NORTHWEST ENVIRONMENTAL ADVOCATES

May 2, 2024

Marla Koberstein, Rule Coordinator
Washington Department of Ecology
P.O. Box 47696
Olympia, WA 98504-7696 *Via on-line portal*: https://wq.ecology.commentinput.com/?id=apZ8BGx2sQ&utm_medium=email&utm_source=govdelivery

Re: **Proposed Updates to Aquatic Life Toxics Criteria, WAC Chapter 173-201A**

Dear Ms. Koberstein:

Ecology claims that its egregious delay in updating its toxic criteria for protection of aquatic life was based on a desire to wait and see what happened with the Endangered Species Act ("ESA") consultations done on Oregon and Idaho water quality standards numeric criteria updates. Maintaining this fiction insults the public if for no other reason than postponing protections to threatened and endangered species on the basis of a future analysis of the threats to those very same species, and actions to be taken by agencies at an unknown date to address those threats, is illogical in the extreme. Moreover, nowhere in the Technical Support Document ("TSD") for the proposed updates does Ecology explain why it believes that the Biological Opinions ("BiOp") for the two adjoining states will answer the question: are the toxic criteria proposed for Washington sufficient to protect Washington threatened and endangered species, as well as other sensitive designated aquatic uses? Idaho does not even have saltwater criteria and neither state has Puget Sound, which possesses unique attributes and supports marine species in unique ways. As a result, Ecology's long-time excuse for not acting at all now permeates and infects its evaluation of what criteria it is choosing to update and how it is proposing to update the chosen criteria.

That Ecology had zero interest in evaluating its existing, outdated toxic criteria for aquatic life is demonstrated by the fact that by 2022 it had not bothered to even obtain copies of the Oregon and Idaho BiOps from the U.S. Environmental Protection Agency ("EPA"), the National Marine Fisheries Service ("NMFS"), or the U.S. Fish and Wildlife Service ("FWS") (together "the Services"). NWEA knows this because it was NWEA that sent these BiOps to Bryson Finch at Ecology on April 21, 2022, along with the California Toxics Rule ("CTR") BiOp to Melissa Gildersleeve on April 19, 2022, following conversations in which it was made clear that Ecology did not have them, and that EPA had not yet provided them to the state as it had requested. There is little question that Washington only began to show a begrudging interest in the

implications of the other states' BiOps after the federal court issued its order on summary judgment on December 29, 2021 in the case *Northwest Environmental Advocates v. United States Environmental Protection Agency*, C20-1362 MJP, a lawsuit that challenged EPA's failure to step in and take care of Ecology's intolerable delay.

It is ironic that Ecology would point to the "significant delay[]" involved in the federal agencies' ESA consultation on the 2004 Oregon update and the "stalled" EPA approval of the Idaho updates. TSD at 21. The only reason that the BiOps for these two sets of EPA approvals of state water quality standards were completed at all was Northwest Environmental Advocates' lawsuits against the Services that forced the production of the BiOps. *See Northwest Environmental Advocates v. National Marine Fisheries Service et al.*, Civil No.: 10-907-BR (2010) (Oregon ESA consultation); *Northwest Environmental Advocates v. The National Marine Fisheries Service et al*., Case No. 1:13-cv-00263-DCN (2013) (Idaho ESA consultation). (And that is not to mention other lawsuits brought by us against EPA for failing to even act on Oregon's 2004 toxic criteria and to promulgate criteria for pollutants that were the subject of ESA jeopardy determinations). That Ecology was aware of these long delays and yet still engaged in its own deplorable delay shows the depth of its hypocrisy when it comes to protecting aquatic life in general, and threatened and endangered species in particular. *See* TSD at 31 ("We are updating our aquatic life toxics criteria to . . . avoid federal promulgation stemming from litigation."). Moreover, despite the fact that there are overlapping species, as well as useful information, in the CTR BiOp, Ecology does not even mention the State of California once in its TSD. *See* Letter from Michael Spear, FWS Manager, California/Nevada Operations Office and Rodney McInnis, NMFS Acting Administrator, Southwest Regional Office to Felicia Marcus, EPA Regional Administrator, Region 9 (March 24, 2000) (California Toxics Rule BiOp).

I. ECOLOGY'S METHOD OF DETERMINING WHICH NUMERIC AQUATIC LIFE CRITERIA NEED UPDATING IS FLAWED

Much of our page-by-page comments below contain a critique of Ecology's method by which it determined which criteria to update. Reading the TSD, it becomes obvious that not only is Ecology's approach flawed but it is also internally inconsistent. Moreover, to the extent that Ecology justified its prolonged delays because it feared most of all an ESA jeopardy determination on any criteria submitted to EPA for approval under the Clean Water Act ("CWA"), the discussion below demonstrates that it simply not possible to ensure that no such determination is made. And given that overweening fear, Ecology has not, in fact, taken the actions needed to ensure that it avoids jeopardy determinations in the future.

A. Ecology's Flawed Approach to Determining Which Criteria to Update Infects How it Conducted its Update Analysis

The discussion below, taking each pollutant in turn, demonstrates repeatedly that Ecology's near obsession with avoiding jeopardy determinations puts it in a situation where it is likely to run afoul of both the CWA and the ESA. It repeatedly avoids looking at species in Washington waters that might be more sensitive than those that are the subject of federal ESA listings. It

repeatedly focuses on jeopardy determinations and ignores the analysis contained in biological opinions when one or both of the Services stops short of a jeopardy determination.

Ecology's approach also fails to consider that different offices of the Services come to different conclusions even when they are considering protection of the exact same species and the same pollutant criteria. For example, contrast the outcomes of the FWS Oregon BiOp and the FWS Idaho BiOp in which the former contained zero jeopardy determinations. It's a fool's errand to think that Ecology can outguess the Services.

This does not even begin to account for the unique nature of Puget Sound and the species that rely upon its waters and its tributaries. As is noted in the page-by-page comments below, Puget Sound is not even mentioned once in this document and is clearly not addressed by Ecology. Ecology has itself studied, has accumulated others' studies, and has access to internal and external studies under development that pertain to accumulation of toxics, the movement of toxics, the bioaccumulation of toxics in the Puget Sound food web and species, and the impacts of toxics on species that depend on its waters, none of which have been taken into consideration in this proposal. The number of those studies is too numerous to cite here.

B. Mercury Criteria: An Example of Ecology's Flawed Approach

As Ecology itself illustrates, the Oregon and Idaho BiOps never could and still cannot provide a comprehensive roadmap to how to approach updating Washington's criteria. For example, mercury/methylmercury does not show up on the list of Oregon toxic criteria adopted in 2004 and therefore subject to the ESA consultation because Oregon specifically excluded mercury from its aquatic life updates in order to avoid a possible jeopardy decision. *See* TSD at 25, Table 1 (Oregon aquatic life toxics criteria submitted in 2004); Oregon Department of Environmental Quality, Memorandum from Stephanie Hallock, Director, to Environmental Quality Commission, Re: *Agenda Item B, Rule Adoption: Water Quality Standards, Including Toxic Pollutants Criteria, OAR Chapter 340, Division 41, May 20-21, 2004, EQC Meeting* (April 29, 2004) at 1 ("The proposed criteria incorporate all of EPA's currently recommended criteria for toxic pollutants except for maintaining Oregon's current criteria for a) mercury, because of concerns that the revised criteria are not protective of threatened or endangered populations of salmonids."), 5 ("[T]he Department now believes that issues raised by NOAA-Fisheries and US Fish & Wildlife Service in the Biological Opinion on the 2000 California Toxics Rule resonate in Oregon concerning the protectiveness of these criteria for threatened and endangered salmonids in the state's waters. The Department is aware of efforts by EPA and the federal fisheries services to develop new aquatic life criteria for mercury.").

While Oregon held back, Idaho moved ahead in a manner of speaking. *See* TSD Table 3 (Ambient water quality criteria for toxic pollutants submitted for consultation in EPA's 1999 Assessment and revisions by the State of Idaho (NMFS, 2014; USFWS, 2015).). In 2008, EPA disapproved Idaho's removal of acute and chronic criteria for mercury, citing its own 2004 comment letter that stated EPA's 304(a) recommended chronic criterion "may not be adequately protective for Idaho." Letter from Michael F. Gearheard, Director, Office of Water and

Watersheds, EPA Region 10, to Barry Burnell, Idaho Department of Environmental Quality, Re: *EPA Disapproval of Idaho's Removal of Mercury Acute and Chronic Freshwater Aquatic Life Criteria, Docket No. 58-0102-0302* (Dec. 12, 2008) at 1. EPA also cited the CTR BiOp in its disapproval letter to Idaho. In Northwest Environmental Advocates' 2013 lawsuit against EPA and the Services, we alleged that EPA had failed to promptly publish and promulgate mercury water quality standards after disapproving Idaho's revision of those standards. After extensive delays, a federal court in Idaho ruled that EPA had a mandatory duty to publish and promulgate a water quality standard for mercury in Idaho. *Northwest Environmental Advocates et al. v. United States Environmental Protection Agency*, Case No. 1:13-cv-00263-DCN (Memorandum Decision and Order, ECF No. 103, July 19, 2021). As a result of a stipulated order in that case, on April 3, 2024, EPA issued a proposed rule providing for both tissue and water column criteria for mercury. *See* EPA, *Mercury Criterion to Protect Aquatic Life in Idaho*, 89 Fed. Reg. 24758 (April 9, 2024). The proposed chronic total mercury criteria are 0.225 µg/kg wet weight for muscle fish tissue, 0.162 µg/kg wet weight for whole body fish tissue, and 0.0021 µg/L for water column values. *Id*. at 24774. EPA asserts these results are consistent with the Services BiOps' reasonable and prudent alternatives. *Id*. at 24768. In contrast, Washington's proposed water column value is 0.012 µg/L. As EPA explains, it is important to include both a tissue and water column value in mercury and methylmercury criteria. *See, e.g., id*. at 24762 ("Because tissue measurements provide a more direct measure of toxicity for bioaccumulative pollutants such as mercury, the EPA has considered it appropriate to establish tissue criteria for these pollutants. However, criteria expressed as organism tissue concentrations can prove challenging to implement in CWA programs such as NPDES permitting and Total Maximum Daily Loads (TMDLs) because these programs typically demonstrate that water quality standards are met by using a water column concentration to calculate a load-based effluent limit or daily load, respectively.").

Consistent with extensive work done in California on looking at bioaccumulation at trophic levels in standards and TMDLs—which Ecology appears to ignore entirely—EPA's proposed mercury criteria for Idaho address the fact that "[m]ethylmercury can also biomagnify (i.e., increase in concentration at successively higher trophic levels) within aquatic food webs[.]" Id. at 24760; *see also id*. at 24764 ("[M]ercury bioaccumulation potential among fish species varies widely (up to 20-fold differences) due primarily to their diets: as trophic level increases so does mercury bioaccumulation. In order to protect higher trophic level fish, such as salmonids, which are commercially, recreationally, and ecologically important in Idaho, the EPA made adjustments to account for known bioaccumulation differences among fish species. Doing so ensures that higher trophic level fish species are protected when evaluating sampling data from lower trophic level species (e.g., bluegill, suckers, pumpkinseed) for implementation purposes."). This is done through footnotes 2 and 3 to Table 1 to Paragraph (b) in the federally-proposed criteria. *Id*. at 24775. These footnotes address the need to use a Bioaccumulation Trophic Adjustment Factor based on the trophic level of the fish from which data have been derived. *Id.*

The work in California includes final, EPA-approved, mercury criteria based on trophic levels. *See, e.g*., California State Water Resources Control Board, *Final Part 2 of the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California—Tribal and*

Subsistence Fishing Beneficial Uses and Mercury Provisions (undated, 2017); Letter from Tomás Torres, Director, Water Division, EPA Region 9, to Felicia Marcus, Chair, California State Water Resources Control Board, Re: *Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California – Tribal and Subsistence Fishing Beneficial Uses and Mercury Provisions* (July 14, 2017) (EPA approval letter describing the Sport Fish Objective that is "applicable both to human health use and to aquatic life and aquatic-dependent wildlife uses," the Prey Fish Objective, and the California Least Tern Prety Fish Objective); California State Water Resources Control Board, *Draft Staff Report: Part 2 of the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California – Tribal and Subsistence Fishing Beneficial Uses and Mercury Provisions, Appendix K. Wildlife Targets* (undated). These were all provided to Ecology by email on May 9, 2022. None of this was cited by Ecology. *See also*, FWS, *Derivation of Numeric Wildlife Targets for Methylmercury in the Development of a Total Maximum Daily Load for the Guadalupe River Watershed* (April 2005); FWS, *Evaluation of the Clean Water Act Section 304(a) Human Health Criterion for Methylmercury: Protectiveness for Threatened and Endangered Wildlife in California* (Oct. 2003).

Putting aside the details, Ecology's justification for waiting simply does not hold water.

