[50]

The CWA envisions frequent updates to state water quality standards, directing states at least every three years to review and, as appropriate, revise their water quality standards.[51] Importantly, the Act sets forth the touchstone for state efforts to this end: "[s]uch standards shall be such as to protect the public health or welfare, enhance the quality of water and serve the purposes of this chapter."[52]

IV. Washington's WQS Must Be Evaluated in View of the Above Legal Constraints

Washington's proposed WQS must be evaluated in view of the legal constraints elaborated above, in Parts II and III. Washington's standard-setting efforts must be framed by tribes' legally protected fishing rights; its WQS thus may not serve to undermine the rights secured to the tribes by treaties and other legal commitments. Washington's proposed WQS must also comport with the CWA's requirement that states' WQS "shall" protect public health and welfare, enhance water quality, and serve the purposes of the CWA, including its goal of achieving "fishable waters."

The understanding elaborated in Part II, moreover, has received recent support from the Office of the Solicitor in the Department of Interior, which considered the relationship beteween tribal fishing rights and WQS in Maine and confirmed to EPA that tribal fishing rights "should be taken into account when evaluating the adequacy of [a state's] WQS."[53] Although the Solicitor's analysis involved the particular legal sources of Maine tribes' fishing rights, it drew on broadly applicable tenets of federal Indian law, including principles articulated by the courts in cases interpreting tribal fishing rights in Washington. As the Solicitor stated:

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[49] 33 U.S.C. § 1251(a)(2).

[50] 40 C.F.R. § 131.2, § 131.4 (unless a state or tribe demonstrates that this use is not attainable, by means of a "use attainability analysis" pursuant to 40 C.F.R. § 131.10(j)).

[51] 33 U.S.C. § 1313(c)(1).

[52] 33 U.S.C. § 1313(c)(2). Congress' distaste for delay on the part of the states was made known during debate surrounding the 1987 amendments. *See, e.g.,* U.S. Environmental Protection Agency, Establishment of Numeric Criteria for Priority Toxic Pollutants; States' Compliance; Final Rule, 57 Fed. Reg. 60,848, 60.849 (Dec. 22, 1992) [hereinafter EPA, National Toxics Rule] ("The critical importance of controlling toxic pollutants has been recognized by Congress and is reflected, in part, by the addition of section 303(c)(2)(B) to the Act. Congressional impatience with the pace of State toxics control programs is well documented in the legislative history of the 1987 amendments.").

[53] Letter to Avi S. Garbow, Office of General Counsel, U.S. Environmental Protection Agency, from Hilary C. Tompkins, Office of the Solicitor, U.S. Department of the Interior (Jan. 30, 2015).

> **In summary, fundamental, long-standing tenets of federal Indian law support the interpretation of tribal fishing rights to include the right to sufficient water quality to effectuate the fishing right. Case law supports the view that water quality cannot be impaired to the point that fish have trouble reproducing without violating a tribal fishing right; similarly water quality cannot be diminished to the point that consuming fish threatens human health without violating a tribal fishing right. A tribal right to fish depends on a subsidiary right to fish populations safe for human consumption. If third parties are free to directly and significantly pollute the waters and contaminate available fish, thereby making them inedible or edible only in small quantities, the right to fish is rendered meaningless. To satisfy a tribal fishing right to continue culturally important fishing practices, fish cannot be too contaminated for consumption at sustenance levels.**

Ecology cites EPA guidance under the CWA as authority for a host of determinations that, together, have led Ecology to propose WQS that will permit the waters to be polluted and the fish to be contaminated to point that they are "inedible or edible only in small quanities," therby rendering meaningless the tribes' rights to fish; that will not adequately "protect public health and welfare;" that will do little – and, in some important cases (such as criteria for methylmercury and PCBs), nothing – to "enhance the quality of water;" and, as such, fail meaningfully to further the purposes of the CWA, including its minimum goal of ensuring fishable waters. Ecology explains the basis for these determinations in its document accompanying the proposed WQS, *Washington State Water Quality Standards: Human Health Criteria and Implementation Tools, Overview of Key Decisions in Rule Amendment* [hereinafter, Overview of Key Decisions].[54] Ecology purports to find authority for its selection of the variables used to calculate the human health criteria in "EPA guidance and practice."[55] Ecology also frequently invokes the mantle of "risk management" for judgments made by the Governor or by Ecology regarding particular variables or the proposed WQS as a whole.[56]

Yet EPA has recognized – as it must – that its guidance must be considered by states as subsidiary to any applicable sources of law. This would include tribes' legally protected fishing rights. States cannot assume that EPA's general guidance relevant to water quality standards has accounted for tribes' fishing rights, including rights secured by treaty and other legal agreements. Thus, while EPA's *Ambient Water Quality Criteria Methodology* [hereinafter EPA's AWQC Guidance] outlines the considerations that will bear generally on EPA's decision whether to approve a state's water quality standards, [57] and while EPA

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[54] Washington Dept. of Ecology, Washington State Water Quality Standards: Human Health Criteria and Implementation Tools, Overview of Key Decisions in Rule Amendment (Jan., 2015) [hereinafter, Ecology, Overview of Key Decisions], available at https://fortress.wa.gov/ecy/publications/SummaryPages/1410058.html.

[55] *Id.* at 3; see also citations to EPA guidance throughout Ecology's Overview of Key Decisions document.

[56] *Id.* at 4 (three mentions of the term "risk management"), at 12 and 13(one mention each of the term "risk management"),at 16 (five uses of the term and a definition of "risk management" in conjunction with discussion of FCR), at 17 (three uses of the term and a definition of "risk management" in conjunction with discussion of the cancer risk level), etc.

[57] U.S. Environmental Protection Agency, Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health 1-8 (2000)[hereinafter EPA, AWQC Guidance], *available at* http://water.epa.gov/scitech/swguidance/standards/upload/2005_05_06_criteria_humanhealth_method_complete.pdf.

was surely aware at the time it published the guidance in 2000 that tribes' fishing rights were implicated, EPA cannot be taken to have incorporated an analysis of how these standards intersect with tribal rights to harvest and consume fish. Nor could EPA, in guidance, purport to authorize state actions in contravention of the tribes' treaties and other agreements with the United States.[58] In fact, EPA is careful to make a disclaimer at the outset of its guidance to this effect: "This Methodology does not substitute for the CWA or EPA's regulations; nor is it a regulation itself. Thus, the 2000 Human Health Methodology cannot impose legally-binding requirements on EPA, States, Tribes or the regulated community, and may not apply to a particular situation based upon the circumstances."[59]

Additionally, EPA's AWQC Guidance must be interpreted in light of data and developments since it was published, in 2000.[60] Although there was then increasing awareness of the variability in fish consumption as among various subpopulations, EPA's guidance pre-dated the focused analysis of this issue provided by the National Environmental Justice Advisory Council (NEJAC) report in 2002.[61] And, it pre-dated the U.S. district court's further explication of the scope of tribes' treaty-secured rights to fish in the Culverts litigation in 2007 and 2013, outlined above. As a consequence, statements in the guidance must be understood as a product of their time. Importantly, EPA's AWQC Guidance likely didn't contemplate fully the environmental justice issues raised by the fact that tribal people are among those most highly exposed to toxic contaminants in fish. And the disclaimer in EPA's AWQC Guidance becomes even more germane, given the particular factual and legal circumstances relevant in Washington, given that tribal rights and resources are implicated.

Finally, EPA has expressed concern for the *actual* risk posed to affected individuals, based on the best information available, when all of the parameters and circumstances are considered. EPA has indicated that it will consider the actual risk that results to those affected when all of a state's selected parameters are considered, and has stated that its scrutiny will increase as a state's target risk level becomes less protective or less conservative, e.g., if it moves from 10^{-6} to 10^{-5}.[62] EPA has emphasized that it will require "substantial support in the record," including an analysis of how the state's selected inputs to its risk assessment equation, when taken together, reasonably estimate the risk actually posed.[63] Among other things, EPA's statements suggest that states do not have unlimited flexibility to

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[58] O'Neill, *Fishable Waters*, *supra* note 2, at 255-260.
[59] EPA, AWQC Guidance, *supra* note 57, at 1-2.
[60] EPA, AWQC Guidance, *supra* note 57.
[61] NATIONAL ENVIRONMENTAL JUSTICE ADVISORY COUNCIL, FISH CONSUMPTION AND ENVIRONMENTAL JUSTICE (2002).
[62] U.S. Environmental Protection Agency, National Toxics Rule, 57 Fed. Reg. 60848-01 (1992) [hereinafter, EPA, NTR] ("In submitting criteria for the protection of human health, States were not limited to a 1 in 1 million risk level (10^{-6})… If a State selects a criterion that represents an upper bound risk level less protective than 1 in 100,000 (i.e., 10^{-5}), however, the State needed to have substantial support in the record for this level…. [Among other things,] the record must include an analysis showing that the risk level selected, when combined with other risk assessment variables, is a balanced and reasonable estimate of actual risk posed, based on the best and most representative information available. The importance of the estimated actual risk increases as the degree of conservatism in the selected risk level diminishes. EPA carefully evaluated all assumptions used by a State if the State chose to alter any one of the standard EPA assumption values.").
[63] *Id.*

choose the least protective or least conservative values for most or all of the relevant variables, e.g., target risk level, FCR, human bodyweight, human lifespan – at least not, as here, where the result leaves people exposed to significant risk.

Thus, while Ecology correctly notes that under the CWA it has the authority and the responsiblity to enact WQS applicable to waters over which Washington has jurisdiction, Ecology's authority is not unfettered. Ecology cannot simply cite guidance to absolve itself of the applicable legal contraints. Nor can Ecology invoke the mantle of "risk management" to insulate choices that are arbitrary or unsupported. The sections that follow take up the individual components of Ecology's proposed WQS in turn. It is important, however, that these indivudal aspects of Ecology's rule be considered in concert: when taken together, the various inputs to the equations used to determine Ecology's proposed human health criteria will permit contaminants in the fish in concentrations that will threaten the public health and welfare, impair tribal fishing rights, and make little or no progress toward the CWA goal of fishable waters. The upshot of Ecology's proposed WQS can be summarized thus: (1) For several dozen chemicals, consumption of fish would now be protected at a slightly higher rate of intake than at present; for the carcinogens in this group, people could now eat 17.5 g/day [64]– roughly two fish meals each month. (2) For several dozen chemicals, consumption of fish would only be protected at the same rate of intake as at present; for these chemicals, people could eat only 6.5 g/day – roughly one fish meal each month. (3) For one chemical, arsenic, people would need to reduce their fish intake below even the current rate of 6/5 g/day. The second group of chemicals warrants particular attention. Included within this group are the chemicals of greatest concern for the fish consumption pathway, including methylmercury, PCBs, and dioxins. These are the chemicals that are largely responsible for the contaminated state of our fish throughout Washington waters and that are the reason that fish consumption advisories have become necessary throughout the state. Ecology has taken pains to cast its proposal for these chemicals in a favorable light, emphasizing in its Overview of Key Decisions that these criteria "are to be no less stringent than the current criteria found in the NTR;"[65] and listing them in its comparision chart as criteria on which Washington is "holding the line."[66] But when the euphemisms are stripped away, Ecology's proposal would *make zero progress* toward cleaning our waters and lifting fish consumption advisories. For the contaminants of greatest concern in this rulemaking, Ecology proposes to continue the status quo – under which there is a *de facto* ceiling on safe fish intake of just twelve fish meals a year. Ecology's proposal in effect retains the state of the world supported by fish consumption data that are now forty years old – gathered in 1973-74, back when the rivers were on fire, the lakes and bays were treated as open sewers, and tribal harvest was under open attack. To set standards that render the fish unfit to eat save for these paltry amounts – one tribal leader has described 6.5 g/day as a "kibble," and 17.5 g/day scarcely more than two – is to impair tribal fishing rights and to burden significantly the public health and welfare.

