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LEGAL STATUS OF MONTANA SITE-SPECIFIC SELENIUM WATER QUALITY STANDARD

Background

On December 24, 2020, upon request of the Montana Department of Environmental Quality (DEQ), the Montana Board of Environmental Review (BER) promulgated a site-specific water quality standard for selenium in Lake Koocanusa,[1] a man-made reservoir operated by the U.S. Corp of Engineers that crosses the boundary with Canada. This move severed six years of collaborative work in a bilateral process with British Columbia before a science-based consensus on a technically achievable and protective selenium threshold for aquatic life could be reached. The new selenium standard was more stringent than the federal guideline — 0.8 micrograms per liter versus the federal guideline of 1.5 micrograms per liter. DEQ's stated purpose, at the time, for the new standard was to protect sensitive fish species, to target Teck Coal, a Canadian company mining north of the border, and to support a referral of the matter to the International Joint Commission (IJC) on transboundary waters. On its last day in office, the Bullock Administration requested that the U.S. State Department initiate that process.

In reaction, the Montana Legislature, by wide majorities in both houses, passed a resolution to study the new standard, concerned it may not have been factually, scientifically, or legally well-founded. Additionally, Teck Coal and the Lincoln County Commissioners petitioned the BER to review its decision, asserting that it had not followed the Montana statute, 75-5-203, MCA, mandating the process for promulgating a water quality standard more stringent than the federal guideline. Both that legal challenge and the HJ 37 Legislative process have demonstrated the former standard, which the BER ruled illegal, invalid, and unenforceable, was not well founded in fact, science, or law.

Purpose of HJ37

The 2021 Montana Legislature enacted a study resolution, HJ 37, to proceed during the interim because: 1) the Board of Environmental Review ("BER") promulgated a site-specific selenium standard for Lake Koocanusa that is more stringent than the federal guideline and the U.S. EPA approved it; 2) affected stakeholders requested a cooperative review of the technical support documents, background data, and assumptions used in the modeling, as well as completion of model validation; and 3)

[1] "Koocanusa" is a portmanteau of Kootenay, the name of the river dammed by the Libby Dam, Canada, and USA. The dam began operation, and the reservoir began filling in 1972.

stakeholders wanted additional, thoughtful, collaborative and scientifically defensible analysis with DEQ to determine if the standard is appropriate.

The Resolution required the HJ 37 Special Committee to: 1) analyze data and processes referenced in and used in the rulemaking to determine whether the site specific selenium standard, ARM 17.30.632, complies with the Montana Water Quality Act and the federal Clean Water Act; 2) offer recommendations on what changes to the standard or supporting documentation, if any, are needed; 3) involve legislators from both the EQC and the WPIC; and 4) consult with stakeholders, specifically including the Lincoln County Commissioners, selenium experts, experts in WQS rulemaking, other appropriate state agencies. The final results of the interim study are to be reported to the 68th Legislature, the Governor's natural resources policy advisor, and the British Columbia Ministry of Environment & Climate Change Strategy.

HJ 37 Interim Study Process

The HJ37 Special Committee met twice to take testimony from relevant governmental agencies, in particular Montana DEQ, Montana FWP, U.S. Geological Survey, U.S. EPA, the Lincoln County Commissioners and interested parties, including Teck.

DEQ provided testimony describing the procedural and technical process for the standard development, including DEQ's participation in the bi-national work group established as a result of British Columbia's regulation of Teck. *See* DEQ Testimony (January 27, 2022). U.S. EPA, USGS, the Kootenai Tribes of Idaho and the Confederated Salish and Kootenai Tribes also testified about the process that included both the bi-national work that began in 2015 and the Board of Environmental Review's (BER) separate administrative rulemaking that took place between September and December 2020. The Idaho Department of Environmental Quality provided testimony about their standards and work related to selenium in the Idaho portion of the Kootenai River. The U.S. Army Corps of Engineers testified about water release management at the Libby Dam.