C. Ecology Fails to Consider Sources of Information in Determining Which Criteria to Update

One example of source material that Ecology should consider when evaluating the importance of assessing and updating its toxic criteria, are stormwater permits. Stormwater is known as a major source of toxic pollutants and water quality standards are key to regulation of this source. Ecology's Industrial Stormwater Permit requires sources to obtain coverage under this permit if they are, among other things, "reasonably . . . expected to cause a violation of any water quality standard." Ecology, *Industrial Stormwater General Permit* (Nov. 20, 2019) at 3. Generally, the permit requires that permittees have and carry out pollution prevention plans that "[e]nsure the discharge does not cause or contribute to a violation of the Water Quality Standards." *Id*. at 9; *see also id*. at 12 (management practices must be selected to prevent violations of water quality standards). The permit includes "benchmarks and sampling requirements" that apply to facilities of all industrial sectors that include copper and zinc. *Id*. at 21, Table 2. Additional benchmarks and sampling requirements are based on specific industrial sectors and include ammonia, arsenic, cadmium, cyanide, lead, mercury, selenium, and silver, all of which have EPA-recommended aquatic life criteria. *Id*. at 22–23, Table 3; 25, Table 4; 26, Table 5. Further sampling and effluent limits apply to discharges of industrial stormwater to waters that have been determined to violate water quality standards and have been placed on Washington's EPA-approved 303(d) list. *Id.* at 29, Table 6. Toxic pollutants covered under this provision include ammonia, copper, lead, mercury, zinc, and pentachlorophenol. *Id*.

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The Western Washington Phase II Municipal Stormwater Permit that covers over 80 cities, five counties, and numerous ports and colleges. Similar to the industrial stormwater permit, this permit includes provisions that prohibit "the discharge of toxicants to waters of the State of Washington which would violate any water quality standard[.]" Ecology, *Western Washington*

Phase II Municipal Stormwater Permit (July 1, 2019) at 77; *see also* Ecology, *Phase I Municipal Stormwater Permit* (July 1, 2019) (applies to Seattle, Tacoma, and King, Clark, Pierce, and Snohomish counties) at 4 (identical language). Additional provisions apply to discharges of municipal stormwater to waters of the state that are known to be (or likely) violating water quality standards. *Western Washington Phase II Municipal Stormwater Permit* at 7–9; *see also id*. at 37–38 (provisions relating to discharges where there is a TMDL clean-up plan in place). Unlike the industrial stormwater permit, the municipal stormwater permit does not include reference to any specific pollutants. The Fact Sheet that Ecology wrote to support issuance of both Phase II and the Phase I municipal permits combined contains the following references to toxic pollutants in municipal stormwater: "Ecology identified the following chemical stressors that were capable of causing adverse effects that were detected on the native trout embryos and preswim-up fry: copper, lead, nickel, zinc, polycyclic aromatic hydrocarbons, and the agricultural fungicide Captan." Ecology, *Fact Sheet for the Phase I, Western Washington Phase II, and Eastern Washington Phase II Municipal Stormwater Permits* (Aug. 15, 2018) at 15.

The Fact Sheet for the municipal stormwater permits also cited Ecology's "Phase 3" toxics study, which it summarized as follows with regard to specific toxic parameters:

> Surface water runoff, particularly from commercial and industrial areas, did not meet water quality or human health criteria for the following parameters: dissolved copper, lead, and zinc; total mercury; total polychlorinated biphenyls (PCBs); several carcinogenic polycyclicaromatic hydrocarbons (PAHs); and DDT related compounds. . . . Commercial land areas produced runoff with relatively greater concentrations of total lead, zinc, PBDEs, and PCBs

Id. at 21. "Copper, zinc, and lead most frequently exceeded (did not meet) the water quality criteria for protection of aquatic life." *Id*. at 23.

II. TSD PAGE-BY-PAGE COMMENTS

30-1: As Ecology notes, EPA is under court order to evaluate chromium III, DDT and metabolites, endosulfan, endrin, tributyltin, zinc, lead, and nonylphenol by June 2026 as the result of one of Northwest Environmental Advocates' lawsuits against EPA. This appears to have motivated Ecology action on some criteria but not all of them. As a policy matter, it is unclear why Ecology has adopted an inconsistent approach.

31: Ecology notes that as the outcome of a lawsuit by the Center for Biological Diversity, "EPA may be required to consult on Washington's existing cyanide criteria under the Endangered Species Act." If Ecology were to adopt new, protective cyanide criteria in line with our comments below, EPA would not be required to consult on the existing criteria but, rather, the new criteria would undergo consultation to ensure they were protective of ESA-listed species in Washington waters. The uncertainty that Ecology cites is both a product of its own delays and inherent in a regulatory program that is intended to respond to new information, whether it is new science on the hazards of pollutants or new information on the decline of species.

31-2: It is unclear how ESA consultations for the States of Oregon and Idaho in any way pertain to many of the species listed in Washington, such as marine rockfish and the Southern resident killer whale, which spend more time in Puget Sound than they do in waters affected by toxic pollution coming from Oregon waters. Oddly, despite Ecology's fixation on the BiOps for other states' standards, the entire TSD mentions the Southern resident killer whales only once, on this list of ESA-listed species.

Ecology's list of ESA-listed species is missing species. For example, the Oregon spotted frog, *Rana pretiosa*, was listed as threatened in 2014. 79 Fed. Reg. 51658 (Aug. 29, 2014). This species is found in Washington State. *Id.* at 51659. It is an aquatic species. *Id*. ("Oregon spotted frogs' highly aquatic habits[.]"); *id*. at 51661 ("This is the most aquatic native frog species in the Pacific Northwest (PNW), as all other species have a terrestrial life stage. It is found in or near a perennial body of water, such as a spring, pond, lake, sluggish stream, irrigation canal, or roadside ditch (Engler 1999, pers. comm.)." Toxic chemicals pose a hazard to the Oregon spotted frog. *See, e.g., id.* at 51689-51690.

Ecology's list also misses an aquatic species in Washington waters with a federal listing status "under review," namely the western ridged mussel (*Gonidea angulata*). *See* FWS, Environmental Conservation Online System, *western ridged mussel* (*Gonidea angulata*), *available at* https://ecos.fws.gov/ecp/species/10893; *see also* 86 Fed. Reg. 40186 (July 27, 2021), *Endangered and Threatened Wildlife and Plants; 90-Day Findings for Three Species* ("we find that the petition[] to list the . . . western ridged mussel (*Gonidea angulata*) present[s] substantial scientific or commercial information indicating that the petitioned action[] may be warranted."); 40189 (potential threats to the western ridged mussel include water quality).

Moreover, Ecology's singular focus on federally ESA-listed species ignores species that are at risk in Washington waters, as identified by the Washington Department of Fish and Wildlife ("WDFW). Aquatic species and their state imperiled status include:

Species	Category	State status	Federal ESA status
Ashy pebblesnail *(Fluminicola fuscus)*	Molluscs	Candidate	
Oregon vesper sparrow *(Pooecetes gramineus affinis)*	Birds	Endangered	
Sage thrasher *(Oreoscoptes montanus)*	Birds	Candidate	
Sagebrush sparrow *(Artemisiospiza nevadensis)*	Birds	Candidate	
Sandhill crane *(Grus canadensis)*	Birds	Endangered	
Sandhill crane (greater) *(Grus canadensis tabida)*	Birds	Endangered	
Short-tailed albatross *(Phoebastria albatrus)*	Birds	Candidate	End
Slender-billed white-breasted nuthatch *(Sitta carolinensis aculeata)*	Birds	Candidate	

Species	Category	State status	Federal ESA status
Cascade torrent salamander *(Rhyacotriton cascadae)*	Amphibians	Candidate	
Columbia spotted frog *(Rana luteiventris)*	Amphibians	Candidate	
Dunn's salamander *(Plethodon dunni)*	Amphibians	Candidate	
Larch Mountain salamander *(Plethodon larselli)*	Amphibians	Sensitive	
Northern leopard frog *(Lithobates [Rana] pipiens)*	Amphibians	Endangered	
Oregon spotted frog *(Rana pretiosa)*	Amphibians	Endangered	Threatened
Rocky Mountain tailed frog *(Ascaphus montanus)*	Amphibians	Candidate	
Van Dyke's salamander *(Plethodon vandykei)*	Amphibians	Candidate	
Western toad *(Anaxyrus boreas)*	Amphibians	Candidate	
Lake chub *(Couesius plumbeus)*	Fish	Candidate	
Leopard dace *(Rhinichthys falcatus)*	Fish	Candidate	
Margined sculpin *(Cottus marginatus)*	Fish	Sensitive	
Mountain sucker *(Catostomus platyrhynchus)*	Fish	Candidate	
Olympic mudminnow *(Novumbra hubbsi)*	Fish	Sensitive	
Pygmy Whitefish *(Prosopium coulteri)*	Fish	Sensitive	
River lamprey *(Lampetra ayresii)*	Fish	Candidate	
Umatilla dace *(Rhinichthys umatilla)*	Fish	Candidate	

WDFW, Species & Habitat, *Threatened and endangered species*, *available at* https://wdfw.wa.gov/species-habitats/at-risk/listed. Likewise, Ecology ignores imperiled aquatic-dependent species, which are included in the following lists:

Fisher *(Pekania pennanti)*	Mammals	Endangered	
Harbor porpoise *(Phocoena phocoena)*	Mammals	Candidate	
Sea otter *(Enhydra lutris kenyoni)*	Mammals	Threatened	
Northwestern pond turtle *(Actinemys marmorata)*	Reptiles	Endangered	

Species	Category	State status	Federal ESA status
American white pelican *(Pelecanus erythrorhynchos)*	Birds	Sensitive	
Black-backed woodpecker *(Picoides arcticus)*	Birds	Candidate	
Burrowing owl *(Athene cunicularia)*	Birds	Candidate	
Cassin's auklet *(Ptychoramphus aleuticus)*	Birds	Candidate	
Clark's grebe *(Aechmophorus clarkii)*	Birds	Candidate	
Columbian sharp-tailed grouse *(Tympanuchus phasianellus columbianus)*	Birds	Endangered	
Common loon *(Gavia immer)*	Birds	Sensitive	
Ferruginous hawk *(Buteo regalis)*	Birds	Endangered	
Flammulated owl *(Psiloscops flammeolus)*	Birds	Candidate	
Golden eagle *(Aquila chrysaetos)*	Birds	Candidate	
Greater sage-grouse *(Centrocercus urophasianus)*	Birds	Endangered	
Loggerhead shrike *(Lanius ludovicianus)*	Birds	Candidate	
Marbled murrelet *(Brachyramphus marmoratus)*	Birds	Endangered	Threatened
Northern goshawk *(Accipiter gentilis)*	Birds	Candidate	
Northern spotted owl *(Strix occidentalis caurina)*	Birds	Endangered	Threatened

Id.

Ecology's failure to look at its sister agency's own findings results in, for example, its ignoring that the "shortface lanx is an uncommon aquatic snail in Washington; its population size has a declining trend." WDFW, Species & Habitat, Species in Washington, *Shorface lanx, available at* https://wdfw.wa.gov/species-habitats/species/fisherola-nuttalli#desc-range. This snail is identified as a "Species of Greatest Conservation Need" under Washington's State Wildlife Action Plan, and a "Priority Species" under WDFW's Priority Habitat and Species Program. *Id*. at https://wdfw.wa.gov/species-habitats/species/fisherola-nuttalli#conservation. The "action needed" is to "protect water quality. *Id*. "A guiding principle of the SWAP planning process is to identify actions needed to conserve wildlife and their habitats before species become too rare and restoration efforts too costly." The purpose of this planning process is "to inform conservation priorities and guide conservation actions statewide" and "[i]t is envisioned that any government entity and conservation partner . . . [will] implement actions that align with their own conservation mission and goals." *Id*. "To that end, the SWAP provides tools and informational resources to support collaborative conservation initiatives across a range of organizations and entities." WDFW, Species & Habitats, At-risk species, *State Wildlife Action Plan (SWAP), available at* https://wdfw.wa.gov/species-habitats/at-risk/swap. We strongly urge Ecology to use these informational resources, such as the Appendix A Species Fact Sheets, to ensure that it has identified the most sensitive designated aquatic life uses that require protection through water quality standards. For example, the Appendix A-5 for invertebrates identifies the aquatic species masked duskysnail (*Lyogyrus sp. 2*) as "critical/declining" and the ashy pebblesnail (*Fluminicola fuscus*) at "uncommon/declining," both statuses that appear dire. *Id.* at A5-84.