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[64] This effective fish consumption rate of 17.5 g/day assumes a cancer risk level held constant at the curren 1×10^{-6}.

[65] Ecology, Overview of Key Decisions, *supra* note 54, at 4 (this material is italicized in Ecology's document).

[66] Ecology, Simple Comparision Chart: Proposed Versus Current Human Health Criteria, available at http://www.ecy.wa.gov/programs/wq/swqs/HHChemSummarysimplecomparisontable.pdf.

A. Fish Consumption Rate

Ecology's proposed WQS enlist a FCR of 175 g/day, which Ecology describes as "representative of an average" of "all fish and shellfish" for "highly exposed populations" that consume fish from Puget Sound waters.[67] Ecology defines "highly exposed populations" as "include[ing], among other groups, the following: tribes, Asian pacific Islanders, recreational and subsistence fishers, immigrant populations, etc."[68] Ecology characterizes 175 g/day as an "'endorsed' value." Ecology claims that "[g]roups endorsing the use of this numeric value include EPA and several tribes."[69]

1. Heritage Consumption versus Contemporary, "Suppressed" Consumption

Ecology's proposed WQS represents a welcome increase in the FCR on which Washington's WQS are calculated.[70] However, as elaborated in this section, this 175 g/day value still considerably understates contemporary tribal consumption and grossly understates tribal consumption rates that are not biased downward by suppression, i.e., heritage rates. It is the latter value that is consonant with practices guaranteed to the fishing tribes by treaties and other legal protections. It is also the latter value that is protective of tribal members' "health and welfare." EPA's recent "Frequently Asked Questions" document updates its AWQC Guidance on this vital point by recognizing the issue of suppression.[71] EPA's recent approval of the Spokane Tribe's water quality standards, moreover, signals its support for addressing suppression by use of a FCR premised on historical or "heritage" fish intake rates.[72] Finally, and most recently, EPA's disapproval of Maine's proposed WQS elaborates further an understanding that WQS affecting tribal fishing rights must "treat the tribal population exercising the sustenance fishing use as the target general population, not as a high-consuming subpopulation of the State," and must use data that reflect tribal consumers' "fishing practices *unsuppressed* by concerns about the safety of the fish available for them to consume."[73] Given that contemporary rates and practices reflect

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[67] Ecology, Overview of Key Decisions, *supra* note 54, at 16-17.
[68] Id. at 16.
[69] Id.
[70] Ecology's proposed WQS appropriately recognize that human health criteria, logically, should be aimed at protecting the health of those affected, namely those who consume fish. As I have discussed elsewhere, the choice of selecting a FCR from among studies of those who consume fish, as opposed to studies of fish-consumpers and non-consumers alike (i.e., per capita values), is a well supported public health approach. Catherine A. O'Neill, *Variable Justice: Environmental Standards, Contaminated Fish, and "Acceptable" Risk to Native Peoples*, 19 STANFORD ENVIRONMENTAL L. J. 3 (2000)[hereinafter, O'Neill, *Variable Justice*].
[71] U.S. Environmental Protection Agency, Human Health Ambient Water Quality Criteria and Fish Consumption Rates Frequently Asked Questions (Jan. 18, 2013), *available at* http://water.epa.gov/scitech/swguidance/standards/criteria/health/methodology/upload/hhfaqs.pdf.
[72] Letter from Daniel D. Opalski, Director, Office of Water and Watersheds, U.S. Environmental Protection Agency, Region X, to Rudy Peone, Chairman, Spokane Tribe of Indians (Dec. 19, 2013).
[73] U.S. Environmental Protection Agency, Analysis Supporting EPA's February 2, 2015 Decision to Approve, Disapprove, and Make No Decision On, Various Maine Water Quality Standards, Including Those Applied to Waters of Indian Lands in Maine, Attachment A 2-3 (Feb. 2, 2015). Although a complete analysis of the similarities and differences in the legal bases for tribes' fishing rights affected by Maine's WQS and those affected by Washington's WQS is beyond the scope of these comments, the comparison is sufficiently apt to support an analogy between the unsuppressed consumption rates and fishing practices guaranteed to the Maine tribes through various

fish consumption at or close to its nadir – a point vividly illustrated by the Nez Perce Tribe's presentation on suppression during a recent Idaho Department of Environmental Quality (IDEQ) public meeting[74] – an FCR selected from the 90th or even the 99th percentile of contemporary tribal consumption surveys will be considerably lower than fish intake consonant with a more robust fish resource and full exercise of tribal fishing rights. Ecology's selection of an "average" value from among an amalgam of "highly exposed subpopulations" is even further from this mark.[75]

Additionally, as sketched above, and elaborated below, when the FCR of 175 g/day is coupled with the risk level of 1 x 10^{-5} for carcinogens, the effective FCR for dozens of chemicals is 17.5 g/day.[76] This is as good as it gets for carcinogenic contaminants: that is, these are the chemicals on which Ecology's rule makes the most progress toward enhancing water quality and ensuring fishable waters, and this progress only enables people safely to eat a fish meal about twice a month. Moreover, for those chemicals for which Ecology proposes no change from the NTR, the effective FCR is is 6.5 g/day. *This leaves people no better off now than they were when the data that support this outdated rate were gathered, four decades ago: they can safely eat just one fish meal a month.* For a signficiant number of contamimants – including those contaminants most responsible for the current inedible state of the fish in Washington waters – Ecology's proposed WQS permit the the waters to be polluted and the fish to be contaminated to point that they are "inedible or edible only in small quanities." Ecology's proposed WQS therby render meaningless the tribes' rights to fish, in contravention of the relevant treaties and laws.

(a) Historical Fish Consumption Practices and Rates

The tribes of the Pacific Northwest are fishing peoples. Historically, fish were vital to tribal life – a central feature of the seasonal rounds by which food was procured for ceremonial, subsistence, and commercial purposes. This fact is self-evident to tribal people. It has also been recognized by U.S. courts, which have observed that, at treaty times, "fish was the great staple of [Indians'] diet and livelihood,"[77] and thus fishing rights "were not much less necessary to the existence of the Indians than the atmosphere they breathed."[78]

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statutory and other legal recognitions and the unsuppressed consumption rates and fishing practices guaranteed to the Washingotn tribes through various treaties and other legal recognitions.

[74] Nez Perce Tribe, The Nez Perce Tribe and its Fisheries: "Our Fate and the Fate of the Fish are Linked," Powerpoint Presentation (Oct. 10, 2014) *available at* http://www.deq.idaho.gov/media/1118105/58-0102-1201-nez-perce-tribe-fisheries-presentation-100214.pdf.

[75] It is, indeed, difficult to ascertain precisely which groups are included in Ecology's "average" value of 175 g/day. It appears, for example, that Ecology did not include data from the 2012 Lummi study, set forth in the text of these comments below, in calculating this average – although Ecolgoy's confusing citations of its own technical support documents in its Overview of Key Decisions make this determination difficult to verify.

[76] At the current "acceptable" cancer risk rate of 1 x 10^{-6}.

[77] Washington v. Washington State Commercial Passenger Fishing Vessel Ass'n, 443 U.S. 658, 665 n.6 (1979) (citations and internal quotation marks omitted).

[78] United States v. Winans, 198 U.S. 371, 381 (1905).

There are ample data documenting the role of fish as a dietary mainstay for Indian people prior to contact and at the time of the treaties. There were differences, of course, in the species relied upon and the quantities consumed, from group to group and from year to year. Nonetheless, there is no doubt that fish comprised a staple source of calories, protein, and other nutrients for tribal people throughout the Pacific Northwest. These data, moreover, drawn from multiple lines of scientific evidence, have supported quantified estimates of historical consumption rates. For example, Deward Walker has estimated pre-dam fish consumption rates for the Columbia River tribes (Umatilla, Yakama, and Nez Perce), based on a review of the ethnohistorical and scientific literature. Walker has quantified total fish consumption for these peoples at 1000 g/day.[79] Earlier estimates, for example, by Gordon Hewes, produced figures of similar magnitude. Hewes estimated salmon consumption rates for the Cayuse at 365 pounds/year (453.6 g/day) and for the Umatilla and Walla Walla at 500 pounds/year (621.4 g/day).[80] Hewes' estimates for the Puget Sound tribes were similar. For example, he estimated salmon consumption rates for the Lummi and Nooksack tribes at 600 pounds/year (745.6 g/day), for the Clallam at 365 pounds/year (453.6 g/day) and for the Puyallup, Nisqually, and various other tribes at 350 pounds/year (435 g/day).[81] These and other data have been enlisted in peer-reviewed methodologies for quantitative exposure estimates for various Pacific Northwest tribes. For example, Barbara Harper, et al. concluded that "[h]istorically, the Spokane Tribe consumed roughly 1,000 to 1,500 grams of salmon and other fish per day."[82]

The substantial degree to which fish were relied upon by the tribes at treaty time was emphasized in evidence before the court in *U.S. v. Washington.* Among the findings of fact in that case, Judge Boldt cited the following figure: "Salmon, however, both fresh and cured, was a staple in the food supply of these Indians. It was annually consumed by these Indians in the neighborhood of 500 pounds per capita [i.e., 621.4 g/day]."[83]

(b) Contemporary, "Suppressed" Fish Consumption Rates

In contrast to estimates of historical fish consumption rates, recent surveys of tribal populations produce estimates of contemporary fish consumption rates. It is important to recognize that these snapshots of contemporary practices are distorted due to suppression.