Teck testified and provided information about how they are regulated by the B.C. Ministry of Environment & Climate Change Strategy, their ongoing investment in water quality cleanup mechanisms totaling over $1 billion to date, as well as information about the bi-national work related to selenium in Lake Koocanusa. Teck also provided factual scientific testimony and legal testimony establishing both factual and legal flaws in the procedural and technical processes that had been used for the standard

development. The Lincoln County Commissioners testified about their concerns with the standard and unanticipated negative consequences upon the local economy and communities.

Members of the HJ37 Special Committee posed some questions to DEQ during the February 28 meeting, to which DEQ did not immediately respond, but agreed to provide written responses. DEQ provided the written responses March 11, 2022. Teck provides this document to summarize the testimony received to-date, reply to DEQ's written submission, and respond to outstanding questions from the HJ37 Special Committee.

Parallel Administrative Legal Action – Petition to the BER

In a separate, but parallel, administrative legal action filed with the Board of Environmental Review (BER),Teck challenged the administrative rulemaking process, asserting that it violated § 75-5-203, MCA, which establishes criteria for enacting a water quality standard more stringent than the comparable federal guideline. The applicable federal guideline for lentic (lake) waters is 1.5 micrograms per liter. The site-specific standard adopted for Lake Koocanusa in 2020 is nearly one-half that, at 0.8 micrograms per liter, and appears to be the most stringent selenium water quality standard in the United States. The Lincoln County Commissioners, who also commented on the stringency of the standard during the rulemaking process, filed a similar challenge to the BER's rulemaking.

On February 25, 2022, the BER ruled in favor of Teck's arguments, which in a separate Petition of its own, Lincoln County had been joined. The BER ruled the standard was more stringent than the federal guideline and that the rulemaking violated the "no more stringent than federal statute," 75-5-203, MCA. April 19, the BER issued its Final Agency Action and Order, ruling squarely in favor of the Petitioners Teck and Lincoln County.

Previously, 0n April 1st, DEQ released draft written findings in an effort to remedy the error and revive the 2020 selenium water standard. DEQ acknowledged that the findings "must be based on the record;" therefore, no new data or analyses were provided. The written findings were made available to the BER, which further deliberated on a written decision during its April 8th meeting. A transcript of that meeting is available on the BER's website. On April 19th, the BER issued its "Final Agency Action and Order of the Board of Environmental Review," including 28 findings of fact and 20 conclusions of law. Ultimately, the Board ordered that the 2020 site

specific water column standard for Lake Koocanusa is more stringent than the comparable federal guideline, that the 2020 rulemaking contained errors and failed to comply with Montana law, and that the 2020 standard is invalid and unenforceable.

Summary of the HJ37 Study Results

The valid/usable data[2] in the record presented to the HJ37 Special Committee, revealed that in Lake Koocanusa, there are no increasing selenium concentrations and no fish tissue exceedances of the standards. In its presentations, DEQ reiterated what it had done in the first place when promulgating the standard. That is, it offered no new valid data and no new analysis, merely restating its previous efforts. The valid data and analysis presented by Teck, however, demonstrated DEQ misapplied the model it chose to derive the water quality standard for Lake Koocanusa and that it relied on invalid data. Admissions by other participating agencies (MFWP, and USGS) confirmed this fact.

Expert testimony from Dr. Sam Luoma, co-author of the original USGS selenium model, revealed that the model was not properly calibrated to Lake Koocanusa and therefore consistently over-predicts selenium levels and results in a standard more stringent than appropriate. Dr. Luoma also testified that DEQ failed to follow best practices when using the model, leading to a rule that is not scientifically defensible. The BER's final agency action and order highlights this issue in its finding of fact 19, which notes that DEQ had "latitude in selecting the assumptions and inputs" for the model and that by changing such assumptions and inputs, the resulting standard would change. In its finding of fact 22, the Board noted that DEQ devised the 2020 standard by modeling with a fish tissue threshold more stringent than the federal guideline in order to "come up with a water column value of .8." When using the higher federally recommended fish tissue threshold, DEQ then "altered other model inputs (bioavailability and Kd percentile) to be more 'conservative' (i.e., more "stringent" and reach a similar number. The validity of DEQ's work is compromised because instead of controlling all variables but one, DEQ changed multiple variables in each modeling scenario. Such inconsistency is contrary to best modeling practices and produces unreliable results.