Note, too, that Ecology's sister agency has an entire program to monitor marine toxic contaminants. *See* WDFW, Species & Habitats, *Marine toxic contaminants*, *available at* https://wdfw.wa.gov/species-habitats/science/marine-toxics. The reason for this is the unique nature of Puget Sound, the focus of the state's marine toxic monitoring program, and a fact inexplicably ignored by Ecology. *See* WDFW, Species & Habitats, Marine toxic contaminants, *Sampling locations*, *available at* https://wdfw.wa.gov/species-habitats/science/marine-toxics/sampling-locations. This is illustrated by this overall map of sampling locations for English sole, mussels, Pacific herring, juvenile and adult chinook:

Id. The toxic pollutants and the media in which they are monitored in this program are as follows:

Contaminants Currently Monitored

Group Name	Analytes	Typical Biota Monitored
Persistent Organic Pollutants	11 Polybrominated diphenylethers or PBDEs	fish and invertebrates
Persistent Organic Pollutants	40 Polychlorinated Biphenyls or PCBs	fish and invertebrates
Organochlorine Pesticides	DDTs, DDDs, DDEs, chlordanes, hexachlorocyclohexanes, hexachlorobenzene, Aldrin, Dieldrin, Endosulfan I, and Mirex	fish and invertebrates
Polycyclic Aromatic Hydrocarbons	42 PAHs	invertebrates
Polycyclic Aromatic Hydrocarbons	Metabolites of PAHs	fish bile
Inorganic Metals	Mercury, lead, cadmium, arsenic, zinc, copper, chromium	fish and mussels

Contaminants of Emerging Concern (newly developed or employed analyses, or analyses being developed)

Group Name	Analytes	Typical Biota Monitored
Estrogenic compounds	Bisphenols, synthetic and natural estrogens	fish and mussels
Pharmeceuticals and Personal Care Products	142 compounds	fish and mussels
Perfluorinated Chemicals	13 compounds including perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS)	fish and mussels
Alkylphenols	4-nonylphenol (NP), 4-n-octylphenol (OP), 4-nonylphenol monoethoxylate (NP1EO) and 4-nonylphenyl diethoxylate (NP2EO)	fish and mussels
Current Use Pesticides	Organochlorine, organophosphorus, organonitrogen, triazine, and pyrethroid pesticides	fish and mussels

WDFW, Species & Habitats, Marine toxic contaminants, *Contaminants monitored*, *available at* https://wdfw.wa.gov/species-habitats/science/marine-toxics/contaminants-monitored.

33: Ecology's discussion of EPA biological evaluations ("BE") fails to point out that EPA routinely concludes that toxic chemicals will not have an adverse effect on ESA-listed species and that the Services often take a contrary view, including but not limited to jeopardy determinations. Relying on EPA BEs, therefore, does not ensure sufficient protection for species any more than relying on decades-old EPA recommended criteria. As for the Services, in one example, NMFS concluded that for DDT in Idaho "[t]he proposed chronic criterion may allow substantial bioaccumulation to occur because DDTs are taken up not only from the water column

but also from sediments and prey organisms" but did not make a jeopardy finding for the salmonid species listed in Idaho waters. NMFS, *Final Endangered Species Act Section 7 Formal Consultation and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for Water Quality Toxics Standards for Idaho* (May 7, 2014) (hereinafter "NMFS Idaho BiOp") at 232. However, at the same time, the Idaho BiOp did not evaluate the impacts of DDT criteria on Southern Resident killer whales—"resident" referring to Washington's Puget Sound waters—because EPA had not provided such an analysis to NMFS. *See id*. at 2. Likewise, the NMFS BiOp for Oregon toxic criteria observed that "Southern Residents are a highly contaminated whale population" and that

> some of these pollutants do not need to be in high concentration in a species to be toxic and have long been recognized as problematic for the Southern Resident killer whales. The organochlorines (e.g., PCBs and DDTs) are thought to pose the greatest risk to killer whales (Ross et al. 2000, Center for Biological Diversity 2001, Krahn et al. 2002). Organochlorines are . . . [d]esigned for their stability, most are highly persistent in the environment and can resist metabolic degradation. These persistent pollutants can accumulate in the food webs and are at relatively high concentrations in upper trophic-level species such as killer whales.

NMFS, *Jeopardy and Adverse Modification of Critical Habitat Biological Opinion for the Environmental Protection Agency's Proposed Approval of Certain Oregon Administrative Rules Related to Revised Water Quality Criteria for Toxic Pollutants* (Aug. 14, 2012) (hereinafter "NMFS Oregon BiOp") at 80. No jeopardy opinion was issued for organochlorines, and because DDT was not one of the pollutants that was the subject of the ESA consultation, NMFS did not determine whether the DDT criteria posed jeopardy to any species including the killer whales. That is not a basis upon which Ecology can rely to decide to do nothing.

Similarly, while NMFS concluded in its evaluation of Oregon toxic criteria that "[t]he available evidence for saltwater zinc indicates that listed species exposed to waters equal to the acute and chronic criteria concentrations will suffer acute or chronic toxic effects including mortality (low intensity) and reproductive failure (low intensity)," that agency did not make a jeopardy finding. NMFS Oregon BiOp at 394 (emphasis added). Similarly, for other toxic pollutants, NMFS identified hazards to threatened and endangered species but stopped short of issuing a jeopardy opinion for them. NMFS concluded:

> Based on the direct mortality population modeling results, juvenile salmon and steelhead exposed to aluminum, ammonia, arsenic, lindane, cadmium, chromium (III), chromium (VI), copper, dieldrin, endosulfan-alpha, endosulfan-beta, endrin, heptachlor epoxide, lead, nickel, pentachlorophenol, selenium, silver, tributyltin, and zinc is predicted to result in mortality at the population level—relative to the baseline population model."

NMFS Oregon BiOp at 486 (emphasis added). NMFS also observed in a separate analysis in the biological opinion that

> using formula-based criteria for aquatic life criteria derived following the [EPA] Guidelines are likely to be underprotective of listed species considered in this opinion. . . . The present formula-based metal method does not consider the environmental fate, transport, and transformations of metals in natural environments (specifically for arsenic, cadmium, chromium (III), chromium (VI), copper, lead, nickel, silver, and zinc), nor the influence of other water quality constituents on toxicity, and therefore affords incomplete protection for listed species and is likely to result in sublethal effects, such as central nervous system disruption, altered liver and kidney function, impaired reproduction, decreased olfactory response, delayed smoltification, impaired ability to avoid predation and capture prey, growth inhibition, growth stimulation, changes in prey species community composition (which will increase foraging budgets), and death of listed species considered in this opinion.

NMFS Oregon BiOp at 694. Yet most of these toxic pollutants were not identified as posing formal jeopardy to ESA-listed species in Oregon. Ecology's reliance on jeopardy calls instead of the Services' analysis, and EPA's analysis in its BEs, is a flawed approach to ensuring compliance with both the CWA and the ESA. If anything, it appears that Ecology's only concern is with the ESA, a statute that, by definition, does not apply to many other aquatic designated uses in the state.

33-34: Ecology's process is explicitly not intended to ensure that designated uses are protected but, rather, that none of its criteria are held up through ESA consultation. In taking this approach, Ecology ensures that it will ignore species with dwindling populations in Washington State, subjecting them to further pressures, while waiting for the species to be formally recognized as on the brink of extinction before acting to protect them. This is not only poor policy, but it is contrary to the requirements of the CWA and contrary to the best interests of the species and the public.

34: Ecology continues to rely on EPA's 1985 methodology despite that it is inappropriate to do so. TSD at 34 ("When developing state-specific criteria using new science only, we used standard EPA methods (Stephan et al. 1985) to incorporate new science and calculate the new criteria."). EPA itself has demonstrated that the 1985 methodology is woefully out-of-date:

> In 1990, EPA convened a workgroup of scientists with the charge of revising the 1985 Guidelines to reflect the latest available science. Among other findings, ***the workgroup concluded that a separate set of procedures were needed for deriving aquatic life criteria for bioaccumulative chemicals.*** This conclusion grew out of recognition that the 1985 Guidelines contain a number of fundamental limitations with respect to deriving criteria for bioaccumulative chemicals. Specifically, the 1985 Guidelines:

(1) Lack a prescriptive procedure for addressing risks to aquatic life that result from exposure to chemicals from the diet (food web).
(2) Rely heavily on toxicity test data that often do not account for the slow accumulation kinetics of many bioaccumulative chemicals and consequently, may underestimate effects associated with long-term (steady state) accumulation.
(3) Lack a scientifically rigorous procedure for addressing chemical risks to aquatic-dependent wildlife (e.g., piscivorous birds and mammals).

EPA, *Science Advisory Board Consultation Document Proposed Revisions to Aquatic Life Guidelines Tissue-Based Criteria for "Bioaccumulative" Chemicals Prepared by the Tissue-based Criteria Subcommittee* (August 2005) at 7 (emphasis in original). As EPA explained in 2015, the need to update its method of establishing aquatic life criteria had, to date, been addressed in multiple "[r]eviews, workshops and recommendations in 1990, 1995, 1998, 2001, 2003, 2005" including a "need to address the state of the science and guidance put forth by EPA and NRC." EPA, *Updating EPA's Guidelines for Deriving National Recommended Water Quality Criteria* (undated), *available at* https://www.epa.gov/sites/default/files/2016-01/documents/01_2015_guidelines_meeting_intro_final_secure.pdf at 12. Noting that "EPA expects this to be a several year effort," EPA concluded that its next steps would include "developing a draft updated Guidelines document." *Id*. at 26. EPA's website does not reflect any agency action since 2015 despite its having acknowledged that it began working on updating the Guidelines in 1990—34 years ago.

The problems with the 1985 Guidelines are not minor, as the numerous expert presenters told EPA. One presentation pointed out that the Guidelines emphasize "commercially or recreationally important species" whereas, for example, a more recent 304(a) criteria for ammonia explicitly evaluated whether the criteria are protective of ESA-listed species. David DeForest *et al*., *Ambient Water Quality Criteria: Protectiveness of Threatened and Endangered (T&E) Species and Aquatic-dependent Wildlife*, *available at* https://www.epa.gov/sites/default/files/2016-01/documents/23_deforest_te_final_secure.pdf. These authors recommended that the Guidelines be revised to explicitly recommend a "risk-based framework and available tools for T&E protectiveness evaluations . . . directly into AWQC documents that reflect the state-of-the-science" and "effects endpoints and statistical endpoints." *Id*. at 39. In fact, the authors point out that "EPA is already moving towards" incorporating risk-based framework for ESA-listed species, using ecological risk assessment guidance, the ICE model, and bioavailability models such as the biotic ligand model used for 304(a) copper criteria. *Id*. at 29. However, they ask: "Should additional toxicity endpoints be considered for T&E species?" *Id*.

Another presentation addressed the failures of the 1985 Guidelines to provide protection for snails, crustaceans, aquatic invertebrates, and amphibians, despite the hundreds of such species that are ESA-listed and under review. *See* Kathleen Patnode, *Incorporation of Field or Meso/Microcosm Data to Validate Criteria in Watersheds Supporting Federally Listed Species*, *available at* https://www.epa.gov/sites/default/files/2016-01/documents/22_patnode_revised

_field_validation_secure.pdf. As these species, along with fish and marine mammals, are discussed as needing protection from Washington's aquatic life criteria in these comments, we urge Ecology to take the defects of the four-decade old Guidelines into consideration as it revises its proposal.

34-5: Ecology sets out its procedure for evaluating pollutants for which the Services in the Oregon and Idaho BiOps issued no likely to adversely affect or jeopardize conclusions and where "new science did not provide adequate protection"[1] as follows—ignoring entirely that the criteria might not be protective for species that are not ESA-listed:

1. Match EPA recommendations if there were no LAA determinations or jeopardy calls for similarly listed species in Idaho and Oregon.
2. If there were LAA determinations or jeopardy calls in Idaho and Oregon for similarly listed species in Washington, then evaluate the new science since EPA last updated national recommendations.
3. If new science met protection levels described in the Idaho and Oregon BiOps, then use the new science to derive the criteria.
4. If criteria based on new science did not provide adequate protection, then derive the 1st percentile of the toxicity data distribution.

As the comments about specific pollutants demonstrate, this approach is highly flawed.

35: Ecology's first category—"We are proposing taking no action ("No change"). No action means that Washington aquatic life criteria are identical to EPA CWA recommendations and there are no ESA consultation jeopardy calls."—relies entirely on the outdated 1985 methodology and jeopardy determinations in the two consultations evaluated. Where states had no reason to update their criteria because EPA has long failed to update its 304(a) recommended criteria, no ESA consultation would have taken place. Therefore, Washington is short-changing its aquatic life by following in EPA's footsteps <u>even as it demonstrates it has the ability to update the science</u> and calculate more protective criteria for some pollutants. After its incredible delay, broken only by a 2013 petition from Northwest Environmental Advocates and two lawsuits later, Ecology still does not want to protect its aquatic species. That Ecology seeks to continue to rely, for example, on EPA-recommended criteria for DDT that date from 1980—a whopping 44 years ago—demonstrates the fallacy of Ecology's approach. *See* TSD at 35, Table 6.

35: Ecology notes that it last updated its criteria for ammonia in 2003, prior to EPA's last updated criteria. Nowhere in the TSD does Ecology discuss ammonia, including why it is not discussed. Yet for older criteria, ammonia is "predicted to result in mortality at the population level" by NMFS. NMFS Oregon BiOp at 486. Ammonia is a concern for both salmonids and freshwater mussels, the former often an ESA-listed species, and the latter well on their way to

[1] This sentence should be revised. New science does not "provide protection." Only regulations provide protection. Actually, regulations don't even provide protection if they are not implemented and enforced, but that is another matter.

ESA listings. *See, e.g.*, EPA, *Aquatic life Ambient Water Quality Criteria for Ammonia (2013) available at* https://www.epa.gov/sites/default/files/2015-08/documents/aquatic-life-ambient-water-quality-criteria-for-ammonia-freshwater-2013.pdf at 52-61 (protection of mussels, snails, and salmonids). Ammonia is hardly an irrelevant pollutant in Washington waters, with 22 segments listed in Category 5 and 599 in Category 3. Why is Ecology not even considering updating the state's ammonia criteria? This omission also raises the question: what other toxic pollutants has Ecology ignored?