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[79] A. SCHOLTZ, ET AL., COMPILATION OF INFORMATION ON SALMON AND STEELHEAD TOTAL RUN SIZE, CATCH, AND HYDROPOWER-RELATED LOSSES IN THE UPPER COLUMBIA RIVER BASIN, ABOVE GRAND COULEE DAM, Fisheries Technical Report No. 2, Upper Columbia United Tribes Fisheries Center, Eastern Washington University (1985).

[80] Gordon W. Hewes, *Indian Fisheries Productivity in Pre-Contact Times in the Pacific Salmon Area*, 7 NORTHWEST ANTHROPOLOGICAL RESEARCH NOTES 133, 136 (1973).

[81] *Id.*

[82] Harper, et al., *The Spokane Tribe's Multipathway Subsistence Exposure Scenario and Screening Level RME*, 22 Risk Analysis 513, 518 (2002). Harper, et al. improved upon the earlier estimates, among other things by accounting for the greater caloric requirements of an active, subsistence way of life. Thus, for example, while Hewes' estimates assumed a 2000 kcal/day energy requirement, Harper, et al. used a 2500 kcal/day figure, "based on a moderately active outdoor lifestyle and renowned athletic prowess" of Spokane tribal members. *Id.* at 517.

[83] United States v. Washington, 384 F. Supp. 312, 380 (W.D. Wash. 1974) (discussing Yakama consumption).

> "A 'suppression effect' occurs when a fish consumption rate (FCR) for a given population, group, or tribe reflects a current level of consumption that is artificially diminished from an appropriate baseline level of consumption for that population, group, or tribe. The more robust baseline level of consumption is suppressed, inasmuch as it does not get captured by the FCR."[84]

Note that suppression effects may infect attempts to assess consumption practices for various subpopulations or for the general population as well. For example, consumption surveys of women of childbearing age may reflect a current level of consumption that is diminished from levels that women in this group *would* consume, but for the existence of fish consumption advisories due to mercury contamination.[85] However, when tribes are affected, there are two important differences. First, the "appropriate baseline level of consumption" is clear for tribes, whereas it may be subject to debate for other groups. Only tribes have legally protected rights to a certain historical, original, or heritage baseline level of consumption. Second, the causes of suppression have exerted pressure on tribes for a longer period, and in more numerous ways, than on the general population. Whereas those in the general population may have begun to reduce their intake of fish in response to consumption advisories once these became more prevalent in the 1970s and thereafter, tribal members have been excluded from their fisheries, and harassed and imprisoned for exercising their fishing rights, from shortly after the ink on the treaties dried. Indeed, the forces of suppression, often perpetrated or permitted by federal and state governments, have included inundation of fishing places; depletion and contamination of the fishery resource; and years of prosecution, intimidation, and gear confiscation.[86]

As a consequence, contemporary surveys of tribal populations produce fish consumption rates that are artificially low compared to the appropriate, treaty-guaranteed baseline. The bias introduced by suppression effects, together with tribes' treaty-secured right to catch and consume fish at more robust historical rates, means that it is inaccurate to refer to contemporary figures as "tribal fish consumption rates." Indeed, the snapshot of contemporary consumption practices provided by recent surveys arguably represents a nadir – a low point from which tribes are working to recover as environments are restored and traditional practices reinvigorated.

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[84] NEJAC, *supra* note 61, at 43-45.

[85] Emily Oken, et al., *Decline in Fish Consumption Among Pregnant Women After a National Mercury Advisory*, 102 OBSTETRICS & GYNECOLOGY 346 (2003) (finding that pregnant women with access to obstetric care decreased fish consumption in response to publication of federal advisory warning of mercury contamination in certain species of fish).

[86] Tribal leaders have long observed the myriad causes of suppression operating to diminish tribal fishing and fish consumption. These are usefully summarized in Jamie Donatuto & Barbara L. Harper, *Issues in Evaluating Fish Consumption Rates for Native American Tribes*, 28 Risk Analysis 1497, 1500-01 (2008); *accord* WILLIAM H. RODGERS, JR., ENVIRONMENTAL LAW IN INDIAN COUNTRY 25 (2005) ("In the latter half of the nineteenth century, the fishing grounds were quickly enclosed. … In hundreds of confrontations, the Indians met owners who hadn't heard of the fishing 'servitude,' or who didn't believe in it; who knew for sure that access was not here but over there; who would let the gates down, but only for a small and reasonable fee; who would insist the fishery was a private one; …The Indians would be introduced to fences and road closures and padlocks and abutments and signs and guard dogs and firearms that were among the pleasures of all fee-simple property owners….Litigation would begin in 1884, and in a fundamental sense, it would never end. Treaty fishing lawsuits continue today into the 21st century.").

Rather, contemporary surveys of tribal populations are properly viewed alongside other surveys used to document contemporary fish consumption by the general population and relied upon by government agencies in the environmental regulatory context. These studies of tribal populations are generally conducted in accordance with the conventions of western science, and have been found to be technically defensible by federal and state governments. These studies have been conducted under governmental or inter-governmental auspices, and subjected to internal and external peer review. As such, these studies follow the practice of studies of the national population that have been relied upon by EPA to set its default fish consumption rate for the general population.[87]

In fact, to the extent that contemporary surveys of tribal populations have erred on the side of following conventions developed for general population surveys, they may underestimate even contemporary tribal consumption rates.[88] Thus, for example, the study of the Tulalip and Squaxin Island tribes and the study of the Columbia River tribes both hewed to the statistical convention that "outliers" – in this case, representing high-end fish consumption rates – are treated as likely the result of error (for example, in recording a respondent's fish consumption rate) rather than a true value. As such, it is a frequent practice for such outlier data points to be omitted from the dataset that then forms the basis of population values (e.g., the mean, or the 90th percentile) or to be "recoded" to coincide with a number closer to the bulk of the population, such as a number equal to three standard deviations from the mean.[89] But, as has been recognized, some tribal members – particularly those from traditional and fishing families – in fact consume very large quantities of fish, even in contemporary times. Tribal researchers at Umatilla, for example, identified a subset of interviewees (35 of 75) who are "traditional fishers" and who confirmed eating fish "two to three times a day in various forms."[90] The average consumption rate for this group was found to be 540 g/day. Notably, the relatively high fish consumption rates indicated by this subset of tribal members reflect *actual* contemporary consumption, not – as assumed for so-called outliers – error. When outliers are treated automatically as errors, according to statistical convention, the effect is to depress the various percentile values and, importantly, to fail to reflect the consumption practices of those tribal members whose practices today are most consonant with practices guaranteed to the tribes by treaty and to which tribes, in an exercise of cultural self-determination, seek to return. A host of other conventions, detailed by tribal researchers, similarly operate so that, together, these surveys likely underestimate even contemporary tribal fish consumption rates.[91]

Additionally, depending on the time period that is covered by a survey, the recorded rates may undercount contemporary intake if the period is one of relatively low harvest. This has been shown to

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[87] *See* EPA, AWQC METHODOLOGY, *supra* note 57.
[88] *See, e.g.*, Donatuto & Harper, *supra* note 86.
[89] *But cf.* U.S. ENVIRONMENTAL PROTECTION AGENCY, GUIDELINES FOR EXPOSURE ASSESSMENT 65 (1992), *available at* http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=15263 (last visited Apr. 20, 2013) [hereinafter EPA, EXPOSURE ASSESSMENT GUIDELINES] (stating, in contrast to this frequent practice, that "[o]utliers should not be eliminated from data analysis procedures unless it can be shown that an error has occurred in the sample collection or analysis phases of the study. Very often outliers provide much information to the study evaluators.").
[90] Stuart G. Harris & Barbara L. Harper, *A Native American Exposure Scenario*, 17 RISK ANALYSIS 789 (1997).
[91] *See, e.g.,* Donatuto & Harper, *supra* note 86.

be the case, for example, for the years in the early 1990s canvassed by the CRITFC survey, during which the tribal harvest was significantly reduced from more recent years, coinciding with severe reductions in fish availability in the Columbia River Basin, for example, 80% for summer Chinook and 94% for fall Chinook.[92] With this concern in mind, the Lummi Nation opted in its recent survey to document consumption practices and rates for the year 1985, a period in contemporary time in which the harvest was more robust than at present, although still suppressed relative to the time of the treaties.[93] While contemporary rates are not representative of treaty-guaranteed practices, surveys of contemporary tribal consumption document rates of fish intake that are nonetheless markedly greater than for the general population. According to the national survey on which the EPA bases its current default recommendations, the mean fish consumption rate is 7.5 g/day; the 50th percentile rate is 0 g/day; the 90th percentile rate is 17.5 g/day; and the 99th percentile rate is 142.4 g/day.[94] As Table 1 shows, contemporary tribal intake is greater at every point of comparison.[95]

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[92] Letter from Babtist Paul Lumley, Executive Director, CRITFC, to Ted Sturdevant, Director, Washington State Department of Ecology 3 (Mar. 19, 2012) (pointing to "the fact that more than 61% of the survey respondents reported that their fish consumption was suppressed by poor fish harvests during the early 1990's" and observing that "[f]ish counts at Lower Granite Dam, reported by the US Army Corps of Engineers (USACE) confirm that spring and summer Chinook availability in the Columbia Basin at the time of the CRITFC survey (1991-1992) was close to 80% lower … and fall Chinook was 94% lower than [in 2002]. Fish availability is similar today compared to 2002 and continues to improve for fall Chinook").

[93] LUMMI NATION SEAFOOD CONSUMPTION STUDY, LUMMI NATURAL RESOURCES DEPARTMENT, LUMMI NATION SEAFOOD CONSUMPTION STUDY 1 (2012) [HEREINAFTER LUMMI NATION SEAFOOD CONSUMPTION STUDY].

[94] EPA, AWQC METHODOLOGY, *supra* note 57, at 4-24 to 4-28. Note that these figures do not represent total fish intake, but rather intake of "freshwater" and "estuarine" species only ("marine" species are excluded; salmon are deemed to be "marine," so excluded). Note further that these figures represent per capita rates, i.e., rates for fish consumers and non-consumers alike, according to the 1994-96 Continuing Survey of Food Intake by Individuals. *Id.* Thus, while total fish intake by the general U.S. population, and by fish consumers within that population, is indeed greater than these figures suggest, these numbers are used here because these are the values that EPA enlists for regulatory purposes.