DEQ testimony and statements made during the rulemaking indicate that the rule will likely be used to list Lake Koocanusa as impaired, which will trigger the need for a Total

[2] The term, "valid/usable data," is crucial to this issue. It means that the evidence referred to is scientifically sound, having been collected, used, including in modeling, and analyzed in accordance with scientific practices and as established by relevant rules and protocols for data gathering. Thus, if data is not "valid/usable" as the term is used here, it should be rejected and is not a legitimate basis for a standard.

Maximum Daily Load (TMDL) and may spark the exercise of federal and international authority, through an International Joint Commission (IJC), over Montana water. Findings of fact 10, 11, and 14 in the BER's final agency action confirm that the rule was premised on a presumption that "the lake will probably be considered impaired for selenium" and that DEQ testified that the standard would be used to "put the pressure on British Columbia" and that, immediately upon promulgation of the 2020 standard, DEQ advocated to the U.S. State Department for an IJC reference for water quality in Lake Koocanusa.

Based on those findings and more, the BER ordered that the 2020 standard "and the rulemaking upon which it is based fail to comply with the Stringency Statute (Mont. Code Ann. 75-5-203)." The 2020 standard is invalid and unenforceable, and the Board ordered that "in order to have a valid and enforceable lake water column standard, new rulemaking must be initiated." Therefore, the 2020 standard of 0.8 micrograms per liter for Lake Koocanusa is invalid. The fish tissue standards remain valid and enforceable, but because DEQ considers Lake Koocanusa to be in "non-steady state," the fish tissue standards do not govern Lake Koocanusa. ARM 17.30.632(3) and (6).[3]

Rather than continue with a legally invalid and scientifically unsupportable rule or defer to the statewide standard of 5 micrograms per liter, DEQ should be directed to initiate rulemaking to adopt the federal guideline of 1.5 micrograms per liter for Lake Koocanusa's water quality standard.

1. <u>There is No Evidence of Increasing Selenium Levels</u>

Whether or not selenium levels in Lake Koocanusa are increasing and whether or not selenium levels in fish are exceeding standards are important considerations for the HJ37 Special Committee because before and during the rulemaking, DEQ and the BER asserted that such increases and such exceedances prompted and supported the need for such a stringent water quality standard. For example, DEQ told the HJ37 Special Committee that it recognized "the problem" by referring to a graph of selenium in the Elk River, which is in Canada, upstream of and beyond Montana's jurisdiction. *See* DEQ slide 14 (January 27, 2022); DEQ slide 11 (WPIC October 13, 2020). Additionally, DEQ testified before the Legislature last year that "56,000 fish records represent the outcome of this fish protective standard" set at 0.8 micrograms per liter. *See* Testimony of C. Dorrington in opposition to SB324 (February 22, 2021). Throughout the

[3] DEQ's conclusion regarding steady state is likely incorrect. As pointed out by Dr. Sam Luoma, the selenium water quality data for Lake Koocanusa shows no upward trend over the past ten years, indicating the lake is in steady state.

rulemaking, DEQ claimed that exceedances had already been detected in Lake Koocanusa fish. *See* DEQ slide 14 (WPCAC September 11, 2020); DEQ slide 13 (BER September 24, 2020); DEQ slide 6 (BER December 11, 2020).