37: Again, Ecology "used the 1985 EPA guidance in addition to standard method test acceptability requirements." This approach fails to address EPA's own understanding of the deficiencies in the 1985 methodology discussed above.

39: Table 9 (EPA acute and chronic conversion factors (CF) for metals (Kinerson et al. 1996) includes the note that "Conversion factors for cadmium and lead are hardness dependent. The values shown are with a hardness of 100 mg/L as calcium carbonate (CaCO3)" but fails to explain whether that hardness level is relevant to Washington waters.

45-7: **Aluminum**. Ecology discusses having default criteria where state-specific data are not available to use the MLR model but it fails to state what water chemistry data are and demonstrate that they are likely to be protective when used. What is the distinction that Ecology is seeking to make in stating that its criteria distribution is "intended to protect the majority of waters with regulated discharge of aluminum"? TSD at 47. Water quality criteria are not limited to discharges but, rather, apply to all waters.

51: **Arsenic**. Ecology might be interested to know that neither Idaho nor EPA has timely met the reasonable and prudent alternatives for arsenic criteria in Idaho. *See, e.g.*, Northwest Environmental Advocates, Before the United States Environmental Protection Agency, *Petition for Rulemaking to Implement Reasonable and Prudent Alternatives in Biological Opinions from the U.S. Fish and Wildlife Service and National Marine Fisheries Service for Toxic Water Quality Criteria in Idaho Water Quality Standards* (June 1, 2023) (hereinafter "NWEA Idaho RPA Petition") (EPA has failed to promulgate aquatic life criteria for Idaho waters for chronic arsenic, acute and chronic cyanide, chronic lead, acute and chronic nickel, acute and chronic zinc, and to remove the low hardness floor to meet the reasonable and prudent alternatives in the Idaho BiOp and avoid jeopardy to numerous ESA-listed species). We support updating the marine chronic criterion but not using the 1985 Guidelines.

58: **Cadmium**. Ecology notes that "[s]altwater cadmium criteria match EPA recommendations, and there are no known endangered species concerns." It appears, looking at Table 19, that Ecology means to say that "proposed criteria" match EPA recommendations, but it reads as if it is talking about current criteria. What Ecology does not say is whether, given Puget Sound in particular, there might be any saltwater concerns for cadmium and ESA-listed species. For example, Idaho has no saltwater in its state boundaries and neither does Oregon have anything that is the equivalent of Puget Sound. Ecology needs to evaluate whether EPA's

recommended criteria are sufficiently protective of Washington marine species. We support Ecology's updating its freshwater criteria.

62: **Chromium III**. Ecology states there are no known concerns regarding ESA-listed species protection using EPA recommended criteria for chromium III. This is false. Chromium (III) is "predicted to result in mortality at the population level" by NMFS. NMFS Oregon BiOp at 486.

63-5: **Chromium VI**. We support Ecology's looking past the lack of jeopardy calls for freshwater chromium VI criteria in Idaho or Oregon and using new science available and the 1st percentile of the toxicity data distribution to derive chromium VI criteria. Chromium VI is "predicted to result in mortality at the population level" by NMFS. NMFS Oregon BiOp at 486. It makes no sense, however, to ignore the possibility that saltwater criteria might need updating based on the fact that Washington's saltwater criteria are identical to EPA recommendations, and there are no endangered species protection issues highlighted in previous ESA consultations in Oregon. Puget Sound is unique among the three Northwest states. But, oddly, Puget Sound is not even mentioned anywhere in the TSD. It makes even less sense when Ecology acknowledges that "[t]he Swinomish biological evaluation found that there would likely be indirect effects to prey species for ESA listed species in Washington from exposure to the freshwater chronic and saltwater acute and chronic chromium VI criteria (USEPA, 2022a)." TSD at 65 (emphasis added). That EPA and NMFS relied on levels of chromium VI in the "action area is unlikely" suggests that Ecology should engage in looking at potential sources of chromium VI in Puget Sound. Ecology's relying on action area conclusions that have no overlap with the action area in question is illogical.

71-3: **Copper**. The explanation of Ecology's reliance on Mebane et al. (2023) is clear. What is not clear is the implication of the following: "Brix et al. (2021) noted differences in performance on a species-specific basis and differences in criteria depending on water chemistry." TSD at 72. Ecology should explain further the implications of the species-specific performance differences, as well as the water chemistry differences. For an approach that is rooted in providing species-specific protections, failing to explain this leaves a lot to the imagination. The same is true of citing to Mebane's conclusion that the MLR-based criteria were "largely protective." *Id*. at 73.

80: Ecology's conclusion that no changes will be considered for saltwater copper criteria because "Washington's current saltwater copper criteria are identical to EPA recommendations, and there are no known ESA consultation issues in other Region 10 states," ignores the unique nature of Puget Sound, its municipal, industrial, and stormwater discharges, and its species. This is in error.

80-1: **Iron**. Please provide citations to Ecology's compliance with 40 C.F.R. § 131.11(a)(2) ("Where a State adopts narrative criteria for toxic pollutants to protect designated uses, the State must provide information identifying the method by which the State intends to regulate point source discharges of toxic pollutants on water quality limited segments based on such narrative criteria."); (b)(iii)("In establishing criteria, States should: (1) Establish numerical values based

on: . . . [o]ther scientifically defensible methods"); and (b)(2) ("Establish narrative criteria or criteria based upon biomonitoring methods where numerical criteria cannot be established or to supplement numerical criteria."). Simply stating that "Washington will continue to use their narrative criteria to protect against toxic and aesthetic effects of iron" is not complying with the requirements of the law.

81: **Lead**. Ecology is misleading when it states that "there were no jeopardy calls" for lead in the State of Oregon. First, lead is "predicted to result in mortality at the population level" by NMFS. NMFS Oregon BiOp at 486. Second, there was a jeopardy call in Idaho for lead, which Ecology conveniently ignores because the ESA-listed Banbury Springs Lanx is not present in Washington waters. In fact, the FWS made a jeopardy determination for chronic lead "[d]ue to the extraordinary sensitivity of snails in the genus *Lymnaea* or family Lymnaeidae to lead toxicity, significant adverse effects in the form of reduced growth and egg production are likely to be caused by implementation of the proposed chronic lead criterion[.]" FWS, *Biological Opinion for the Idaho Water Quality Standards for Numeric Water Quality Criteria for Toxic Pollutants* (June 25, 2015) (hereinafter "FWS Idaho BiOp") at 264 (emphasis added). So, the question is not whether the Banbury Springs Lanx is present in Washington waters but whether other snails in the genus *Lymnaea* or family *Lymnaeidae* are present in Washington waters. Not only are they present, they have been identified by WDFW as "uncommon/declining" as described above. *See also* Dave C. Campbell, *et al., Phylogenetic analysis of the Lancinae (Gastropoda, Lymnaeidae) with a description of the U.S. federally endangered Banbury Springs lanx*, 663 ZooKeys 107–132 (2017), *available at* https://www.ncbi.nlm.nih.gov/pmc/articles/ PMC5523177/pdf/zookeys-663-107.pdf ("*Fisherola nuttallii* (Haldeman, 1841) which occurs in the Snake River and other major tributaries of, as well as the main stem of the Columbia River. Coutant and Becker (1970) observed *Fisherola nuttallii* laying transparent, suboval gelatinous egg masses containing between 1–12 eggs laid from April to June in the Washington, U.S.A. portion of the Columbia River."); Celeste Mazzacano, The Xerces Society for Invertebrate Conservation, *Fisherola nuttalli (Haldeman 1841) Giant Columbia River limpet; shortface lanx Gastropoda: Lymnaeidae*, *available at* https://www.xerces.org/sites/ default/files/2019-10/fisherola_nuttalli.pdf ("Currently, large populations of *F. nuttalli* persist in only four streams: . . . the Okanogan River and the Hanford Reach of the Columbia River in Washington[.] Additional small populations are found in . . . the lower Columbia River near Bonneville Dam; the Methow River, Washington; and the Grande Ronde River, Washington and Oregon.").

A quick search of Washington's 303(d) list for lead shows that even with the current criteria, there are 30 Category 5 listings and an additional 1,030 Category 3 listings for insufficient data. Many of these are in the Puget Sound area with some in and about the Columbia River. Two Category 3 listings are in the Methow River, noted above as the location of a small population of *F. nuttalli*. *See* Listing ID Nos. 76355, 97499.

Ecology might be interested to know that neither Idaho nor EPA has timely met the reasonable and prudent alternatives for chronic lead criteria in Idaho. *See, e.g.*, NWEA Idaho RPA Petition (EPA has failed to promulgate aquatic life criteria for Idaho waters for chronic lead to meet the

reasonable and prudent alternatives in the Idaho BiOp and avoid jeopardy to numerous ESA-listed species).

81-82: **Mercury**. It's amusing to read that "EPA has indicated that they are working on updating their aquatic life toxics national recommendations for mercury. We have decided to wait until EPA's new recommendations to revise chronic criteria for mercury." On what legal basis does Ecology rest this decision to further delay updating its 1997 criteria? As discussed above, EPA has proposed new freshwater tissue and water column criteria for Idaho. Given Ecology's excuse for not updating its criteria because criteria were being developed in Idaho and Oregon, why is EPA's work for Idaho not a sufficient basis for Ecology to proceed? In proposing its Idaho promulgation, EPA discusses how its proposal meets the requirements of the 2015 FWS Idaho BiOp that Ecology quotes in its TSD at 82 ("Based on the above information, implementation of the proposed chronic criterion for mercury is likely to adversely affect growth, reproduction, and behavior in the bull trout throughout its distribution in Idaho."). Idaho's proposed freshwater chronic criterion was 0.012 µg/L or the same as Washington's current criterion. Leaving it in place is not an option. See further discussion of mercury/methylmercury above.

It is worth noting that on May 25, 2023—after a decade of litigation—EPA issued an Administrator's Determination that new and revised water quality standards are necessary to meet the requirements of the CWA for Washington, including specifically for mercury. *See* Letter from Radhika Fox, EPA Assistant Administrator, to Laura Watson, Ecology (May 25, 2023). While EPA is anticipating an update to its 304(a) recommended criteria, there is no basis for Washington's waiting around for that to be completed, and EPA has no rationale either to wait, having made its Administrator's Determination a little under a year ago.

82: **Nickel**. Ecology's rationale for updating the freshwater criteria is sound. Ecology is incorrect, however, to ignore the jeopardy determination for the Snake River physa, Bliss Rapids snail, Banbury Springs lanx, and the Bruneau hot springsnail in Idaho as if they are irrelevant to Washington, as explained above with regard to lead and the Banbury Springs lanx. FWS found that:

> The proposed acute and chronic aquatic life criterion for nickel are likely to result in mortality to the Snake River physa, the Bliss Rapids snail, and the Bruneau hot springsnail and affect the reproduction, numbers, and distribution of these snails at the rangewide scale.
>
> The proposed acute and chronic aquatic life criteria for nickel are likely to create habitat conditions that cause ionoregulatory disruption and cellular damage oxidative stress (Pyle and Couture 2011) and mortality to the Banbury Springs lanx. These effects are likely to have lethal and sub-lethal impacts affecting the reproduction, numbers, and distribution of the lanx at the rangewide scale.

FWS Idaho BiOp at 267. Ecology has not evaluated the impacts of nickel on the imperiled Ashy pebblesnail, California floater mussel, Columbia Oregonian snail, Dallas sideband snail, Popular Oregonian snail, or the Shortface lanx (*F. nuttali*).

Again, Ecology relies on an entirely flawed basis for not even evaluating the saltwater criteria. TSD at 83 ("No changes were necessary for saltwater criteria because Washington's saltwater nickel criteria are identical to EPA recommendations and there are no endangered species protection issues highlighted in previous ESA consultations in other Region 10 states."). This is illogical as neither Oregon nor Idaho have the waters of Puget Sound nor do they have the ESA-listed marine species present in Washington.

Ecology might be interested to know that neither Idaho nor EPA has timely met the reasonable and prudent alternatives for nickel criteria in Idaho. *See, e.g.*, NWEA Idaho RPA Petition (EPA has failed to promulgate aquatic life criteria for Idaho waters for acute and chronic nickel to meet the reasonable and prudent alternatives in the Idaho BiOp and avoid jeopardy to numerous ESA-listed species).

90-91: **Selenium**. Ecology oddly states that "[w]e are not aware of endangered species concerns for Washington's ESA-listed species related to EPA recommended criteria for selenium." TSD at 90. First, selenium is "predicted to result in mortality at the population level" by NMFS. NMFS Oregon BiOp at 486. Second, Idaho's chronic selenium criterion was the subject of a jeopardy determination by both the Services. For example, FWS found that Idaho's proposed 5 µg/L criterion was "likely to create habitat conditions that cause reproductive failure in the bull trout due to maternal transfer of selenium resulting in embryo toxicity and teratogenicity, and reduced bull trout prey abundance within 44 percent of the streams and 34 percent of the lakes and reservoirs occupied by the bull trout within its range." FWS Idaho BiOp at 265. It also found that "reproductive failure in fish and wildlife is likely to occur at aquatic concentrations of 2 µg/L of inorganic selenium or less than 1 µg/L of organic selenium." *Id*. at 266. Because Ecology merely observed that the current EPA recommended criteria have not been the subject of ESA consultation, it ignored these findings. Ecology should explain how the analysis in the Services' Idaho BiOps is met by adopting EPA's current recommended criteria. It should also evaluate the effects on species not covered by those BiOps that might be as sensitive or more than ESA-listed species in Washington waters. Ecology should also evaluate the need to update the saltwater selenium criteria.