[95] Table 1 reflects the summary statistics reported by four recent surveys of contemporary tribal fish consumption. *See*, COLUMBIA RIVER INTER-TRIBAL FISH COMMISSION, A FISH CONSUMPTION SURVEY OF THE UMATILLA, NEZ PERCE, YAKAMA, AND WARM SPRINGS TRIBES OF THE COLUMBIA RIVER BASIN (1994) [hereinafter CRITFC, Fish Consumption Survey]; TOY, ET AL, A FISH CONSUMPTION SURVEY OF THE TULALIP AND SQUAXIN ISLAND TRIBES OF THE PUGET SOUND REGION (1996) [hereinafter Tulalip and Squaxin Island Fish Consumption Survey]; SUQUAMISH TRIBE, FISH CONSUMPTION SURVEY OF THE SUQUAMISH TRIBE OF THE PORT MADISON INDIAN RESERVATIONS, PUGET SOUND REGION (2000) [hereinafter Suquamish Tribe, Fish Consumption Survey]; and LUMMI NATION SEAFOOD CONSUMPTION STUDY, *supra* note 93. These statistics in some cases represent conversions from data originally expressed in grams of fish intake/kilogram of bodyweight/day; such conversions necessarily involve a number of judgments and assumptions. As such, this Table enlists the statistics as they have been reported in a number of recent governmental publications, namely, by the Lummi Nation, the Oregon Department of Environmental Quality, and the Washington State Department of Ecology. LUMMI NATION SEAFOOD CONSUMPTION STUDY *supra* note 86, at 57; OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY, HUMAN HEALTH FOCUS GROUP REPORT, OREGON FISH CONSUMPTION RATE PROJECT 28 (June, 2008) [hereinafter ODEQ, HHFG REPORT]; and WASHINGTON DEPARTMENT OF ECOLOGY, FISH CONSUMPTION RATES TECHNICAL SUPPORT DOCUMENT 6 (Sept. 2011) *available at* https://fortress.wa.gov/ecy/publications/summarypages/1109050.html (last visited Apr. 20, 2013) [hereinafter ECOLOGY, FCR TSD]. The exceptions are the maximum values, which were not reported in these publications, but the Suquamish value is available at SUQUAMISH TRIBE, FISH CONSUMPTION SURVEY, at 11, 25, 71 (my calculations, based on maximum individual rate, in g/kg/day; mean bodyweights for men and women, and percentage of male and female respondents); the CRTIFC value is available at CRTIFC, FISH CONSUMPTION SURVEY, at 29.

Table 1

Surveyed Population	Fish Consumption at Descriptive Percentiles (grams/day)					
	Mean	50th	90th	95th	99th	Maximum
CRITFC Tribes	63	40	113	176	389	972
Squaxin Island Tribe	73	43	193	247	--	--
Tulalip Tribe	72	45	186	244	312	--
Suquamish Tribe	214	132	489	796	--	1453
Lummi Nation	383	314	800	918	--	--

(c) Past and Future

Fish and all of the lifeways associated with the fish are essential to tribal health and well-being, today as in the past. Fish consumption is thus an embedded practice. Fish are vital to tribal people for the nutrients they provide, of course, but fish consumption is also imbued with social meaning. Every facet of managing, harvesting, distributing, and honoring the fish is woven into the fabric of tribal life. These practices and the knowledge they beget form a central part of the inheritance of each succeeding generation. For this reason, the salmon have been described as a "cultural keystone species" for the Indian peoples of the Pacific Northwest.[96] Fish are important for each individual tribal member, and for the tribe as a whole – necessary for health and well-being broadly understood to include not only physiological, but also cultural and spiritual dimensions.[97] As depicted in artwork by Swinomish carver and painter Kevin Paul that graced a recent study, fish are "food for the body, food for the soul."[98]

For the tribes, the past informs the future. Historical, original, or "heritage" rates have ongoing relevance for the fishing tribes. This is so given that the treaty guarantees are in perpetuity, given that the tribes in fact seek to resume fish consumption practices and rates consonant with the treaty guarantees, and given that the tribes envision a future in which ecosystems that support the fish are restored. Thus, for example, the Umatilla tribe looked to "original consumption rates along the Columbia River and its major tributaries" in developing a fish consumption rate for environmental

[96] Ann Garibaldi & Nancy Turner, *Cultural Keystone Species: Implications for Ecological Conservation and Restoration* 9 ECOLOGY AND SOCIETY 1 (2004); *accord* Donatuto & Harper, *supra* note 86, at 1500 (explaining that, for the tribes of the Pacific Northwest, "fish represent a cultural keystone species—species that have significant meaning and identity in tribal values and practices and as such are used in family and place names, educational stories, and ceremonies. Impacts to cultural keystone species degrade overall cultural morale. Therefore, degradation of traditional foods, for example, via contamination, directly impacts the physical health of those consuming the food and is regarded, equally, as an attack on beliefs and values through the 'acknowledged relationship of the people with the land, air, water, and all forms of life found within the natural system.'") (quoting SUQUAMISH TRIBE, FISH CONSUMPTION SURVEY OF THE SUQUAMISH INDIAN TRIBE OF THE PORT MADISON INDIAN RESERVATION, PUGET SOUND REGION (2000)).

[97] *See, e.g.,* Jamie Donatuto et al., *Poisoning the Body to Nourish the Soul: Prioritizing Health Risks and Impacts in a Native American Community.* 13 HEALTH, RISK, AND SOCIETY 103 (2011).

[98] *See* Donatuto & Harper, *supra* note 14, at fig 1., "Swinomish Seafood Spiral"); magnet with artwork and text distributed by Swinomish Indian Tribal Community (on file with author).

regulatory purposes "because that is the rate that the Treaty of 1855 is designed to protect and which is upheld by case law. It also reflects tribal fish restoration goals and healthy lifestyle goals."[99] Relatedly, recent surveys of Swinomish tribal members showed that they sought to reinvigorate more robust fish consumption practices and to increase their fish intake.[100]

To this end, tribal staff and their colleagues in academia and government have developed methods for creating tribal exposure scenarios, for use in environmental standard setting and other contexts. As Barbara Harper, Anna Harding, Stuart Harris and Patricia Berger explain, "[w]hile contemporary tribal resource use is often higher than in non-native communities, resource uses would be even higher under baseline conditions, (i.e., in the absence of resource degradation and contamination)."[101] Therefore, the method set forth is for tribal-specific exposure scenarios that are "not necessarily intended to capture contemporary resource patterns, but to describe how the resources were used before contamination or degradation, and will be used once again in fully traditional ways after cleanup and restoration."[102]

It is perhaps unsurprisingy, then, that Ecology's out-of-context assertion that "several tribes" have "endorsed" the 175 g/day FCR is false.[103]

2. All Fish

Ecology's proposed WQS appropriately enlist an FCR that includes "all fish and shellfish," and that does not exclude particular species, such as salmon, from comprising the rate. This is an appropriate decision on the science and on the law.

As to the science, data show that salmon are contaminated at levels that pose a threat to human health and several fish consumption advisories include salmon among the species for which intake should be curtailed or avoided altogether. However, given salmon's anadromous habit, and given that a portion of many salmon life histories is spent outside of the waters over which Washington asserts regulatory jurisdiction, (i.e., in the Pacific ocean beyond the three-mile coastal zone), it has been argued that salmon ought to be excluded from the tally of fish intake, because their contaminant body burden comes from "elsewhere." However, as elaborated below, the data for Puget Sound reveal a south-

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[99] STUART G. HARRIS & BARBARA L. HARPER, CONFEDERATED TRIBES OF THE UMATILLA INDIAN RESERVATION, EXPOSURE SCENARIO FOR CTUIR TRADITIONAL SUBSISTENCE LIFEWAYS app. 3 (2004).

[100] JAMIE DONATUTO, WHEN SEAFOOD FEEDS THE SPIRIT YET POISONS THE BODY: DEVELOPING HEALTH INDICATORS FOR RISK ASSESSMENT IN A NATIVE AMERICAN FISHING COMMUNITY, 85-89 (Ph.D. dissertation, University of British Columbia 2008) (summarizing survey of Swinomish Indian Tribal Community members, finding multiple causes of suppressed consumption, and finding that 73% of respondents stated that they would like to eat more fish than they do now). *Accord* Donatuto & Harper, *supra* note 14, at 150 (using the term "heritage" rates and describing the relevance of past consumption practices for future consumption practices for the fishing tribes).

[101] Barbara Harper, et al., *Subsistence Exposure Scenarios for Tribal Applications*, 18 HUMAN & ECOLOGICAL RISK ASSESSMENT 810, 811 (2012) [hereinafter, Harper, et al., *Subsistence Exposure Scenarios*].

[102] *Id.* at 810.

[103] Northwest Indian Fisheries Commission, Comments to Washington's Proposed WQS (to be submitted to the rulemaking docket, March 23, 2015).

north gradient such that South Sound salmon, which must run a greater gauntlet of contaminated environments in its outward and homeward migrations than its Georgia Strait and Pacific coastal counterparts, have significantly greater concentrations of bioaccumulative toxicants in their tissue. Other data from around the region show the presence of contaminants in the salmon at various life stages, including in outmigrating juveniles still in freshwater environments.[104] Moreover, there is considerable variability, even within species, in salmon's behavior. Chinook salmon originating in the rivers of the Puget Sound watershed, for example, typically migrate out to the Pacific and forage along the coastal continental shelf; however, a substantial portion of these salmon display "resident" behavior, remaining in the Puget Sound during the marine phase of their lives. Further, "the waters of Washington" include the Puget Sound, portions of the Straits of Juan de Fuca and the Columbia River, and Pacific coastal waters to a distance of three miles, and contaminants released or re-suspended at one location may be transported to another. It is likely, therefore, that some salmon get all of their contaminants from sources for which Washington has regulatory responsibility, and some salmon get only some of their contaminants from sources for which Washington has regulatory responsibility.

Recent studies by Sandra O'Neill and Jim West[105] and by Donna Cullon, et al.[106] have recognized that anthropogenic influences had contributed to contamination of the Puget Sound watershed and set out to determine the source of contaminants in Pacific salmon, as between their freshwater and saltwater environments. The O'Neill & West study looked at PCBs in Chinook salmon; the Cullon, et al., study looked at a host of persistent organic pollutants (POPs), including PCBs, dioxins and furans, and DDT. Both studies sampled out-migrating juveniles and returning adult salmon at several locations. The O'Neill & West study sampled five "in-river" (i.e., freshwater or estuarine) locations ranging from the Deschutes River in the south to the Nooksack River in the north, as well as two marine locations in the south and central Puget Sound. The Cullon, et al., study sampled two in-river locations, the Deschutes and the Duwamish.