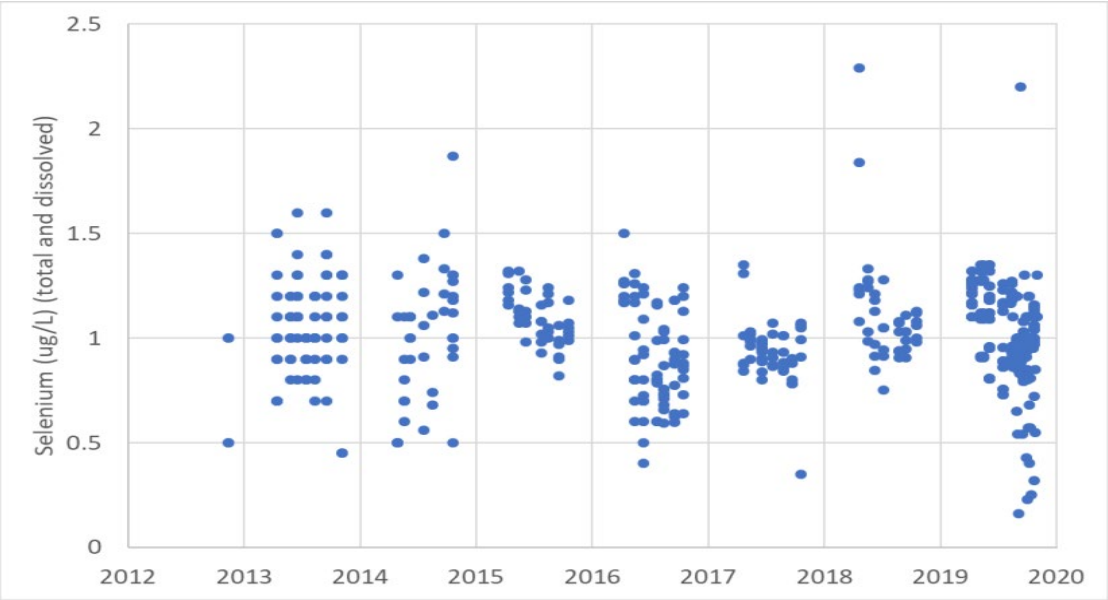
The claimed "exceedances" were also relevant to DEQ's choice of modeling inputs. *See* BER Response to Comment 161 ("Given these contrasting recommendations [from Selenium Technical Subcommittee members], along with **the department's knowledge that egg/ovary data from fish already exceed EPA (2016) tissue recommendations** under current water quality conditions, and knowledge that certain fish species (e.g., burbot and red shiner) have even higher [egg/ovary] tissue concentrations, the modeling approach and recommended criterion are appropriate and justified"). When David DeForest, an expert on the Selenium Technical Subcommittee, pointed out that the model cannot be validated (meaning it does produce accurate results when using existing lake data), BER and DEQ discounted his input based on "**evidence suggesting impacts are already occurring to fish in Lake Koocanusa**." BER Response to Comment 162. Mr. DeForest's input was inappropriately criticized for allegedly "overlook[ing] certain fish tissue data altogether . . . despite the fact that several cyprinid species (e.g., redside shiner, peamouth chub) **already have elevated tissue concentrations** above EPA (2016) egg/ovary criteria, and in multiple samples"). BER Response to Comment 162. ***But every one of DEQ's and BER's assertions noted above is wrong***.

There is no evidence of increasing selenium levels in Lake Koocanusa, no evidence of 56,000 fish records supporting the standard, and no evidence of existing impacts to fish. In fact, FWP testified that they have sampled about **907 individual fish** (not 56,000), and that they have **"never had a gravid fish," which makes all of the egg/ovary the data unusable**. *See* Testimony of T. Selch (February 28, 2022). USGS recognized the "data gap" in reproductive fish tissue data and, as evidenced in the USGS 2020 model, no fish tissue data was used because none was valid or usable. *See* Testimony of J. Kilpatrick (February 28, 2022); see also USGS 2020 Model, p. 26 (noting that the model was **not** validated to fish tissue data because **none of the reproductive data was valid or useable**).