91: **Silver**. We support Ecology's proposing chronic criteria for silver where EPA has no recommendations. Silver is "predicted to result in mortality at the population level" by NMFS. NMFS Oregon BiOp at 486. Again, this demonstrates that Ecology can do better than EPA when it puts its mind to it. However, Ecology misses an opportunity to be more clear on why silver criteria are important to protection of ESA-listed species by not mentioning the Idaho BiOps. While the Services did not make a jeopardy determination for silver, FWS in Idaho did conclude that the acute criterion for silver has the "potential to adversely affect the prey base of the bull trout." FWS Idaho BiOp at 228. Although the FWS concluded that bull trout have sufficiently

diverse diets such that this would not pose a risk to the species, the information is certainly not to be ignored. Likewise, FWS concluded:

> The data reviewed on chronic effects of silver (as silver nitrate) to rainbow trout indicate that the proposed acute criterion, which effectively acts as a chronic criterion, would not avoid chronic toxicity at concentrations below the acute criterion. For example, the work of Davies et al. (1978) suggests that the maximum acceptable silver concentration to prevent chronic mortality in rainbow trout embryos, fry, and juveniles, and avoid premature hatching, is less than 0.17 µg/L for a water hardness equal to 26 mg/L (Davies et al. 1978). The proposed acute criterion at a water hardness value of 26 mg/L is twice that concentration, 0.34 µg/L. Likewise, Nebeker et al. (1983) concluded that the maximum acceptable toxicant concentration of silver to prevent inhibition of growth of steelhead embryos was less than 0.1 µg/L for a water hardness value equal to 36 mg/L. The proposed acute criterion for silver at a water hardness value of 36 mg/L is six times that concentration, 0.6 µg/L.

FWS Idaho BiOp at 227-8. Ecology should evaluate its proposed criteria (hardness based on 100 mg/L) to these recommendations. For the reasons stated above, Ecology should not use EPA's 1985 methodology to calculate saltwater silver criteria.

102: **Zinc**. We support Ecology's updating its zinc criteria. Ecology's stormwater permit for discharges including zinc was the topic of a series of letters from NMFS regarding its failure to establish sufficiently protective limits on stormwater permits. *See, e.g.*, Letter from Steven W. Landino, Washington State Director for Habitat Conservation, NMFS, to Mike Gearheard, Director, Office of Water and Watersheds, EPA (May 4, 2007) (re: Ecology issuance of Industrial Stormwater General Permit); Letter from Steven W. Landino, NMFS, to Mike Gearheard, EPA (Jan. 10, 2008) (same); Letter from Steven W. Landino, NMFS, to Mike Gearheard, EPA (July 15, 2009) (same). Ecology should provide an explanation as to whether its proposed criteria appear to be sufficiently protective given the concerns expressed by NMFS in those letters (and referenced studies); *see also* NMFS, *Water Quality How Toxic Runoff Affects Pacific Salmon & Steelhead* (Spring 2012) (referencing the harm to ESA-listed species from zinc).

Ecology's rationale for not updating its saltwater criteria—because "there are no endangered species protection issues highlighted in previous ESA consultations in other Region 10 states"—is not logical for the reasons explained above. In particular, there is no indication that NMFS's past concerns about industrial and municipal stormwater discharges of metals, including zinc, applied only to freshwater.

Ecology might be interested to know that neither Idaho nor EPA has timely met the reasonable and prudent alternatives for zinc criteria in Idaho. *See, e.g.*, NWEA Idaho RPA Petition (EPA has failed to promulgate aquatic life criteria for Idaho waters for acute and chronic zinc to meet the reasonable and prudent alternatives in the Idaho BiOp and avoid jeopardy to numerous ESA-listed species).

117: **4,4'-DDT and Metabolites**. Ecology proposes to take no action to update its 4,4'-DDT and metabolite criteria because "[w]e are not aware of endangered species protection issues with EPA recommended 4,4'-DDT and metabolites criteria in Region 10 states." TSD at 117. DDT was not the subject of the Oregon BiOp and in Idaho, with FWS rationalizing that DDT was unlikely to adversely affect ESA-listed species because "[n]o new discharges permitted and human health criteria will minimize exposure risk." FWS Idaho BiOp at 231. However, NMFS concluded that for DDT in Idaho "[t]he proposed chronic criterion may allow substantial bioaccumulation to occur because DDTs are taken up not only from the water column but also from sediments and prey organisms" while not making a jeopardy finding for the salmonid species listed in Idaho waters. NMFS Idaho BiOp at 232. However, this biological opinion did not evaluate the impacts of DDT criteria on Southern Resident killer whales because EPA had not provided such an analysis to NMFS. *See id*. at 2. Likewise, in the Oregon BiOp, DDT was not a subject of the ESA consultation but NMFS observed:

> some of these pollutants do not need to be in high concentration in a species to be toxic and have long been recognized as problematic for the Southern Resident killer whales. The organochlorines (e.g., PCBs and DDTs) are thought to pose the greatest risk to killer whales (Ross et al. 2000, Center for Biological Diversity 2001, Krahn et al. 2002). Organochlorines are . . . [d]esigned for their stability, most are highly persistent in the environment and can resist metabolic degradation. These persistent pollutants can accumulate in the food webs and are at relatively high concentrations in upper trophic-level species such as killer whales.

Oregon BiOp at 80. Similarly, in its 2009 report on toxics in the Columbia River Basin, EPA highlighted four toxic pollutants including the long-banned DDT, explaining that "[d]ata collected in the 1980s showed that fish in the Yakima River Basin had some of the highest concentrations of DDT in the nation." EPA, *Columbia River Basin: State of the River Report for Toxics* (Jan. 2009) at 20. EPA also wrote that DDT is "still regularly detected in the fish, plants, and sediments of the River and many of its tributaries, indicating that DDT continues to cycle through the food web," and that "[t]he primary source of DDT to the Columbia River Basin is the considerable acreage of agricultural soils in which DDT accumulated over three decades of intensive use (1940s to early 1970s)." *Id*. at 19. In its conclusion that DDT levels in the Columbia River can be reduced, EPA cited to the CWA provisions of Section 303(d) to identify and prepare "water quality improvement plans for those impaired waters so they will meet water quality standards." *Id*. at 30. These Total Maximum Daily Loads ("TMDL") cannot be protective if the standards they seek to meet are not adequate.

DDT is a problem in Washington's waters statewide. In its latest 303(d) list of impaired waters, DDT and its metabolites accounted for 173 segments in Category 5 and 1,076 in Category 3. In Puget Sound, DDT is a continuing problem. As EPA states on its website:

> High levels of persistent organic pollutants (e.g. PCBs and DDT, which were banned from use in Canada and the U.S. long ago) and newer pollutants like those

> found in flame retardants (PBDEs), may be preventing the population of Southern Resident Killer Whales from increasing at a rate required for recovery. Individuals have been found to carry some of the highest PCB concentrations reported in animals, with levels in blubber exceeding those known to affect the health of other marine mammals. Other contaminant levels, such as the levels of DDT and PBDEs, are also found in high levels, especially in juvenile killer whales.

EPA, Southern Resident Killer Whales, Why is it Happening?, *Current Threats to Killer Whale Recovery, Pollution and Contaminants* (updated June 2021). Ecology's "Phase 3" study, cited in the Western Washington Phase II Municipal Stormwater Permit (July 1, 2019) Fact Sheet, evaluated DDT because it was highlighted as being a "key contaminant" in the report for the Phase 2 study of toxics in surface runoff (EnviroVision et al. 2008; Herrera 2010)." *Id*. at 41. *See* Herrera Environmental Consultants, Inc. 2011, *Toxics in Surface Runoff to Puget Sound, Phase 3 Data and Load Estimates, Washington State Department of Ecology, Olympia, WA* (2011). The report concluded:

> Total DDT was detected in 8.3 percent of the storm-event samples and 6.7 percent of the baseflow samples for all land-use types. Total DDT was detected almost solely in commercial/industrial subbasin samples. Lastly, DDT was detected more frequently in the Puyallup watershed than the Snohomish watershed.

Id. (internal citations omitted). This means that, although banned for decades, DDT is still present in discharges authorized by NPDES permits

It is not difficult to find extensive documentation of the threat posed by DDT to the Southern Resident killer whales that could be easily described as "endangered species protection issues." *See, e.g*., NMFS, *Exposure to a Mixture of Toxic Chemicals: Implications for the Health of Endangered Southern Resident Killer Whales* (Nov. 2016) at 4 (Table 1, describing DDT as persistent, bioaccumulative "pesticide still used in some countries, currently banned in North America; persists in terrestrial runoff 30 years post-ban, enters atmosphere from areas where still in use" that poses the risk to killer whales of "reproductive impairment, immunosuppression, adrenal and thyroid effects." DDT is also described as being maternally transferred to young killer whales during both gestation and lactation. *Id*. at 27-31. While NMFS identifies DDT as a "signature of foraging in California waters," *id*. at 56, Washington's contribution is not nothing, as demonstrated by the 303(d) list, and the killer whales do not care what the source of the DDT is; to provide protection for them, Ecology must consider their current level of contamination. Likewise, Ecology must consider the nutritional stress on the orcas from reduced Chinook salmon populations in the Puget Sound region, *see, e.g., id*. at 57, for which the State of Washington bears full responsibility.

In any event, it is ludicrous for Ecology to assert that there are no ESA concerns with EPA's 1980 recommended criteria, criteria that are 44 years old.

117-8: **6-PPD-quinone (N-(1,3-Dimethylbutyl)-N′-phenyl-p-phenylenediamine-quinone)**. We fully support Ecology's effort to adopt criteria for 6PPD-q. Again, this demonstrates that where Ecology is inclined to do the work, it is fully capable of doing so. Its proposed adoption also shows that where "no ESA consultations have been completed," Ecology can proceed rather than simply ignore the need to update an obviously outdated criterion.

In addition, Ecology's use of the Interspecies Correlation Estimation (WEB-ICE) model raises questions about why it did not use the WEB-ICE model for other criteria derivations?

122: **Acrolein**. Ecology is required to adopt criteria for acrolein. Its comment that it is "not aware of endangered species protection issues for Washington endangered species in regards to EPA's recommended acrolein criteria" and therefore need not give any further consideration to assessing whether EPA's recommended criteria are sufficiently protective is nonsensical because there have been no ESA consultations on this pesticide.

123: **Carbaryl**. Ecology states that it is not aware of any ESA concerns about the EPA recommended criteria for this pesticide. However, it fails to point out that there are other biological opinions that pertain to carbaryl. In 1989, the FWS issued a BiOp on pesticides that include carbaryl. FWS, *U.S. Fish and Wildlife Service Biological Opinion on Selected Pesticides* (June 14, 1989, rev. Sept. 14, 1989) (hereinafter "FWS Pesticide BiOp"). This BiOp includes a large number of jeopardy determinations for species that are similar to those present in Washington waters, e.g., suckers, trout, and mussels—relevant not because of an ESA-listing status but to the CWA requirement to protect designated uses. 40 C.F.R. § 131.11(a)(criteria must support the most sensitive use). According to FWS, this BiOp does not even begin to provide full protection to ESA-listed species. *See* Letter from David C. Frederick, FWS, to Gregg Cooke, EPA Regional Administrator, Re: *EPA's noncompliance in Texas on National Pesticide Consultations* (June 28, 2001). Ecology also misses the 2009 NMFS BiOp on the carbaryl registration. *See,* NMFS, *National Marine Fisheries Service Endangered Species Act Section 7 Consultation Biological Opinion Environmental Protection Agency Registration of Pesticides Containing Carbaryl, Carbofuran, and Methomyl* (April 20, 2009) (finding that pesticide products containing carbaryl are likely to jeopardize the continuing existence of 22 listed Pacific salmonids and that the effects of carbaryl are likely to destroy or adversely modify designated habitat for 20 of 26 listed salmonids. Some of the species identified are present in Washington waters.). We are not in a position to assess the relevance of the science in these biological opinions to the EPA recommended criteria; that is Ecology's job.

124: **Chlordane**. Chlordane is prevalent in Washington waters, with 15 segments on the Category 5 303(d) list and 473 in Category 3. Ecology should conduct an evaluation of whether the criteria are protective of ESA-listed and sensitive species.

124: **Chloride**. We are not aware of any ESA protection issues with regard to chloride or EPA's recommended criteria but given Ecology's frequent, and misguided, invocation of this excuse for not evaluating the need to update criteria, we do not place any store by its conclusion.

125: **Chlorine**. We appreciate Ecology's discussion of the Swinomish Tribe BE. However, EPA's evaluation suggests that the Services might have a different perspective on the potential hazards of chlorine. Given that chlorine is a common constituent of regulated discharges, we urge Ecology to either adopt the 12.56 µg/L EPA calculated or re-adopt the EPA recommended criteria and give the Services an opportunity to determine whether these criteria are sufficiently protective to ESA-listed species in Washington waters. Given the State of Washington and Ecology's ostensible goal to protect salmonids and the Southern Resident killer whale, it is the least the agency could do.