O'Neill & West found, first, that the average PCB concentration in returning adult Puget Sound Chinook was 3 to 5 times greater than average concentrations reported in adult Chinook at six other West Coast locations outside Puget Sound. O'Neill & West concluded that "the elevated PCB levels observed for Puget Sound Chinook salmon relative to coastal populations were probably associated with differences in PCB contamination in the environments they inhabit or with differences in diet." O'Neill & West also

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[104] *See, e.g.,* Lyndal L. Johnson, et al, *Contaminant Exposure in Outmigrant Juvenile Salmon from Pacific Northwest Estuaries of the United States*, 124 ENVIRONMENTAL MONITORING & ASSESSMENT 124 (2007); Catherine A. Sloan, et al., *Polybrominated Diphenyl Ethers In Outmigrant Juvenile Chinook Salmon From The Lower Columbia River And Estuary And Puget Sound, WA*, 58 ARCHIVES OF ENVIRONMENTAL CONTAMINATION & TOXICOLOGY 403 (2010); Gladys K. Yanagida, et al., *Polycyclic Aromatic Hyrdocarbons and Risk to Threatened and Endangered Chinook Salmon in the Lower Columbia River Estuary*, 62 ARCHIVES OF ENVIRONMENTAL CONTAMINATION & TOXICOLOGY 282 (2012).

[105] Sandra M. O'Neill & James E. West, *Marine Distribution, Life History Traits, and the Accumulation of Polychlorinated Biphenyls in Chinook Salmon from Puget Sound, Washington*, 138 TRANSACTIONS OF THE AMERICAN FISHERIES SOCIETY 616 (2009).

[106] Donna L. Cullon, et al., *Persistent Organic Pollutants in Chinook Salmon (Oncorhynchus tshawytscha): Implications for Resident Killer Whales of British Columbia and Adjacent Waters*, 28 ENVIRONMENTAL TOXICOLOGY & CHEMISTRY 148 (2009).

concluded that, although salmon uptake some PCBs from freshwater environments, the elevated concentrations of PCBs found in adult Chinook "were accumulated during residence in marine habitats rather than riverine habitats in the region." They reported that "adult Chinook salmon that had migrated as subyearlings from the Duwamish River, the most highly PCB-contaminated river draining into Puget Sound, accumulated the vast majority (>96%) of PCBs during their marine life history phase, whereas there was little PCB contribution from freshwater." Although Cullon, et al., sampled a small number of fish at fewer locations, their conclusions were similar.[107] Both O'Neill & West's discussion and their study design make clear that their findings respecting salamon's "marine life history phase" include the marine waters of Puget Sound, the Strait of Juan de Fuca, and other marines waters over which Washington asserts regulatory responsibility, in which returning adult salmon will have spend considerable time.

It should also be noted that, in many cases, the contaminants that are the subject of human health criteria are also contaminants of concern for the health of the salmon resource itself. Studies show that PCBs, PAHs, and other contaminants that are harmful to human health are also detrimental to the growth and reproductive success of the salmon.[108] One particularly troubling example has been documented by recent research into pre-spawn mortality among adult coho returning to urban streams, which the weight of the evidence suggests is attributable to toxic contaminants in urban stormwater runoff.[109] With adult mortality rates ranging from 60-100%, and inspection of the female carcesses showing 90% egg retention, the long-term impact on salmon reproduction is of grave concern. To take another example, Juvenile Chinook salmon from the South Puget Sound have been shown to harbor PCBs in concentrations from 2,500 to 10,000 ng/g lipid, well above the 2,400 ng/g lipid threshold for adverse effects such as depressed growth.[110] Although Ecology's proposed WQS address adverse impacts to human health, the fact that many of the chemicals that are responsible for contamination of

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[107] *Id.* at 154 ("By comparing body burdens of POPs in returning adult Chinook to out-migrating smolts and juveniles, we estimate that 97 to 99% of the body burden of PCBs, PCDDs, PCDFs, DDT, and HCH in all stocks originated during their time at sea … Our estimation that the majority of POPs in Chinook salmon can be ascribed to their growth stage in coastal and marine waters is consistent with other studies. A study of Chinook from Washington ascribed 99% of PCBs in returning Duwamish River adults to the waters of Puget Sound and the Pacific Ocean.").

[108] See, e.g., Lyndal L. Johnson, et al., *The Effects of Polycyclic Aromatic Hydrocarbons in Fish in Puget Sound, Washington*, in The Toxicology of Fishes 877 (R.T. DiGiulio & D.E. Hinton, eds., 2008)(concluding "that even short-term exposures to PAHs may be associated with reduced growth and altered immune function in anadromous fish species that utilize contaminated estuaries in Puget Sound"); Eugene Foster, et al., *Toxic Conaminants in the Urban Aquatic Environment*, in Wild Salmonids in the Urbanizing Pacific Northwest 123 (J. Allen Yeakley, et al., eds., 2014)(discussing exposures and adverse impacts of PCBs, PAHs, dioxins and furans, heavy metals, PBDEs, chlorinated and other pesticides, and other toxic chemicals)

[109] See, e.g., Nathanial L. Scholz, et al., *Recurrent Die-Offs of Adult Coho Salmon Returning to Spawn in Puget Sound Lowland Urban Streams*, 6 PLoS One e28013 1, 7 (2011)(observing that "spawner mortality syndrome appears to be specific to coho in urban drainages. We observed no symptoms and less than 1% pre-spawn mortality among wild coho returning to spawn in the non-urban reference stream").

[110] James E. West, South Sound Science Symposium Presentation, *supra* note 105 (citing James P. Meador, et al., *Use of Tissue and Sediment-Based Threshold Concentrations of Polychlorinated Biphenyls (PCBs) to Protect Juvenile Salmonids Listed Under the US Endangered Species Act*, 12 AQUATIC CONSERVATION: MARINE AND FRESHWATER ECOSYSTEMS 493 (2002) for source of threshold level of 2,400 ng/g lipid).

this fish resource also contribute to depletion of the fish resource is relevant to the bigger picture of tribes' legally protected fishing rights.[111]

As to the law, the treaties reserved a means for ensuring tribes' survival and well-being in a changing world; they presumed resilience, not stasis. To this end, courts have held that tribal members are not restricted in their harvest to a particular mix of species, whether a mix taken in the past or in contemporary times. Rather, the right to take fish secured by the treaties is a right "without any species limitation."[112] As the court in the Rafeedie decision explained, "[at treaty] time,... the Tribes had the absolute right to harvest any species they desired, consistent with their aboriginal title.... The fact that some species were not taken before treaty time - either because they were inaccessible or the Indians chose not to take them - does not mean that their *right* to take such fish was limited."[113] Subsequent courts have continued to reject attempts to cabin tribes' fishing rights by excluding certain species argued not to have been harvested historically.[114] Tribes' rights cannot be thus pinned down: these rights encompass all species of fish. So, while a survey of contemporary tribal fish consumption practices may document a particular proportion of species consumed (e.g., of a hypothetical 100 g/day of locally-harvested fish, 60 g/day salmon and 40 g/day other finfish and shellfish), tribal members are not in any sense bound to consume this mix of species in the future. Rather, to use the terminology of EPA Region X, tribal members are free to undertake "resource switching."[115] Yet industry has called for eliminating salmon from the FCR, in amounts calculated from contemporary consumption patterns. This approach is at odds with tribes' rights to determine the mix of species that will comprise their dietary intake from their "usual and accustomed" areas in the future. Put another way, tribes' rights should be protected to the full extent of their total fish intake, at heritage rates.

Ecology's determination that it is not justified in excluding salmon from its calculation of the FCR is supportable on scientific and legal grounds. Ecology ought not alter this determination in the final rule.

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[111] For example, although Ecology's rationale is not completely clear, to the extent that it has acknowledged the issue of suppression, it has tried to cabin the causes of suppression to those attributable to contamination of the fish resource, to the exclusion of those attributable to depletion of the fish resource. See, e.g., Washington Dept. of Ecology, Comments on EPA's Proposed Updates National Recommended Water Quality Criteria (Aug. 6, 2014), available at http://www.ecy.wa.gov/programs/wq/swqs/EPAcommentsMG.pdf. The two, however, cannot be so neatly separated where the same chemicals are the source of both. EPA's mention of the former but not that latter as a cause of suppression in its disapproval of Maine's proposed WQS must similarly be understood in this light.

[112] United States v. Washington, 873 F. Supp. 1422, 1430 (W.D. Wash. 1994) (emphasis in original).

[113] *Id*. (emphasis in original).

[114] *See, e.g.,* Midwater Trawlers Co-operative v. Department of Commerce, 282 F.3d 710 (9th Cir. 2002) (rejecting challenge to allocation of Pacific whiting fish to coastal tribes on grounds that they had not fished for whiting at the time of the treaties, stating "the term "fish" as used in the Stevens Treaties encompassed all species of fish, without exclusion and without requiring specific proof").

[115] U.S. ENVIRONMENTAL PROTECTION AGENCY REGION X, FRAMEWORK FOR SELECTING AND USING TRIBAL FISH AND SHELLFISH CONSUMPTION RATES FOR RISK-BASED DECISION MAKING AT CERCLA AND RCRA CLEANUP SITES FOR PUGET SOUND AND THE STRAIT OF GEORGIA 9 (Aug., 2007).

B. Cancer Risk Level

Ecology's proposed WQS would usher in a tenfold increase to the cancer risk level deemed "acceptable" for those eating fish from Washington waters. Ecology would move from a risk level, 1×10^{-6}, that has been taken to reflect the judgment of the people of Washington for decades to a risk level, 1×10^{-5}, that offers an order of magnitude less protection, without any support for doing so. Ecology frequently states that the choice of a cancer risk level is a matter of judgment – a "policy" or "risk management" call. Having stated as much, however, Ecology never offers support for the policy call it (or the Governor) has made. Thus, Ecology has simply re-stated the question at hand, together with a bald answer to this question. But it offers no explanation of the values at stake, nor an account of how the citizens of Washington grappled with the difficult ethical issues raised – nor any support at all apart from a vague reference to "input to Ecology on the risk level"[116] and the statement that the Governor's "direction included considerations of engineering, social, economic and political concerns."[117]

Ecology cites as authority EPA's AWQC Guidance, selectively citing EPA's mention of cancer risk levels of either 1×10^{-6} or 1×10^{-5}.[118] However, EPA's Guidance actually states that the range of acceptable risk levels, in EPA's view, is from 10^{-7} to 10^{-5} – with the caveat that risk levels at the less protective end of this range will be scrutinized for their impact on highly exposed subgroups and may be rendered unacceptable if they result in risks greater than 10^{-4} to members of such subgroups:

> With AWQC derived for carcinogens based on a linear low-dose extrapolation, the Agency will publish recommended criteria values at a 10^{-6} risk level. States and authorized Tribes can always choose a more stringent risk level, such as 10^{-7}. EPA also believes that criteria based on a 10^{-5} risk level are acceptable for the general population as long as States and authorized Tribes ensure that the risk to more highly exposed subgroups (sportfishers or subsistence fishers) does not exceed the 10^{-4} level.[119]

As such, Ecology begins by portraying a cancer risk level of $1x\ 10^{-6}$ as an upper limit, whereas EPA actually offers 10^{-6} as somewhere in the middle.