Furthermore, FWP confirmed that it has not noted any population declines, missing age class, or deformities associated with selenium in any fish in Lake Koocanusa. This is important because, as noted by DEQ, selenium is most toxic to the reproduction of fish and has been present in the Elk River, flowing downstream to Lake Koocanusa for decades. If those decades of selenium addition have been adversely impacting fish, at

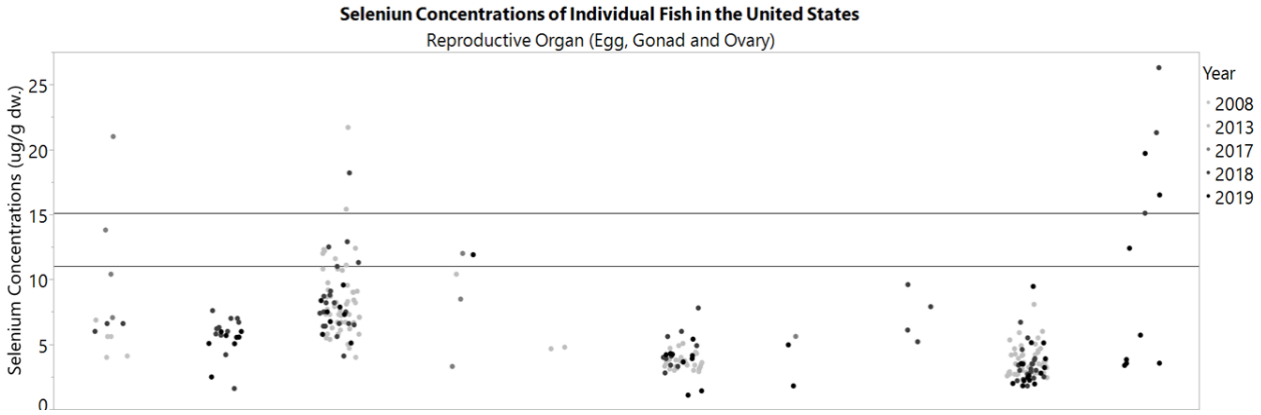
some point a population decline, missing age class, or deformities would have been noted. However, no evidence of a population decline, missing age class or deformities has been presented.

Water Quality Data:
Selenium levels are not increasing in Montana's portion of Lake Koocanusa, as demonstrated by Figure 2-9 from DEQ's Derivation document:



This is the water quality data that was before DEQ and the BER during the rulemaking. The data shows no discernable increasing trend and instead shows the lowest selenium levels in the lake recorded in late 2017 and 2020. Presentations of water quality in the Elk River in Canada are beyond both Montana's and EPA's jurisdiction and not representative of Montana's waters. See DEQ Slide 14 (January 27, 2022).

Fish Tissue Data:
DEQ has continually relied on the following graph of egg/ovary data for Lake Koocanusa provided by EPA to explain why the standard is necessary, pointing to the data points above the federal guideline of 15.1 µg/g dw as indicative of a problem:



But this is the ovary data that USGS concluded they could not use in the Lake Koocanusa model because it was **not "representative of what was going on in the lake,"** it was **not "useable,"** and **not "reliable."** *See* footnote 1 above. USGS admitted that there is a "data gap" in the fish tissue data available for Lake Koocanusa, specifically, they are missing useable reproductive (egg/ovary) fish tissue data. *See* testimony of Mr. J. Kilpatrick, USGS (February 28, 2022). In agreement, FWP admitted that they have **"never had a gravid fish,"** as required by USGS and EPA sampling protocols. Therefore, none of the Montana egg/ovary data are valid/useable, including the data portrayed in the graph above.

The rule, ARM 17.30.632(6), requires that "Fish tissue sample results shall be reported as a single value representing an average of individual fish samples or a composite sample, each option requiring a minimum number of five individuals from the same species." But FWP testified that its data is presented as **individual sample data, not as averaged data, as required by the rule**. *See* Testimony of T. Selch (February 28, 2022). Because FWP's data is presented without averaging, it is misleading and not valid/usable or accurate.

Accurate portrayal of the fish tissue data was provided by Teck, with unreliable or insufficient data in grayscale, indicating that it is not useable or reliable, as noted by USGS and as required by the rule. The accurate portrayal of fish tissue data reveals ***no exceedances*** of any fish tissue standards in Lake Koocanusa. *See* Teck Fish Plots (February 28, 2022).