125: **Chlorpyrifos**. Once again, Ecology invokes its lack of awareness about "endangered species protection issues" to avoid evaluating whether the 1986 EPA recommended criteria are sufficient to protect ESA-listed species and designated uses writ large in Washington waters. There is plenty of evidence that EPA might have gotten the criteria wrong 38 years ago. In that intervening time period, NMFS made a jeopardy determination for the registration of this pesticide, a consultation that was reinitiated by EPA following a modification of the federal action (e.g., removal of high risk uses from the authorized use). *See* NMFS, *Revised Conference and Biological Opinion on the Environmental Protection Agency's Registration Review of Pesticide Products containing Chlorpyrifos, Malathion, and Diazinon* (June 30, 2022). Nonetheless, the science on the effects of chlorpyrifos on designated uses, including but not limited to ESA-listed species, is highly relevant to evaluating whether the 38-year old EPA recommended criteria are sufficiently protective. Regardless of how chlorpyrifos is allowed to be used through the registration, Washington already has identified 15 waterbody segments that violated current criteria and 132 for which it had insufficient information (Category 3). These alone demonstrate that chlorpyrifos is present in Washington waters. Moreover, EPA issued a final rule revoking all chlorpyrifos tolerances and setting an expiration date for those tolerances of February 28, 2022. EPA, *Chlorpyrifos*, *available at* https://www.epa.gov/ingredients-used-pesticide-products/chlorpyrifos. Regardless of subsequent action by the Eight Circuit Court of Appeals, *see id*., EPA has finally determined this pesticide is not safe for people. NMFS has identified it is not safe for salmon. Ecology has an obligation to assess the sufficiency of the outdated EPA recommended criteria for protection of Washington's aquatic species.

In addition, Ecology is ignoring the potential impacts to the ESA-listed Oregon spotted frog. There is evidence that amphibians, including but not limited to those with ESA listings, are more sensitive to pesticides than other biota. *See, e.g*., Sara J. McClelland, *et al., Insecticide-induced changes in amphibian brains: How sublethal concentrations of chlorpyrifos directly affect neurodevelopment*, 10 Environ Toxicol Chm 2692 (Oct. 2018) ("Previous work has shown that trace amounts of the pesticide chlorpyrifos altered tadpole morphology and neurodevelopment in artificial ponds[.]. * * * Developmental exposure to chlorpyrifos resulted in metamorphs with a relatively wider optic tectum, medulla, and diencephalon compared with controls, and this result was found regardless of the zooplankton population within the mesocosm. Thus, chlorpyrifos directly impacted brain development, independent of the effects on the trophic community. . . . To conclude, low, ecologically relevant doses of organophosphorous pesticides can directly impact neurodevelopment in a vertebrate model.").

126-9: **Cyanide**. Ecology states: "Washington's current saltwater cyanide criteria are identical to EPA recommendations and to our knowledge there are no endangered species protection concerns in Washington." This is absurd. First, Ecology fails to accurately reflect its current cyanide saltwater criteria. These are inaccurately shown in TSD at 126, Table 63. In fact, as Ecology knows full well, its saltwater criteria include an entirely separate provision in a footnote:

> The cyanide criteria are: 2.8µg/l chronic and 9.1µg/l acute and are applicable only to waters which are east of a line from Point Roberts to Lawrence Point, to Green Point to Deception Pass; and south from Deception Pass and of a line from Partridge Point to Point Wilson. The chronic criterion applicable to the remainder of the marine waters is l µg/L.

WAC 173-201A-240, Table 240, footnote mm. Second, Ecology cites only the Idaho BiOps for information about ESA consultation, ignoring the draft BiOps by both Services in a failed national consultation on cyanide that shed light on saltwater criteria that would not have been covered in an ESA consultation for an inland state, such as Idaho.

While differences between EPA and the Services, and litigation brought by Northwest Environmental Advocates against the Services over their failure to complete the consultation, brought about EPA's withdrawal of the request for consultation, NMFS found that the current EPA recommended cyanide criteria are

> likely to reduce the viability of one or more populations throughout the range of listed Pacific salmon, steelhead, and sturgeon species, we expect that the action is likely to reduce the viability (that is, increase the extinction probability or appreciably reduce their likelihood of both surviving and recovering in the wild) of the listed species as a whole. The specific listed species at risk are: California coastal Chinook salmon, Central Valley spring-run Chinook salmon, Lower Columbia River Chinook salmon, Upper Columbia River spring-run Chinook salmon, Puget Sound Chinook salmon, Sacramento River winter-run Chinook salmon, Snake River fall-run Chinook salmon, Snake River spring/summer-run Chinook salmon, Upper Willamette River Chinook salmon, Columbia River chum salmon, Hood Canal summer-run chum salmon, Central California Coast coho salmon, Lower Columbia River coho salmon, Southern Oregon and Northern California Coast coho salmon, Oregon Coast coho salmon, southern green sturgeon, shortnose sturgeon, Lake Ozette sockeye salmon, Snake River sockeye salmon, Central California Coast steelhead, California Central Valley steelhead, Lower Columbia River steelhead, Middle Columbia River steelhead, Northern California steelhead, Puget Sound steelhead, Snake River steelhead, South-Central California Coast steelhead, Southern California coast steelhead, Upper Columbia river steelhead, and Upper Willamette River steelhead.

> Finally, a reduction in Puget Sound Chinook salmon would in turn significantly reduce the forage base of southern-resident killer whales. Therefore, while we agree that southern resident killer whales are not likely to respond physically, physiological, or behaviorally to their direct exposure to cyanide at the CCC or the CMC, we expect that the action, through indirect effects to their primary prey, Pacific salmon, is likely to appreciably reduce the likelihood of southern-resident killer whales surviving and recovering in the wild. Similarly, a reduction in Chinook, coho, sockeye, and chum salmon would in turn significantly reduce the forage base of Cook Inlet beluga whales.

NMFS, *DRAFT Endangered Species Act Section 7 Consultation Biological Opinion & Conference Opinion On the U.S. Environmental Protection Agency's Approval of State or Tribal, or Federal Numeric Water Quality Standards for Cyanide Based on EPA's Recommended 304(a) Aquatic Life Criteria* (undated) at 270-271. While NMFS found no jeopardy—based on insufficient data—to marine species based on the EPA recommended criteria, it did not consult on and did not find that Washington's much higher marine criteria in footnote mm are protective. *See id*. at 31-32.

Last, there is other information in the aborted national consultation on cyanide that should inform Ecology's choice of proposed criteria. For example, the Draft NMFS Cyanide BiOp discusses the relationship between cyanide and low temperatures on coldwater species, such as salmon. *Id.* at 267. Ecology should also review and rely on the related FWS BiOp, which found for example jeopardy to ESA-listed bull trout. *See* FWS, *Draft Biological Opinion On EPA's Proposed Program of Continuing Approval or Promulgation of New Cyanide Criteria in State and Tribal Water Quality Standards* (Jan. 15, 2010). Again, the information on the effects of cyanide criteria on ESA-listed species is not limited to evaluating only ESA-listed designated uses in Washington.

Ecology might be interested to know that neither Idaho nor EPA has timely met the reasonable and prudent alternatives for cyanide criteria in Idaho. *See, e.g*., NWEA Idaho RPA Petition (EPA has failed to promulgate aquatic life criteria for Idaho waters for acute and chronic cyanide to meet the reasonable and prudent alternatives in the Idaho BiOp and avoid jeopardy to numerous ESA-listed species).

130: **Diazinon**. Diazinon was determined to cause jeopardy to a large number of ESA-listed species in the 1989 FWS Pesticides BiOp. *See id*. at II-64—II-66. Species at jeopardy include mussels, trout, salamanders, chub, darter. *Id.* It is Ecology's job to determine if the information on the pesticide registration is applicable to the EPA recommended criteria or Ecology's proposed criteria. This is particularly true when Ecology, as it is here, proposes to adopt criteria that it had not bothered to include in its standards to date. That Ecology is "not aware" of ESA issues does not mean that EPA's recommended criteria are the end of the analysis. *See* 40 C.F.R. § 131.11. Moreover, Ecology should be aware of a significant source of information on diazinon: the NMFS, *Revised Conference and Biological Opinion on the Environmental Protection Agency's Registration Review of Pesticide Products containing Chlorpyrifos,*

Malathion, and Diazinon (June 30, 2022). This BiOp did not result in a jeopardy determination only because "EPA and all diazinon applicants have subsequently agreed to modify the action by adopting Conservation Measures to avoid the likelihood of jeopardizing the continued existence of ESA-listed species or resulting in the destruction or adverse modification of critical habitat[.]" *Id*. at 112. Regardless, the BiOp pertains to this pollutant and contains relevant analysis.

130: **Dieldrin**. Ecology notes that EPA's recommended saltwater criteria and existing Washington criteria for dieldrin are based on the now outdated 1985 methodology. That alone strongly suggests, for the reasons explained above, that Ecology should reassess those criteria rather than blindly continuing to rely upon them. *See* 40 C.F.R. § 131.11. The same is true of EPA's 1995 update to the freshwater criteria, upon which Ecology is relying. Dieldrin is known to be found in Washington's waters, making accuracy of the criteria particularly important. In its 2018 list, Washington had 55 waterbody segments in Category 5 and 386 in Category 3, for which it had insufficient data. Finally, dieldrin is "predicted to result in mortality at the population level" by NMFS. NMFS Oregon BiOp at 486.

131: **Endosulfan (alpha) & (beta)**. Ecology's ignorance notwithstanding, there is information from the Services on the hazards of endosulfan to some ESA-listed species, and therefore potentially to ESA-listed species and other sensitive designated uses in Washington waters. For example, jeopardy determinations were made by the FWS in its 1989 Pesticide BiOp, notably for suckers and mussels. *See id.* at II-89–II-91. NMFS in its Oregon BiOp did not make a jeopardy determination but it raised significant concerns about the protectiveness of the EPA recommended criteria:

> Based on the direct mortality population modeling results, juvenile salmon and steelhead exposed to aluminum, ammonia, arsenic, lindane, cadmium, chromium (III), chromium (VI), copper, dieldrin, endosulfan-alpha, endosulfan-beta, endrin, heptachlor epoxide, lead, nickel, pentachlorophenol, selenium, silver, tributyltin, and zinc is <u>predicted to result in mortality at the population level</u>—relative to the baseline population model.

NMFS Oregon BiOp at 486 (emphasis added). How does this not constitute "endangered species protection issues with EPA recommendations"?

132: **Endrin**. Ecology notes that EPA's recommended saltwater criteria and existing Washington criteria for endrin are based on the now outdated 1985 methodology. That alone strongly suggests, for the reasons explained above, that Ecology should reassess those criteria rather than blindly continuing to rely upon them. *See* 40 C.F.R. § 131.11. The same is true of EPA's 1995 update to the freshwater criteria, upon which Ecology is relying. Shorebirds are among jeopardy calls for endrin in the FWS Pesticide BiOp, suggesting that Ecology should look at that information. *Id*. at II-92. Endrin is also "predicted to result in mortality at the population level" by NMFS. NMFS Oregon BiOp at 486. Blindly using EPA's recommended criteria is not sufficient.

132: **gamma-BHC (Lindane)**. Lindane is "predicted to result in mortality at the population level" by NMFS. NMFS Oregon BiOp at 486. Blindly using EPA's recommended criteria, based on the outdated 1985 methodology is not sufficient.

133: **Guthion**. Northwest Environmental Advocates is also not aware of any endangered species protection issues with guthion. Guthion was not the subject of Oregon, Idaho, or California ESA consultations. This is likely because other states had already adopted EPA's 1986 criteria, an action Ecology failed to do for 38 years. We urge Ecology to adopt the missing criteria but we also urge that it engages in the evaluation of the sufficiency of EPA's 38-year old recommended criteria rather than relying on the absence of any ESA consultations done to date.

133: **Heptachlor**. Heptachlor has not been the subject of any ESA consultations on species found in Washington because Idaho and Oregon had already adopted criteria for this 1980 recommended criteria. In California, EPA declined to engage in ESA consultation for this pollutant, thereby avoiding it. It is unlikely that 44-year old criteria are sufficient to protect designated uses including but not limited to ESA-listed species. Heptachlor is one of multiple pesticides covered by the NMFS *Biological Opinion on EPA Pesticides General Permit for Discharge of Pollutants into U.S. Waters* (Oct. 17, 2016) that concluded:

> The species jeopardy and designated critical habitat adverse modification determinations in prior NMFS opinions for pesticide re-registrations and the analyses in EPA's BE indicate that pesticide discharges under these use patterns will result in exposures to toxicants that will affect the survival and fitness of individuals through direct mortality, reduced growth, altered behavior, and reduced fecundity of salmonids, sea turtles, rockfish, sturgeon, coral, and Nassau grouper. Further, discharges under these use patterns are expected to result in exposures to toxicants that will affect the survival and fitness of individuals through reduction in extent of inhabitable area/avoidance and reduction in prey species, affecting the prey component of designated critical habitat essential features for the following species: leatherback sea turtle, southern resident killer whale, green sturgeon, eulachon, bocaccio, yelloweye rockfish, steelhead, and chum, sockeye, chinook, and coho salmon.