1. "Acceptible" Risk

As soon as we move away from zero risk for non-threshold toxicants such as carcinogens, there is potential for harm. How much risk (and of what sort, borne by whom) we are willing to tolerate requires a judgment of value. It is a judgment that involves nothing less than deciding, to paraphrase

[116] Ecology, Overview of Key Decisions, *supra* note 54, at 4.
[117] Id. at 17.
[118] Id.
[119] EPA, AWQC Guidance, *supra* note 57, at 1-12.

Annette Baier, which harms to notice and on whom we will with good conscience impose "death [or] risk of death."[120]

At the individual and collective levels, this judgment of value is context specific. As a general matter, a risk's acceptability can turn on a host of factors respecting the nature of the risk (including, e.g., its familiarity, controllability, etc.); whether the risk is sought out or undertaken voluntarily (please see discussion below); what is at stake/the seriousness of the harm (including, e.g., death, irreversible neurological impairment, cancer); whether the risk is equitably distributed (including, e.g., whether those who bear the risk also benefit from the risk-producing activity); whether subpopulations of particular concern will bear the risk (including, e.g., children); and whether the risk attends the exercise of practices that are important or to which people have rights.[121]

Thus, risks are not fungible (except in the actuarial sense). Judgments of "acceptability" made in one context (e.g., the occupational context) can't simply be transferred to another context (e.g., the environmental context). Specifically, their import depends on an inquiry into the similarities in and differences between these two contexts (e.g., risks on the job are undertaken by adults as part of an consensual contractual arrangement for compensation; whereas risks from environmental sources are imposed on all humans whose ordinary practices – e.g., breathing, eating, drinking – leave them exposed to contaminants) and, importantly, why these similarities/differences ought to matter. Consent, in particular, is understood to be among the relevant considerations to evaluations of a risk's acceptability.[122]

Ecology also fails to grapple in an honest fashion with another aspect of risk that is recognized in the risk literature to be important to a risk's acceptability: whether it is shared equally or whether it is borne disproportionately by a few. Such concerns for equity are particularly acute, moreover, if the "few" are members of an identifiable group that has historically been subjected to discrimination or colonization. Where, as here, members of the fishing tribes are among the most highly exposed and will thus disproportionately have to bear the risk, evaluations of risk raise issues of environmental justice.

Yet, public debate about risk is often couched in the abstract, in terms of "statistical lives," i.e., nameless, faceless probabilities. As Douglas MacLean observes, "[r]isk analysts have tended to focus only on the magnitude of the risk, however distributed. … If exactly one person will die each year, the

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[120] Annette Baier, *Poisoning the Wells,* in VALUES AT RISK 49 (Douglas MacLean, ed., 1986)("When is a public policy that entails death for some and risk of death for more a policy that offends our moral standards? … It is not merely a question of whose lives we should save by what measures with whose money, but whom, among those whose cooperation and whose taxes we use, we will with good conscience kill, cause to die, or let die, and by what measures or neglect.")

[121] See, e.g., Molly J. Walker Wilson, *Cultural Understandings of Risk and the Tyranny of the Experts*, 90 OREGON L. REV. 113 (2011); see generally, VALUES AT RISK (Douglas MacLean, ed., 1986).

[122] See, e.g., Douglas MacLean, *Risk and Consent: Philosophical Issues for Centralized Decisions*, in VALUES AT RISK 17 (Douglas MacLean, ed., 1986)(discussing why the concept of consent must play a crucial role in justifications for governments' decisions to impose risk). As will be discussed, risk in an occupational context is also governed by different statutory commands, namely, the Occupational Health and Safety Act.

1(10^{-6}) magnitude indicates our ignorance in advance about who it will be."[123] This theoretical ignorance allows the discussion about risk to proceed on the premise that everyone is equally likely to be among the unfortunate.

This requisite – that everyone is equally likely to have to bear the risk – is thought to be satisfied in one of two ways. First, everyone can be expected to experience roughly the same level of risk if their circumstances of exposure are roughly the same – that is, the physical, geographical, and other parameters that determine each individual's exposure don't vary that much from person to person. Alternatively, everyone can be thought to experience roughly the same *chance* of experiencing a relatively high or relatively low level of cancer risk if we don't know, in advance, on whom the greater risk will fall – it is a greater chance being taken by all of us, like a lottery.[124] But, as elaborated below, neither of these conditions holds true when we are talking about fish consumption.

As to the first, individuals' circumstances of exposure are emphatically *not* "roughly the same" where the exposure pathway involves fish consumption. In fact, fish intake is highly variable, with differences in people's contemporary intake spanning as many as three orders of magnitude. Some people eat no fish at all; others eat 1453 grams/day.[125] The 90th percentile intake rate for the general population is the source of the EPA's national default of 17.5 grams/day.[126] By contrast, the 90th percentile intake rate documented by recent surveys of the Suquamish and Lummi is 489 grams/day and 800 grams/day, respectively.[127] Note that these are contemporary, suppressed fish consumption rates (FCRs); if historical or "heritage" rates were considered the variability would be even more marked.

As to the second, we cannot pretend that everyone's chances of being subjected to a greater level of risk are roughly the same.[128] Here in the Pacific Northwest, we know *who* it is that depends on fish, *who* it is that is the most exposed. We know, then, *who* will be left to bear the risk if a state such as Idaho shifts to a less protective level: it will be tribal people. This is problematic as an ethical matter, and it changes the terms of the policy debate. We cannot pretend to be debating the appropriate risk level in the abstract, i.e., in terms of statistical lives. In the states of the Pacific Northwest, a determination that highly exposed subpopulations may be subjected to risk levels of 10^{-4} is effectively a determination that *tribal people* may be subjected to risk levels of 10^{-4}.

Previously, the state of Washington had deemed "acceptable" a risk level of 10^{-6}. This is the risk level that Washington found tolerable *when it assumed that everyone was more or less equally likely to be on the receiving end of the risk of cancer* – when it employed the national general population default rate

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[123] Douglas MacLean, *Social Values and the Distribution of Risk*, in VALUES AT RISK 75, 78-79 (Douglas MacLean, ed., 1986).

[124] See discussions in O'Neill, *Variable Justice*, *supra* note 70, at 73-75; and O'Neill, *Fishable Waters*, *supra* note 2, at 255-260 (2013).

[125] See O'Neill, *Fishable Waters*, *supra* note 2, at Table 1 (The 1453 grams/day figure is the value for intake by the maximum consumer surveyed in the Suquamish tribal study).

[126] EPA's most recent calculations assume a slightly greater fish consumption rate of 22 grams/day.

[127] O'Neill, *Fishable Waters*, *supra* note 2, at Table 1.

[128] Importantly, this fact also renders the use of probabilistic risk assessment techniques, such as Monte Carlo analysis, inappropriate for jurisdictions such as Idaho and Washington.

for fish intake in its calculations. Now, however, Ecology has been required to consider studies that demonstrate both that fish intake is highly variable and that tribal people are among the very highest consumers. Why, now, when EPA has instructed Washington to consider this data and to ensure that its standards are adequately protective of the most highly exposed (and when Washington has finally recognized that it must increase its FCR) has Ecology proposed to reconsider its longstanding cancer risk level? If Washington now deems acceptable a tenfold increase in its risk level, it cannot deny the implication of this shift: namely, that Washington believes it to be "okay" for risk-producers to transfer the costs of their processes to identifiable people, tribal people, in the form of increased cancer risk.

Ecology attempts to sidestep this question in its Overview of Key Decisions by pointing out that "unequal risk among groups and individuals will always exist because of differences in fish consumption habits."[129] First, this is so only at non-zero concentrations of non-threshold contaminants or at concentrations above thresholds deemed safe for threshold contaminants. Thus, it is actually possible, contrary to Ecology's assertion, to ensure that groups and individuals consuming fish at different rates are nonetheless equally protected. Second, Ecology once again does more by way of re-stating the issue at hand rather than working with the citizens of the state – particularly those affected – to grapple with it in an honest and transparent manner. If there will be unequal (and, now, greater) risks to those who consume fish, and if we can look around a room and identify precisely on whom the burden of this increased risk of cancer will fall, is this supportable, ethically and legally?

Indeed, not only has Ecology failed to grapple in a straightforward manner with this most weighty of questions, it appears to have gone to greath lengths to *hide* the fact that a increase in the cancer risk level is at issue in this rulemaking. If one reviews the entirety of the 31-slide Powerpoint Presentation used by Ecology to explain the import of its revisions to the WQS during its public hearings on the rule, one cannot find a single use of the word "cancer;" rather, Ecology uses the more opaque term "risk level." [130] Nor does Ecology's two-page "Focus Sheet," which is designed to alert the public to aspects of a pending rulemaking that might arouse interest or concern, anywhere contain mention of the proposed increase to the acceptable cancer risk rate.[131] Ecology was surely aware that its proposed increase to the cancer risk level is the aspect of the rule that is most likely to elicit public concern. How can it purport to be basing its change to the risk rate on "input to Ecology on the risk level"[132] when Ecology has not seen fit to alert the public that this issue was in play and input was thus called for?[133] As noted

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[129] Ecology, Overview of Key Decisions, *supra* note 54 at 18.

[130] Washington Dept. of Ecology, Revisions to Washington's Surface Water Quality Standards, Powerpoint Presentation for Public Workshops and Public Hearings (March, 2015), available at http://www.ecy.wa.gov/programs/wq/ruledev/wac173201A/PublicHearingDraftPresentationFINAL30215.pdf. Nor, it should be noted, is an equivalent term, such as "carcinogen" ever used.

[131] Washington Dept. of Ecology, Rule Proposal Notice – Water Quality Program, Washington Water Quality Standards (Jan. 2015), available at https://fortress.wa.gov/ecy/publications/SummaryPages/1410059.html.

[132] Ecology, Overview of Key Decisions, *supra* note 54 at 4.

[133] Nor can Ecology have relied on the fact that there was media coverage of the proposed rule. Given the structure of the proposed rule language, the new cancer risk level appears in a footnote to a table, where it is easily overlooked. While this placement may be logicial, it meant that media outlets in fact overlooked this vital aspect of the proposed rule.

above, EPA has stated that its scrutiny of a state's proposed WQS will increase as a state's target risk level becomes less protective or less conservative, e.g., if it moves from 10^{-6} to 10^{-5}.[134] EPA has emphasized that it will require "substantial support in the record for this level."[135] While industry may have weighed in heavily in favor of a less protective level, such one-sided support ought not satisfy EPA's heightened inquiry. In fact, tribes and others who would bear the burden of an increase in risk have consistently and emphatically voiced their opposition to the notion that this is "acceptable."