Although not available during the rulemaking, FWP presented fish tissue data from 2020.[4] Again, the data was presented as **individual sample data, not as averaged data, as required by the rule**. *See* Testimony of T. Selch (February 28, 2022). Moreover, FWP admitted that although their presentation slides were labeled as "egg data," the data was actually from ovaries, not eggs, and it was not collected from gravid fish. *See* Testimony of T. Selch (February 28, 2022).

Even so, of the 2020 FWP data only the Peamouth Chub appears at first glance to have five or more samples greater than the standard; however, FWP confirmed that half of those samples were collected in September, not during the spawning period that occurs in May-June, **making the September data invalid and unusable**. *See* Testimony of T. Selch (February 28, 2022). Teck pointed out, and FWP did not argue otherwise, that the average of the data collected in May, which is *potentially* the only data that could be used because it might have been collected during the spawning period, was **10.1 mg/kg dw, well within the standard** even though it was not collected from gravid females. Teck also pointed out, and FWP did not argue otherwise, that FWP's presentation of 2020 Westslope Cutthroat Trout data was inaccurate because it included samples taken outside Montana and **failed to include two Montana samples, both below the standard (6.31 and 4.67 mg/kg dw)**.

2. <u>DEQ Did Not Use the Model Properly</u>

Bioavailability:

Dr. Luoma, former USGS scientist and co-author of the 2010 USGS model, explained that DEQ failed to calibrate the 2020 USGS model to Lake Koocanusa. While DEQ relied on 60% bioavailability, calibrating the model to site-specific zooplankton data for Lake Koocanusa supports use of 30% bioavailability. *See* Testimony of S. Luoma, slides 3 and 4 (February 28, 2022). Had the model been appropriately calibrated, the range of **acceptable standards would be between 1.5 and 3.0** micrograms per liter. *See* Testimony of S. Luoma, slides 6 and 7 (February 28, 2022).

DEQ has directed the Special Committee to the BER's 2020 rulemaking responses to comment numbers 160-178 and 181 for an explanation of the model validation. Those comments, provided during public comment on the rulemaking in October and November 2020, align with and raise the same concerns noted in Dr. Luoma's

[4] 2020 fish tissue data were not available until after the standard was promulgated and became rule; therefore, even if it did show exceedances (which it does not), it cannot serve as justification for the standard.

testimony, specifically that the model appeared to overpredict selenium levels and did not appear to be calibrated with site-specific information.

The responses acknowledged that the "Lake Koocanusa model overpredicted Se concentrations in zooplankton and invertebrates," that uncertainty can be reduced by using "site-specific selenium data and information" and claimed that the model was calibrated to "improve predictions on the local level." BER Response to Comments 163, 166. Another response claimed that DEQ's modeling included "**calibrated** bioavailability factors." BER Response to Comment 160. Both the rulemaking responses to comments and DEQ's response to the Special Committee (March 9, 2022) assert that the calibration equated to "using a 60 percent bioavailability scenario to address unmeasured local factors causing over prediction." Board Response to Comment 166; DEQ Response, p. 3. Now, DEQ further asserts that the USGS 2020 model was "calibrated using 60 percent bioavailability" and "validated to the site-specific zooplankton and aquatic insect data," pointing only to the USGS 2020 model for "[a]dditional details on the calibration." DEQ Response, pp. 3, 4, 5.