Id. at 95 (emphasis added). The findings of this biological opinion apply to Washington State. *Id*. at 117 (the reasonable and prudent alternatives apply in Washington). Putting aside the EPA action underlying the consultation, Ecology is required to use the data and analysis provided therein.

134: **Heptachlor epoxide**. As explained above with regard to mercury, Ecology does not have the option foregoing the adoption of numeric criteria with a wave to using its narrative toxics criteria "when needed," which it utterly fails to explain. In addition, heptachlor epoxide is "predicted to result in mortality at the population level" by NMFS. NMFS Oregon BiOp at 486. Washington has nearly 1,000 waterbody segments that it has identified as either Category 3 or 5 for heptachlor and heptachlor epoxide combined, demonstrating that the pollutant is of

significant concern in the state. It is nonsensical to concurrently state that heptachlor epoxide is a metabolite that "can result in toxicity greater or less than a parent compound" and that Ecology is not going to adopt any numeric criterion for heptachlor epoxide.

134: **Malathion**. Washington has gone 38 years without a malathion criterion and now it proposes to adopt recommended criteria of that are likewise 38 years old because it is not aware of any ESA issues. Again, this is likely because adjoining states managed to adopt these criteria a long time ago. Even so, FWS found that malathion posed jeopardy to numerous aquatic species, many of which are likely relevant to designated uses in Washington, possibly including ESA-listed species. FWS Pesticide BiOp. For example, malathion was found to pose jeopardy to suckers, mussels, darters, and amphibians. *Id*. at II-127–II-129. Malathion was also a part of the NMFS consultation on the 2016 reissuance of the EPA Pesticide General Permit. *See e.g., id*. at 76-77; see also id. at 86 ("Mixtures containing malathion resulted in additive effects (when mixed with DDT, toxaphene), synergistic effects (when mixed with Baytex, parathion, carbaryl, perthane) and antagonistic effects (when mixed with copper sulfate) (Macek, 1975)."). Malathion was the subject of NMFS's biological opinion on EPA registration for malathion that required additional conservation measures to avoid jeopardy. *See* NMFS, *Revised Conference and Biological Opinion on the Environmental Protection Agency's Registration Review of Pesticide Products containing Chlorpyrifos, Malathion, and Diazinon* (June 30, 2022). Regardless of the determination of jeopardy, the data and analysis in the NMFS BiOp is essential for Ecology to include when it adopts malathion criteria. For example, in evaluating the risk to Chinook salmon, Puget Sound ESU, NMFS found that prior to the adoption of the measures, malathion posed a "high risk," including:

- Reductions in prey and degradation of water quality are likely to reduce the overall conservation value of designated critical habitat
- Exposure to mixtures and elevated temperature expected to increase adverse effects

Id. at 1133. To assert that Ecology is "not aware of endangered species protection issues with EPA recommended malathion criteria in Region 10 states" may be accurate but it is distinctly disingenuous considering the existing BiOps.

135: **Methoxychlor**. Another EPA recommended criteria that date to 1986. We reiterate the same points as set out above regarding the reason why there are no consultations completed on this pollutant and why that should not be relied upon by Ecology to simply adopt outdated EPA recommendations. NMFS has pointed out that

> methoxychlor is a co-constituent in formulations with malathion. Formulated products are more toxic than methoxychlor alone. It is also an organo-chlorine insecticide that is toxic to fish and aquatic invertebrates. Johnson and Finley (1980) reported LC50s less than 20 µg/L and one 96-hour LC50 of 1.7 µg/L was reported for Atlantic salmon (Howard 1991).

NMFS Pesticide General Permit BiOp at 76.

135: **Mirex**. Same comments as above regarding the reason why Ecology is not finding any consultations on mirex and why it should not rely on the lack of consultations for other states.

136: **Nonylphenol**. Ecology seems to have missed the information that there are ESA-listed marine mammals in Washington waters. It cites the EPA BE on the Swinomish consultation that "exposure at the level of the marine chronic nonylphenol criterion is likely to adversely affect rainbow trout (steelhead), Chinook salmon, chum salmon, bull trout, bocaccio and yelloweye rockfish." TSD at 137. But it fails to consider the designated use of ESA-listed Southern resident killer whales. On the basis of no other ESA consultations having been completed, it has decided to adopt EPA's recommended criteria. We suggest starting with Kiah Lee, *et al., Emerging Contaminants and New POPs (PFAS and HBCDD) in Endangered Southern Resident and Bigg's (Transient) Killer Whales (Orcinus orca): In Utero Maternal Transfer and Pollution Management Implications*, 57 Environ. Sci. Technol. 360-374 (2023) at 360. This study not only found the chemical 4-nonylphenol predominated the orcas' toxic burden but identified it as the chemical having the highest transfer rates from mothers to fetuses, as high as 95 percent. *Id*.

There is information on nonylphenol in Puget Sound waters despite Ecology's not recognizing it as a pollutant of concern. For example, Dr. James P. Meador and his team found the following:

> Nonylphenol (NP) was one of the more ubiquitous compounds in our study and was observed in every sample (except Sinclair Inlet estuary water) at relatively high concentrations in water (14–41 ng/L) and tissue (8–76 ng/g). The ethoxylates of nonylphenol (NP1EO and NP2EO) were also detected in most effluent and tissue samples. The U.S. Environmental Protection Agency (2005) chronic water quality criterion (WQC) for nonylphenol in marine systems is 1.7 ng/mL, a value that approximates the observed effluent concentration for the Tacoma WWTP reported here. Also, the U.S. Environmental Protection Agency (2010) provides toxic equivalency factors (TEFs) for aquatic species exposed to nonylphenol ethoxalates and these are considered to be about 50% as potent as NP (NP = 1; NP1EO and NP2EO = 0.5). When these TEFs are applied to the observed effluent concentrations, the combined concentrations of NP and these 2 ethoxylates exceed the WQC approximately 2-fold.

James P. Meador *et al., Contaminants of emerging concern in a large temperate estuary*, 213 Environ Pollut. 254-267 (June 2016) at § 4.4.3. Ecology should respond to the need to have criteria based on TEFs for nonylphenol ethoxalates.

Nonylphenol, entirely ignored by Ecology to date, is of grave concern. For example, in 1999–2000, the U.S. Geological Survey ("USGS") found the compounds in 80 percent of 139 streams across 30 states. Dana W. Kolpin, *et al*., *Pharmaceuticals, Hormones, and Other Organic Wastewater Contaminants in U.S. Streams, 1999−2000: A National Reconnaissance*, 36 Environ. Sci. Technol. 1202-1222 (2002), *available at* https://pubs.acs.org/doi/pdf/

10.1021/es011055j. Of the 95 compounds evaluated, 4-nonylphenol was among top seven. *Id*. at 1202. A driver of EPA's concern in 2005, when it issued its recommended criteria for nonylphenol, was the large—and increasing—production of nonylphenol:

> Nonylphenol is produced in large quantities in the United States. Production was 147.2 million pounds (66.8 million kg) in 1980 (USITC 1981), 201.2 million pounds (91.3 million kg) in 1988 (USITC 1989), 230 million pounds (104 million kg) in 1998 (Harvilicz 1999), and demand is increasing about 2 percent annually.[508]

EPA, *Aquatic Life Ambient Water Quality Criteria -- Nonylphenol* (Dec. 2005) at 1. Meanwhile, Ecology does not even account for the existence of nonylphenol on its 303(d) list database. In adopting nonylphenol criteria, Ecology must evaluate the sufficiency of EPA's recommended criteria.

137: **Parathion**. NMFS has found that "[m]ixtures containing malathion resulted in additive effects (when mixed with DDT, toxaphene), synergistic effects (when mixed with Baytex, parathion, carbaryl, perthane) and antagonistic effects (when mixed with copper sulfate) (Macek, 1975). Mixtures of diazinon and parathion killed more bluegill sunfish than predicted." NMFS EPA Pesticide General Permit BiOp at 86. FWS found that parathion jeopardized numerous ESA-listed species including darters, salamanders, suckers, and mussels, as well as aquatic dependent birds. *See* FWS Pesticide BiOp at II-100–II-102. This is sufficient information upon which Ecology should conduct a full evaluation of whether the EPA recommended criteria are sufficiently protective for Washington's designated uses.

138: **Pentachlorophenol**. We support Ecology's having derived more protective criteria for pentachlorophenol based on the very language that we have cited above concerning the predicted mortality from this pollutant. It's a mystery why Ecology applied a different approach to this pollutant as compared to the other ones for which Ecology decided not to conduct an evaluation. NMFS did find that pentachlorophenol is "predicted to result in mortality at the population level." NMFS Oregon BiOp at 486. We note, in addition, that in California, the CTR BiOp determined that pentachlorophenol posed jeopardy to salmonids, among other species, an action that postdated EPA's recommended criteria. CTR BiOp at 188 ("Based on the documented toxicity of pentachlorophenol to early life stage salmonids, with adverse effects seen at water concentrations between 2.5 to 7.5 times below the proposed chronic criterion, together with the potential for exposure of anadromous salmonids to occur, the Services conclude that the proposed numeric criteria are likely to significantly impair the survival and recovery of all listed anadromous salmonids, and are likely to adversely affect populations of the Lahontan cutthroat trout, Paiute cutthroat trout, and Little Kern golden trout if an exposure pathway is created within the habitat for these species."). The Services also found that "the chronic criterion may also pose a potential hazard to some nonsalmonid species. Among the non-salmonids, suckers and minnows appear more sensitive." *Id.* Because Ecology has not referenced the CTR, it is unclear whether the agency has taken the Services' analysis into account in deriving proposed criteria for Washington. If not, it should.

150: **Perfluorooctane sulfonic acid (PFOS)**. It is unclear why Ecology announces: "We intend to adopt EPA final recommendations if they are released during this rulemaking. If EPA's recommendations are not finalized during the proposal phase, we do not intend to adopt the draft recommendations." Why can Ecology not, just for once, be out front on updating its aquatic life criteria? This is just irresponsible. The point of water quality standards, including numeric criteria, is to increase their regulation and decrease their discharge to waters of Washington. Based on the state's ever-growing 303(d) list—even considering the use of highly outdated numeric criteria and the absence of many legally-required criteria—Ecology is doing a lousy job of protecting the aquatic environment from toxic chemicals. PFAS is a huge concern that EPA has ignored for decades; why should Ecology perpetuate the problem?

For example, **since 1999**, the Center for Disease Control ("CDC") has measured at least 12 PFAS in the blood serum of participants 12 years and older in the National Health and Nutrition Examination Survey. CDC, *Per- and Polyfluorinated Substances (PFAS) Factsheet*, *available at* https://www.cdc.gov/biomonitoring/PFAS_FactSheet.html. The CDC found four PFAs—PFOA, PFOS, perfluorohexane sulfonic acid ("PFHxS"), and perfluorononanoic acid ("PFNA")—in the serum of nearly all people tested, indicating widespread exposure to these PFAS in the U.S. population. *Id*. **In 1998**, EPA was informed about the tendency of PFOS to build up in blood and was offered studies that showed liver damage from PFAS exposure. Scott Faber, Environmental Working Group, *For 20-Plus Years, EPA has Failed to Regulate 'Forever Chemicals'* (Jan. 9, 2020), *available at* https://www.ewg.org/research/20-plus-years-epa-has-failedregulate-forever-chemicals. **In 2006**, EPA's Science Advisory Board found PFOA to be a "likely human carcinogen." *Id.* In 2016, EPA set a non-enforceable health advisory level at 70 parts per trillion for PFOA and PFOS in drinking water—far above levels that independent researchers said was safe. *Id*. In 2019, EPA issued a PFAS Action Plan and promptly missed a self-imposed deadline to issue a plan to set enforceable legal limits for PFOA and PFOS in drinking water. *Id.* The point is, waiting for EPA to act is not good policy for the State of Washington.

151: **Perfluorooctanoic acid (PFOA)**. See discussion for PFOS above.

152: **Polychlorinated biphenyls (PCBs)**. Ecology offers an especially thin excuse for not evaluating whether its PCB criteria are sufficiently protective: "We do not intend to modify our freshwater and saltwater acute PCB criteria because of existing protections the criteria provides [sic] for aquatic life." We suggest that Ecology consider these findings from NMFS: " In this report, we focus on three persistent organic pollutants (POPs): polychlorinated biphenyls (PCBs), polybrominated diphenyl ethers (PBDEs), and dichlorodiphenyltrichloroethane (DDT) and its metabolites. We focus on these three POPs because they are found at relatively high levels in the whales and may cause adverse health effects." NMFS, *Exposure to a Mixture of Toxic Chemicals: Implications for the Health of Endangered Southern Resident Killer Whales* (Nov. 2016) at vii; *see also id*. at 69 ("Southern Resident killer whales frequent marine waterways where relatively high levels of PCBs, PBDEs, and DDTs are found. Adverse effects from exposure to these persistent pollutants are known to impact reproduction, immune function,

and neurodevelopment, and to disrupt the endocrine system, in multiple mammalian species. Exposure to a mixture of these contaminants can heighten these detrimental biological effects and may hinder recovery of the Southern Resident killer whale population. . . . Ultimately, long-term monitoring, reducing exposure, and determining the risks posed by PCBs, PBDEs, and DDTs in the killer whales are essential for the effective protection of this endangered species."). There are innumerable studies and reports on the risks posed by PCBs to marine mammals and particularly the endangered orcas.