Moreover, as outlined above, Ecology is simply not free, no matter how vibrant the public debate, to choose a cancer risk level that, together with the other relevant inputs to its WQS, has the effect of impairing tribes' legally protected fishing rights. Courts have repeatedly recognized that if the waters are permitted to be significantly degraded, tribes' legally protected fishing rights can be eviscerated as surely as if tribal members had been hauled from their boats or barricaded from their fishing places. Washington, thus, may simply not be free to choose a risk level that undermines or unduly burdens tribes' fishing rights.

Additionally, if Washington's decisions regarding the risk level and other aspects of its water quality standards permit tribes to be disproportionately impacted, they may run afoul of commitments to environmental justice. Disproportionate impacts can include impacts that are not only different in degree, but also different in kind – such as those implicated when tribes' rights, resources, and the multiple facets of the lifeways associated with harvesting and consuming fish are affected. EPA has indicated that it will take seriously its obligations to ensure environmental justice in discharging its duties and in overseeing states' administration of their programs. Executive Order 12,898 commits agencies of the federal government to further environmental justice and specifically mentions to need to protect "subsistence consumption of fish and wildlife."[136] Federal civil rights laws prohibit recipients of federal funds, including state environmental agencies, from administering their programs in a manner that discriminates against American Indians.[137] Moreover, EPA has recently emphasized its particular commitment to ensuring environmental justice for tribes, their members, and indigenous people. EPA's July 2014 *Policy on Environmental Justice for Working with Tribes and Indigenous Peoples* commits in

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[134] EPA, NTR, *supra* note 62, 57 Fed. Reg. at 60848-01 ("In submitting criteria for the protection of human health, States were not limited to a 1 in 1 million risk level (10^{-6})… If a State selects a criterion that represents an upper bound risk level less protective than 1 in 100,000 (i.e., 10^{-5}), however, the State needed to have substantial support in the record for this level…. [Among other things,] the record must include an analysis showing that the risk level selected, when combined with other risk assessment variables, is a balanced and reasonable estimate of actual risk posed, based on the best and most representative information available. The importance of the estimated actual risk increases as the degree of conservatism in the selected risk level diminishes. EPA carefully evaluated all assumptions used by a State if the State chose to alter any one of the standard EPA assumption values.").

[135] *Id.*

[136] Executive Order 12,898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (Feb. 11, 1994) (singling out the issue of "subsistence consumption of fish and wildlife" in section 4-4, the only subject matter issue receiving specific mention in the Executive Order).

[137] Civil Rights Act of 1964 § 106, 42 U.S.C. § 2000d (2012); 40 C.F.R. § 7 (2012).

this context to addressing disproportionate risks to human health and the environment.[138] EPA also commits to encouraging states to implement environmental justice principles when states' programs, policies, and activities may affect tribes and their members.[139]

Finally, as a society, we *have* collectively determined that some risks – such as those from environmental contaminants – should be reduced. And, through democratic processes, we have enacted an array of environmental, health, and safety laws that direct agencies to require risk reduction. These statutes enlist different approaches and permit different considerations, depending on context (e.g., consumer protection, worker safety, children's health). Some environmental statutory provisions permit cost-benefit balancing; some preclude agencies from considering costs. Some direct agencies to set standards based on what is healthful; some direct agencies to set standards that are technologically feasible or achievable. It is not appropriate (and may not be legal), as Michael Livermore and Richard Revesz have recently discussed, for agencies to make decisions on the basis of an "unacknowledged factor," such as cost.[140] As noted above, the CWA's water quality standards provisions are health-based; they take human health, not technological feasibility, as their touchstone. Yet, to the extent that Ecology, through the Governor, has based its adoption of a significantly less protective cancer risk level on the basis of unspecified "engineering" or "economic" concerns,[141] it has arguably made a decision on an impermissible factor – such as feasibility or cost.

2. Actual Risk, When All Parameters are Considered

As noted above, EPA has indicated that it will consider the actual risk that results to those affected when all of a state's selected parameters are considered, and has stated that its scrutiny will increase as a state's target risk level becomes less protective or less conservative, e.g., if it moves from 10^{-6} to 10^{-5}.[142] EPA has emphasized that it will require "substantial support in the record," including an analysis of how the state's selected inputs to its risk assessment equation, when taken together, reasonably estimate the risk actually posed.[143] Among other things, EPA's statements suggest that states do not have unlimited flexibility to choose the least protective or least conservative values for most or all of the relevant variables, e.g., target risk level, FCR, human bodyweight, human lifespan – at least not, as here,

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[138] U.S. Environmental Protection Agency, Policy on Environmental Justice for Working with Tribes and Indigenous Peoples 1 (July 24, 2014), *available at* http://www.epa.gov/oecaerth/environmentaljustice/resources/policy/indigenous/ej-indigenous-policy.pdf.
[139] *Id.* at 4 (Principle 16).
[140] Michael A. Livermore & Richard L. Revesz, *Rethinking Health-Based Standards*, 89 NYU L. Rev. 1184, 1233 (2014).
[141] Ecology, Overview of Key Decisions, *supra* note 54 at 17.
[142] EPA, NTR, *supra* note 63, 57 Fed. Reg. at 60848-01 ("In submitting criteria for the protection of human health, States were not limited to a 1 in 1 million risk level (10^{-6})… If a State selects a criterion that represents an upper bound risk level less protective than 1 in 100,000 (i.e., 10^{-5}), however, the State needed to have substantial support in the record for this level…. [Among other things,] the record must include an analysis showing that the risk level selected, when combined with other risk assessment variables, is a balanced and reasonable estimate of actual risk posed, based on the best and most representative information available. The importance of the estimated actual risk increases as the degree of conservatism in the selected risk level diminishes. EPA carefully evaluated all assumptions used by a State if the State chose to alter any one of the standard EPA assumption values.").
[143] *Id.*

where the result leaves people exposed to significant risk. As a recent IDEQ Risk Discussion Paper recognizes, moreover, people aren't actually exposed to one chemical at a time in the real world; rather, they are often exposed to multiple chemicals present in the water and, so, the fish: "If criteria for carcinogens are based on a risk of 1×10^{-6}, and if an individual is exposed to multiple carcinogens at their criteria concentrations, the total cancer risk experienced by that individual will be greater than 1×10^{-6}."[144] As IDEQ observes, "[t]his situation presents an argument for conservatism in setting criteria, favoring lower [i.e., more protective] risk levels."[145] This concern for the risks actually faced by those exposed counsels attention to estimates of cumulative impacts experienced by tribal members consuming at contemporary suppressed rates.[146] Studies of cancer risks from the multiple chemicals present in the Columbia River Basin suggest reason for disquiet. When one considers particular species or sites, the risk levels are sobering. For example, at a site between the John Day and McNary dams, a person consuming fish at contemporary levels documented in the CRITFC survey (389 g/day) has an excess cancer risk between 1 in 100 and 1 in 1000 for all four species surveyed (i.e., steelhead, fall Chinook, largescale sucker, and white sturgeon). This concern also counsels attention to the actual risks that would be experienced by those consuming at historical or "heritage" rates, as tribal members have a right and an intention to do.

C. Bodyweight

Ecology's proposed WQS alter but one other variable, ostensibly in the name of updating Washington's standards to reflect "new science and local data."[147] Ecology cites EPA's 2011 Exposure Factors Handbook, which provides an updated average adult bodyweight of 80 kg (176 pounds) in place of the bodyweight of 70 kg (154 pounds) previously used by Ecology. Ecology also suggests that its decision to adopt an updated bodyweight "closely aligns" with the average adult bodyweights documented in studies of the Tulalip and Suquamish tribes. However, this post hoc rationalization rings hollow when its history is revealed and its implications refelected upon. Because the bodyweight variable resides in the denominator of the relevant risk assessment equations, an increase in its value means a decrease in the protectiveness of the resulting WQS. Ecology's proposed change to 80 kg would render Washington's WQS about 10-15% less protective than were it to retain a 70 kg value.

[144144] Idaho Department of Environmental Quality, Idaho Fish Consumption Rate and Human Health Water Quality Criteria – Discussion Paper #7: Risk Management and Protection of Human Health 7 (Dec. 2014)[hereinafter IDEQ, Risk Discussion Paper] *available at* http://www.deq.idaho.gov/media/1118404/58-0102-1201-discussion-paper7.pdf.

[145] *Id.* In a related vein, people aren't exposed to contaminants solely via the fish consumption pathway. For threshold pollutants, concern for an individual's total exposure counsels enlisting more protective assumptions for the relative source contribution (RSC). One would expect that a state seeking to depart from EPA's default assumptions for RSC in the direction of less protection to have to satisfy a heavy burden justifying this move – one that addressed the potential for tribal people's exposure to exceed threshold levels recognized to be safe.

[146] EPA and CRITFC, Columbia River Basin Contaminant Survey, app. N, 2-3 and fig. 6-26. (2002), *available at* http://yosemite.epa.gov/r10/oea.nsf/0/C3A9164ED269353788256C09005D36B7?OpenDocument. This estimate of risk is for whole body samples and assumes a 70-year exposure duration.

[147] Ecology, Overview of Key Decisions, *supra* note 54 at 23.

As I have described and documented at greater length elsewhere,[148] Ecology's decision to adopt the 80 kg bodyweight was made at the behest of an industry consultant. In direct response to an e-mail inquiry regarding the source of this change, Ecology staff forwarded the email from industry that contained the initial suggestion for this alteration.

As I have observed, the changed bodyweight "means that the fish will be that much less safe to eat – or, to put a finer point on it: tribal people seeking to put a healthy, uncontaminated meal of fish on their table will be able to do so less often."

"But tribes know well the connection between tribal members' health and their ability to obtain and consume traditional foods. For the fishing peoples throughout the Pacific Northwest, salmon and other fish and shellfish are at the center of a traditional diet. As documented by a recent study of one of the fishing tribes, "[t]he loss of traditional food sources is now recognized as being directly responsible for a host of diet-related illnesses among Native Americans, including diabetes, obesity, heart disease, tuberculosis, hypertension, kidney troubles, and strokes."[149] These illnesses are currently a matter of grave concern throughout Indian Country. American Indians and Alaska Natives now suffer extraordinary rates of diabetes – two to three times that of all other racial/ethnic populations combined.[150] Some 1,300 patients with diabetes require the services of the Yakama Indian Health Clinic; the incidence of diabetes in the Yakama Nation is 14.8% – double that in the state of Washington. The relatively higher bodyweights recorded in contemporary surveys of tribal people in the Pacific Northwest coincide with the depletion and contamination of the fish resource. This increase is also a direct legacy of the days in which tribal fishers were harassed and their fish frightened away; tribal nets were slashed; and tribal boats and gear were destroyed or confiscated. With tribal fishers in jail, there was no fish to put on their family's table. Without gear – and no fish to sell to buy new gear – some fishers were forced to turn to other work. Together, these forces have worked to deprive tribal people of their salmon and other traditional foods and have fueled a public health crisis."