However, review of the USGS 2020 model reveals **no calibration of bioavailability** factors. Instead, USGS relied on an "assumed" bioavailability of 100% and a "generalized" bioavailability of 60%. USGS 2020 model, pp. 25-26. Further, when validating the model, USGS noted that comparison of model predictions to actual observations revealed **overpredictions** at both the 100% and 60% bioavailability. USGS 2020 model, p. 27. For invertebrates in Montana, the "range of observed selenium concentrations is 0.4-9.1" micrograms per gram dry weight, but use of the model at 100% and 60% bioavailability results in over-predictions – ranges of 1.2-18.8 and 0.7-11.3, respectively. USGS 2020 model, p. 27. Similarly, for zooplankton in Montana, the actual observations range from 0.3-4.4, but using the model at 60% bioavailability **overpredicts** the range at 0.7-5.9 micrograms per gram dry weight. USGS 2020 model, p. 27. Therefore, DEQ's blind reliance on an uncalibrated model, despite expert comments calling out the problem, led to an invalid standard that is more stringent than necessary and not scientifically supportable. Worse, DEQ pointed the public, and the now the Legislature, to an assumed calibration that cannot be found in the record.

Dr. Luoma noted that site-specific calibration is needed to derive a site-specific standard from the model that he originally co-authored. Dr. Luoma testified that DEQ's application of the model without the necessary site-specific calibration "will affect the credibility of the use of this model in this jurisdiction, and in others." *See* Testimony of

S. Luoma (February 28, 2022). Without site-specific calibration, the model results are not credible. Dr. Luoma affirmatively demonstrated that calibrating the model to the most certain factor (bioavailability at the zooplankton level) based on site-specific data requires use of 30% bioavailability, not the much higher 60% bioavailability that DEQ used.

DEQ's response does not claim that Dr. Luoma is wrong, only that Dr. Luoma's statements: (1) have not been peer-reviewed, (2) do not calibrate to fish as the USGS did, and (3) may not be based on DEQ's preferred trophic levels. DEQ Response, p. 4.

Regarding DEQ's first statement, Dr. Luoma is not producing a regulatory standard that warrants peer-review, nor do his statements require peer-review to be credible and instructive. As one of the original co-authors of the model that DEQ relied upon, Dr. Luoma's comments warrant special consideration. *See* DEQ slide 13 (January 27, 2022). Additionally, Dr. Luoma has authored more than 250 scientific publications, tens of them specifically about selenium. His review and concerns about DEQ's use of his model do not need peer-review to prove their credibility.

Further, as illustrated by the volume of comments the BER received and responded to on this very subject, as well as comments raised within the Selenium Technical Subcommittee, Dr. Luoma's concerns are not isolated. He is one among many selenium experts who raised this concern. *See* Rulemaking Comments from Anne Fairbrother, J.R. Simplot Company, North American Metals Council, American Exploration and Mining Association, National Mining Association, Coal Association of Canada; *see also* Selenium Technical Subcommittee comments[5] from Mr. Joe Beaman and Mr. Dave DeForest. Mr. Beaman, EPA's selenium expert noted that of the two options provided in the model, 100% bioavailability "resulted in significant overpredictions" and that 60% was "more comparable," but he did not assert that the model was calibrated. Mr. DeForest, a selenium expert who provided peer-review of EPA's selenium guideline and who was hired by Teck to participate in the Subcommittee, found that the USGS model "consistently over-predicted measured fish selenium concentrations." Thus, the model **was not properly calibrated** to real Lake Koocanusa conditions. The model's over-prediction was due, in part, to model inputs that were not site-specific and "that are over-predicting selenium exposure in Koocanusa Reservoir." He noted that even using

[5] DEQ claims that it relied on a Subcommittee recommendation, but no Subcommittee recommendation was reached. Only four of the seven members offered individual comments and of those four comments, there is neither a consensus nor a majority recommendation. *See* Appendix A to DEQ's *Derivation of a Site-Specific Water column Selenium Standard for Lake Koocanusa* (September 2020).

site-specific model inputs for other factors resulted in "consistent over-prediction of fish selenium concentrations," leading him to conclude that "the multi-step modeling approach appears to have too much uncertainty to support, by itself, recommendations for a site-specific selenium criterion for Koocanusa Reservoir." It is undisputed that Dr. Luoma is an expert on the model that he co-authored and upon which DEQ relied, and it is evident that other experts expressed the same concern, corroborating Dr. Luoma's testimony. Thus, DEQ's statements implying that Dr. Luoma's comments require some further peer-review to be credible are unfounded and inappropriate.