Regardless of whether there has been a consultation on PCB criteria that addresses marine mammals, Ecology is still obligated to ensure that its numeric criteria protect the most sensitive designated uses in its waters. Ecology would be hard pressed to come up with a population of threatened or endangered species in its waters that is more under threat of extinction than the Southern resident killer whales.

152: **Sulfide-Hydrogen Sulfide**. Northwest Environmental Advocates proposes that Ecology adopt the EPA recommended criteria. To the extent that Ecology suggests that it will use its toxic narrative criteria to address "any issues," it is required to establish precisely how it will do so, as described above. Ecology has an abysmal track record on using its toxic narrative criteria.

153: **Toxaphene**. Toxaphene is another pollutant that EPA chose to not consult on for the CTR promulgation. While the Services found no jeopardy for the Idaho criteria, Idaho is an inland state without marine waters. The toxaphene criteria date to 1986, an indication of why they are likely not protective. We suggest that Ecology make at least a half-hearted effort to see if there is "new" literature on the effects of toxaphene in the intervening 38 years since EPA derived its criteria. Even with these old criteria, there is sufficient evidence that toxaphene pollution is affecting Washington waters, with 20 waterbody segments on the Category 5 list and 261 on the Category 3 list.

153: **Tributyltin**. Ecology, which even with Puget Sound in its state waters has astoundingly failed to adopt criteria for this highly toxic pollutant, asserts that it is "not aware of endangered species protection issues with EPA recommended tributyltin ("TBT") criteria in Region 10 states." Yet for PCP, it quoted this very statement from the NMFS Oregon BiOp (edited for TBT):

> Based on the direct mortality population modeling results, juvenile salmon and steelhead exposed to . . . <u>tributyltin . . . [are] predicted to result in mortality at the population level</u>—relative to the baseline population model.

NMFS Oregon BiOp at 486 (emphasis added). It's enough to render anyone speechless.

Nonetheless, we will note the following and urge Ecology to respond to these findings in its decision to adopt EPA recommended criteria for TBT. While use of TBT as an antifouling paint has been restricted, in the early 1980s through mid-1990s, water column concentrations in the 0.1–1.0 ng/mL range were found, as compared to the EPA recommended criteria of 0.07 ng/mL

for freshwater and 0.007 ng/mL for marine water, "certainly result[ing] in severe biological effects in many ecosystems." James P. Meador, *Organotins in Aquatic Biota: Occurrence in Tissue and Toxicological Significance* (2011), published in Environmental Contaminants in Biota: Interpreting Tissue Concentrations, 2nd edition, ed. W. Nelson Beyer & James P. Meador (Boca Raton: CRC, 2011), *available at* http://digitalcommons.unl.edu/usdeptcommercepub/552 at 260–261 (citing K. Fent, *Ecotoxicology of organotin compounds*, 26 Crit. Rev. Toxicol. 1–117 (1996)). Since then, as water column levels have improved, sediment concentrations have remained high and "sediment-associated TBT will likely continue to be a source and lead to elevated water and tissue concentrations." *Id.* at 260.

Bioaccumulation of organotins has proven difficult to assess but high bioconcentration factors ("BCF") for aquatic invertebrates have been observed, such as a BCF of 15,000 for marine snails for TPrT and in the range of 2,000 to 95,000 for TBT. *Id*. at 264. As with some other toxic pollutants, "rate of uptake for TBT is highly variable among species" and similarly the rate of elimination is also highly variable, but NMFS generally concluded that "TBT (and likely other organotins) is very slowly eliminated from tissue." *Id*. at 265, 266. NMFS summarized the body burden of marine mammals with regard to several organotins:

> Marine mammals also appear to accumulate relatively high concentrations of organotins. Several recent studies and reviews demonstrate that numerous marine mammal species exhibit high levels in various tissues, including liver, blubber, and muscle. Tanabe (1999) found concentrations of TBT at high concentrations (35-2200 ng/g ww) in several different tissues of finless porpoise *(Neophocaena phocaenoides)* from waters around Japan, with similar high concentrations for DBT and MBT. A review article by Kajiwara et al. (2006) presents data for 11 marine mammals species from various locations (Japan, Great Britain, Mediterranean, United States, Indo-Pacific, and India) showing high concentrations of TBT in liver (mean values 20-820 ng/g ww, maximum = 1200 ng/g). A number of studies examined organotins in killer whales *(Orcinus orca).* Harino et a1. (2008) found TBT concentrations in the range of 6-25 ng/g ww and far higher levels of DBT (16-556 ng/g) and MBT (16-152 ng/g) in the liver of this species (Table 7.2). They also report low levels of TPT (<i-58 ng/g) in blubber and liver, which was also noted by Kajiwara et al. (2006) who reported no detectable concentrations of TPT or DPT in killer whales.

Id. at 263.

In 2011, NMFS concluded that "[i]n all cases an organotin compound is far more toxic than its individual components," and identified multiple types of toxic responses including: inhibition of cellular energy metabolism, endocrine disruption including imposex and intersex abnormalities, neurotoxicity, inhibition of ion pumps, inhibition of cytochrome P450, inhibition of intracellular enzymes, immune system impairment, reduced growth, shell chambering (excessive shell growth) in bivalves, maternal transfer to eggs and young, reproductive effects including impairment, behavioral alterations, as well as mortality. *Id*. at 266, 269-277.

These and additional toxic responses are discussed in a 2017 analysis of data from 160 references that focused on TBT as an endocrine disrupter. Laurent Lagadic, *et al*., *Tributyltin: Advancing the Science on Assessing Endocrine Disruption with an Unconventional Endocrine-Disrupting Compound*, 245 Reviews of Environmental Contamination and Toxicology 65–127, 67 (2017), *available at* https://link.springer.com/chapter/10.1007/398_2017_8. This paper drew conclusions about the toxicity of TBT as well as the implications for adequate regulation of complex toxic compounds:

> [A] more thorough evaluation of the available data clearly shows that TBT is highly toxic to a variety of aquatic taxa. Through a comparative analysis of the potency of TBT in various aquatic species, our review highlights the observation that fish are as sensitive, or more so, compared to molluscs when based on water exposure. This is an important conclusion because molluscs were long recognized as uniquely sensitive to this compound. TBT's precise MeOA is still incompletely understood but may include link/cross-talk between PPARs (i.e., carbohydrate, lipid, protein metabolism), RXRs (i.e., development), thyroid (growth) and even sex determination and differentiation pathways; the latter pathways may be stronger affected by TBT exposure in species where environmental factors play a significant role in determining sex ratios (e.g., zebrafish).
>
> Current screening and assessment methodologies are able to identify TBT as a potent endocrine disruptor with a high environmental risk. If those approaches were available when TBT was introduced to the market, it is likely that its use would have been regulated sooner, thus avoiding the detrimental effects on marine gastropod populations and communities as documented over several decades.
>
> This retrospective evaluation of TBT, a very potent endocrine disruptor in vertebrates and invertebrates, should serve as an example demonstrating how shortfalls within the framework of chemical toxicity evaluation can result in under-protective regulatory assessment. Nowadays, the assays included in the OECD Conceptual Framework, including those recently developed on gastropod molluscs would likely recognize TBT as a chemical of concern with respect to endocrine disruption, although its mechanism of action and potency across taxonomic groups would remain largely unknown. Reflective analysis of well-studied,but potentially misunderstood contaminants, such as TBT, provides important lessons that should serve as a guiding principle for future studies and refinements of assessment protocols.

Id. at 105.

Adoption of EPA's recommended criteria without consideration to issues pertaining specifically to Puget Sound waters and without consideration of impacts to highly sensitive species is in error.

CONCLUSION

After waiting an extraordinary and unjustified number of years to update Washington's toxic criteria for the protection of aquatic life, Ecology has managed to do very little in its proposed update. It's as if it adopted one of its initial proposals—to conduct multiple rulemakings, spread out over years—but repackaged that proposal to do a few updates in a single rulemaking. Ecology has concurrently demonstrated its technical ability to derive aquatic life criteria in some instances—primarily where it knows or suspects that using EPA-recommended criteria will likely result in a CWA disapproval or ESA jeopardy determination—and yet it has glibly proposed to leave in place innumerable toxic criteria that doubtless fail to protect the very species the state pledges not only to protect but to restore. In the end, this rulemaking is a picture of Ecology mostly, but not entirely, doing the bare minimum.

Sincerely,

Nina Bell
Executive Director

cc: Casey Sixkiller, Regional Administrator, Environmental Protection Agency, Region 10 (attachments by U.S. Postal Service)

Attachments:

Letter from Michael Spear, FWS Manager, California/Nevada Operations Office and Rodney McInnis, NMFS Acting Administrator, Southwest Regional Office to Felicia Marcus, EPA Regional Administrator, Region 9 (March 24, 2000) (California Toxics Rule BiOp)

Oregon Department of Environmental Quality, Memorandum from Stephanie Hallock, Director, to Environmental Quality Commission, Re: *Agenda Item B, Rule Adoption: Water Quality Standards, Including Toxic Pollutants Criteria, OAR Chapter 340, Division 41, May 20-21, 2004, EQC Meeting* (April 29, 2004)

Letter from Michael F. Gearheard, Director, Office of Water and Watersheds, EPA Region 10, to Barry Burnell, Idaho Department of Environmental Quality, Re: *EPA Disapproval of Idaho's Removal of Mercury Acute and Chronic Freshwater Aquatic Life Criteria, Docket No. 58-0102-0302* (Dec. 12, 2008)

California State Water Resources Control Board, *Final Part 2 of the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California—Tribal and Subsistence Fishing Beneficial Uses and Mercury Provisions* (undated, 2017)

Letter from Tomás Torres, Director, Water Division, EPA Region 9, to Felicia Marcus, Chair, California State Water Resources Control Board, Re: *Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California – Tribal and Subsistence Fishing Beneficial Uses and Mercury Provisions* (July 14, 2017)

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FWS, *Derivation of Numeric Wildlife Targets for Methylmercury in the Development of a Total Maximum Daily Load for the Guadalupe River Watershed* (April 2005)

FWS, *Evaluation of the Clean Water Act Section 304(a) Human Health Criterion for Methylmercury: Protectiveness for Threatened and Endangered Wildlife in California* (Oct. 2003)

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Ecology, *Western Washington Phase II Municipal Stormwater Permit* (July 1, 2019)

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Ecology, *Fact Sheet for the Phase I, Western Washington Phase II, and Eastern Washington Phase II Municipal Stormwater Permits* (Aug. 15, 2018)

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WDFW, Species & Habitat, *Threatened and endangered species*, *available at* https://wdfw.wa.gov/species-habitats/at-risk/listed

WDFW, Species & Habitat, Species in Washington, *Shorface lanx, available at* https://wdfw.wa.gov/species-habitats/species/fisherola-nuttalli#desc-range

WDFW's Priority Habitat and Species Program, *available at* https://wdfw.wa.gov/species-habitats/species/fisherola-nuttalli#conservation

WDFW, Species & Habitats, At-risk species, *State Wildlife Action Plan (SWAP), available at* https://wdfw.wa.gov/species-habitats/at-risk/swap

WDFW, *State Wildlife Action Plan*

WDFW, Species & Habitats, *Marine toxic contaminants*, *available at* https://wdfw.wa.gov/species-habitats/science/marine-toxics

WDFW, Species & Habitats, Marine toxic contaminants, *Sampling locations*, *available at* https://wdfw.wa.gov/species-habitats/science/marine-toxics/sampling-locations

WDFW, Species & Habitats, Marine toxic contaminants, *Contaminants monitored*, *available at* https://wdfw.wa.gov/species-habitats/science/marine-toxics/contaminants-monitored

EPA, *Science Advisory Board Consultation Document Proposed Revisions to Aquatic Life Guidelines Tissue-Based Criteria for "Bioaccumulative" Chemicals Prepared by the Tissue-based Criteria Subcommittee* (August 2005)

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Northwest Environmental Advocates, Before the United States Environmental Protection Agency, *Petition for Rulemaking to Implement Reasonable and Prudent Alternatives in Biological Opinions from the U.S. Fish and Wildlife Service and National Marine Fisheries Service for Toxic Water Quality Criteria in Idaho Water Quality Standards* (June 1, 2023)

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Letter from Radhika Fox, EPA Assistant Administrator, to Laura Watson, Ecology (May 25, 2023)

Letter from Steven W. Landino, Washington State Director for Habitat Conservation, NMFS, to Mike Gearheard, Director, Office of Water and Watersheds, EPA (May 4, 2007)

Letter from Steven W. Landino, NMFS, to Mike Gearheard, EPA (Jan. 10, 2008)

Letter from Steven W. Landino, NMFS, to Mike Gearheard, EPA (July 15, 2009)

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Letter from David C. Frederick, FWS, to Gregg Cooke, EPA Regional Administrator, Re: *EPA's noncompliance in Texas on National Pesticide Consultations* (June 28, 2001)

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