"The solution is not to take one element of that crisis – increased bodyweight – as a "given," and therefore a basis for environmental agencies to permit more contaminants in fish. Rather, the solution is to see the bigger picture: human health-based standards ought not be manipulated so as to undermine human health. They shouldn't permit *greater* contamination of the very foods that are recommended as healthful ways to combat diabetes, obesity, and other diet-related conditions. The perversity of Ecology's preferred approach is underscored by the fact that theNational Indian Health Board[151] and the Centers for Disease Control and Prevention (CDC)[152] are hard at work in the opposite

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[148] Catherine A. O'Neill, "Washington State's Weakened Water Quality Standards Will Keep Fish Off the Table, Undermine Tribal Health," Center for Progressive Reform Blog (March 4, 2014), available at http://www.progressivereform.org/CPRBlog.cfm?idBlog=8D9DD724-B323-B46A-857B382825C93F62.
[149] Kari Marie Norgaard, *The Effects of Altered Diet on the Health of the Karuk People* (2005), available at http://ejcw.org/documents/Kari%20Norgaard%20Karuk%20Altered%20Diet%20Nov2005.pdf.
[150] Centers for Disease Control and Prevention, MMWR, *Health Disparities Experienced by American Indians and Alaska Natives* (Aug. 1, 2003), available at http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5230a1.htm.
[151] National Indian Health Board, Speical Diabetes Program in Indian Country, available at http://www.nihb.org/sdpi/index.php.

direction. They have devoted funds and devised programs that seek to enable, not thwart, tribal efforts to access and consume traditional foods as a means to decrease the incidence and impact of diabetes, foods programs, which seek to encourage *increased*intake of these tribes' first foods in order to restore tribal health and well-being."

Ecology has pointed to contemporary data that document tribal people's higher bodyweights to justify its preferred approach. But Ecology invokes this data in a vacuum, turning a blind eye to the historical context in which this increase has occurred. Ecology thus ignores the implications of this choice for tribal members' future health, including tribes' ability to combat the scourge of diabetes and other diet-related illnesses in their communities.

D. Other Updated Inputs to the Calculation of Human Health Criteria

While Ecology claims that the existence of "newer science and local data" regarding bodyweight "compels" it to adopt the less protective, 80 kg value,[153] Ecology did not feel similarly compelled to adopt any of the other updated inputs recommended by EPA in its 2011 Exposure Factors Handbook or in other guidance. Yet, for several of these variables, newer science supports updated recommendations by EPA; for some of these variables, local data also supports updated values. However, in each of these cases, the updated values would result in more protective WQS. Ecology thus proposes arbitrarily to cherry-pick the more recent science and recommendations – "updating" only the bodyweight variable (which leads to less stringent WQS) but declining to adopt the other newer values and recommendations (which lead to more stringent WQS).

1. Life Expectancy

Ecology proposes to retain a 70-year exposure duration, based on an average 70-year life expectancy supported by earlier editions of EPA's Exposure Factors Handbook. However, the 2011 Exposure Factors Handbook indicates that the updated average life expectancy nationwide, based on the most recent science then available, is 78 years.[154] Moreover, local data published by the Washginton Department of Health in 2013 document life expectancy for Washingtonians at 80.3 years, with recent trends "show[ing] that Washingtonians are living longer" than in previous times.[155] Interestingly, were Ecology as keen to base its exposure duration on the "newer science and local data" for life expectancy, this change would almost exactly cancel out the change Ecology proposes to the bodyweight.

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[152] Centers for Disease Control and Prevention, Traditional Foods Project, available at http://www.cdc.gov/diabetes/projects/ndwp/traditional-foods.htm.
[153] Ecology, Overview of Key Decisions, *supra* note 54, at 23.
[154] EPA, Exposure Factors Handbook 18-1 (2011) *available at* http://www.epa.gov/ncea/efh/pdfs/efh-complete.pdf.
[155] Washington Dept. of Health, Mortality and Life Expectancy 1, 5 (Aug. 26, 2013), available at http://www.doh.wa.gov/Portals/1/Documents/5500/GHS-MLE2013.pdf (reporting the 80.3 years figure and adding that "[t]rends in life expectancy show that Washingtonians are living longer: the average life expectancy for those born in 2011 is 80 years, about five years longer than for those born in 1980").

2. Drinking Water Intake

Ecology proposes to retain a drinking water intake value (for freshwater criteria) of 2 liters/day, based on earlier editions of EPA's Exposure Factors Handbook and EPA's AWQC Guidance, published in 2000.[156] However, the 2011 Exposure Factors Handbook supports updated values considerably greater than this.[157] Moreover, EPA's most recent national recomemendation for surface water criteria, published in draft in May, 2014, embraces a 3 liters/day figure, based on the data available in the 2011 Exposure Factors Handbook. Ecology offers no rationale for its choice of the more dated science and EPA recommendation, other than to say that it is opting to do so "at this time" and that it had not obtained any local data resepcting this variable.

3. Relative Source Contribution

Ecology proposes to retain a reslative source contribution (RSC) of 1.0, based on the value used by EPA to calculate the NTR, which in turn is based on an earlier version of EPA's AWQC Guidance, from 1980.[158] The current EPA recommendation is that a RSC of 0.2 be employed to calculate criteria for non-carcinogens. This recommendation is based on EPA's AWQC Guidance, published in 2000 (as clarified in 2013). The RSC accounts for the fact that people are exposed to contaminants through other routes in addition to consumption of fish. Because non-carcinogens are threshold contaminants (i.e., there is a threshold – the reference dose (RfD) – above which exposure is not safe), the RSC is intended to recognize that, were people to obtain the entirety of their contaminant "budget" from fish and/or surface water intake, exposures via other routes (e.g., dietary intake of non-fish items; inhalation; dermal absorption) would lead to an exceedance of the relevant threshold. EPA recommends its default of 0.2 to allow room in the "budget" for other sources of exposure where there is uncertainty about other sources of exposure, but states that if other sources of exposure are well known and characterized, an RSC of up to 0.8 may be adopted. As Ecology recognizes, the difference between a criterion calculated assuming an RSC of 1.0 and 0.2 is significant, with the former producing a criterion that is less stringent by 80%. Although Ecology does not suggest that the other potential sources of exposure for Washingtonians are well characterized, it nonetheless proposes to exceed even EPA's high-end recommendation of an RSC of 0.8. It again attempts to portray its decision as a "risk management" call that is left to the states "to carefully weigh," in this instance based on a questionable understanding of the scope of the CWA and states' role in determining that scope.[159]

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[156] Ecology, Overview of Key Decisions, *supra* note 54 at 24-26.
[157] EPA, Exposure Factors Handbook, *supra* note 156, at 3-3 (documenting 95th % per capita value for all ages at 2.7 liters/day and 95% consumers-only value for all ages at 2.8 liters/day).
[158] Ecology, Overview of Key Decisions, supra note 54, at 21.
[159] The reasons for questioning Ecology's understanding of the CWA on this point are set forth in greater detail in Waterkeepers, Comments on Washingtons's Proposed WQS (to be submitted to the rulemaking docket on March 23, 2015), which are hereby incorporated by reference.

4. Bioaccumulation Factor

Ecology proposes to eschew use of a bioaccumulation factor (BAF) in place of a bioconcentration factor (BCF), despite the fact that the former represents the best available science. Moreover, because a BAF accounts for all sources that contribute to the uptake of contaminants by fish (which are in turn consumed by humans), including water, food, and sediment, whereas a BCF only accounts for accumulation directly from the water, the fomer is also most appropriate for local conditions in Washington, where, among other things, the sediments harbor significant bioaccumulative toxics. Ecology declines to enlist BAFs, despite the fact that EPA's AWQC Guidance has long recognized their greater accuracy in accounting comprehensively for the uptake of contaminants encountered by fish in the aquatic environment, and despite the fact that EPA itself published national default BAFs for 94 contaminants in early 2014. Ecology again cites no rationale for declining to make use of this newer science, other than its "risk management" determination and its interpretation of the scope of the CWA.

In sum, in every instance that that adoption of an updated variable based on newer science, more recent EPA recommendations, or the latest local data would lead to more protective WQS, Ecology nonetheless refused to do so. This refusal, when seen alongside its eagerness to justify adoption of an updated bodyweight variable as "compelled" by the availability of newer science and local data, is arbitrary when viewed in its best light. Given the evidence of industry's role in urging the 80 kg bodyweight value, moreover, this characterization may be generous. In either event, Ecology's repeated choices of less protective and less conservative inputs, when taken together, cannot survive the heightened scrutiny that EPA has indicated it will give to states' WQS.

E. Delay

Ecology has had data evidencing tribes' and other Washingtonians' higher fish consumption rates for more than two decades now, beginning with the publication of the CRITFC survey back in 1994. Ecology has watched as fish consumption advisories have proliferated for Washington waters. Ecology has long been aware of the dangers of methyl mercury, PCBs, and other contaminants for which the primary route of human exposure is fish intake. Ecology has seen the NEJAC's admonitions regarding the environmental justice impacts of contaminated fish. Ecology, along with the other successors to the treaties, marked the 40th anniversary of the Boldt decision affirming tribes' treaty-secured rights to take fish just last year. After years of inaction, missed deadlines, and reversals of course, Ecology's proposed WQS make little and, too often, *no* progress toward cleaning our waters and ensuring that our fish are fit for human consumption. Remarkably, then, Ecology's proposed WQS also include a suite of what it calls "Implementation Tools" – i.e., mechanisms by which compliance with Washington's WQS can be delayed for some additional number of years. The rationale for these tools offered by Ecology is the need for "more time" for the sources of contamination to be addressed – as if the contaminated state of Washington's waters and fish had been only recently discovered to be a concern. As I have argued

elsewhere, the delay to date has been unconscionable; to augment the mechanisms by which sources might add to the time before which they must comply with WQS compounds this error.[160]

Conclusion

Thank you for considering these comments and the documents they incorporate by reference.

Respectfully submitted,

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[160] The implementation tools proposed by Ecology are also questionable on a variety of legal and policy bases, as elaborated in comments to the rulemaking docket by the Waterkeepers and NWIFC, which are incorporated herein by reference.