Regarding DEQ's second statement, there is nothing in the USGS 2020 model indicating that it is calibrated to fish as DEQ now claims. In fact, USGS noted that for model validation, it "excludes comparison to observed fish" because the data are invalid and unreliable, as noted above and as confirmed by USGS and FWP testimony heard by the HJ37 Special Committee. *See* Testimony J. Kilpatrick and T. Selch (February 28, 2020).

Finally, regarding DEQ's statements about the trophic level, both Dr. Luoma and Trevor Selch with FWP agreed that most selenium bioaccumulation occurs in the lower trophic level organisms, not in the piscivorous or top-level predator fish. *See* Testimony of S. Luoma and T. Selch in response to questions from Rep. Marler (February 28, 2022). Mr. Selch noted that he could not "really add too much to Dr. Luoma's response." He did not disagree with Dr. Luoma that the step between the food of invertebrates and vertebrates "is the least uncertain in terms of data." *See* Testimony of S. Luoma in response to questions from Rep. Marler (February 28, 2022). Thus, there is no need to "look[] at a different trophic level." *See* Testimony of T. Selch in response to questions from Rep. Marler (February 28, 2022). Given FWP's unique role and expertise in fish management, their agreement with Dr. Luoma is significant and warrants special consideration. As suggested by Dr. Luoma, DEQ should go back and calibrate the model, (including calibration to higher trophic levels if desired) but the priority should be to calibrate it for Lake Koocanusa. *See* Testimony of S. Luoma in response to question from Rep. Marler (February 28, 2022). There is no credible basis to reject or discount Dr. Luoma's testimony.

Juggling Coefficients and Rationales Is Bad Science that Leads to Unsupportable and Unreliable Results:

Dr. Luoma also noted that DEQ juggled coefficients and did not follow best practices when using the 2020 USGS model to reach a standard of 0.8 micrograms per liter. Highlighting Tables 5.1 and 5.2 from DEQ's Derivation document, Dr. Luoma pointed out

that it is not best practice and not scientifically defensible to use numbers representing different model runs (50th percentile in one and 75th percentile[6] in the other) or to use different bioavailability (45% in one, 60% in the other) and compare the results. Juggling coefficients "so you end up with the same desired criteria in the end" is not best practices and not standard scientific methodology. *See* Testimony of S. Luoma, slide 9 (February 28, 2022). DEQ presented no rebuttal to Dr. Luoma's points. The BER's proposed order also notes that DEQ altered model inputs to achieve criteria more stringent than the comparable federal guideline.

DEQ's written response implies that it "was guided by" British Columbia's regulatory requirements and that the standard was only based on just one of those scenarios, using 8.5 mg/kg dw, 60% bioavailability and the 75th percentile of the Kd distribution. DEQ Response, p. 5. But that is not what DEQ's Derivation document says. There, DEQ noted that it had:

> determined that scenario 3 from Table 5-1 [using 5.6 mg/kg dw, 45 % bioavailability, and the 50th percentile of Kd distribution], resulting in a dissolved water column numeric standard of 0.8 µg/L, to be protective of the aquatic life beneficial uses of Lake Koocanusa. Scenario 3 ensures all ecosystem food webs are protected, a stated goal of the SeTSC.

DEQ Derivation document, p. 41. DEQ then presented another modeling scenario in Table 5.2 that uses different model inputs and "also meets the protection goals defined by the SeTSC and DEQ" resulting in a water quality standard of 0.8 micrograms per liter. *Id*. DEQ presented that second scenario as verification of and confirmation of DEQ's chosen scenario 3 of Table 5.1, which uses 5.6 mg/kg dw from British Columbia. *Id*.; *see also* BER Response to Comment 161 ("Each of these assumptions result in a proposed criterion of 0.8 µg/L"). As noted by Dr. Luoma, such juggling of coefficients allows one to end up at the same number, but it is not best practice, nor is it scientifically defensible.

3. <u>Operation of Libby Dam Was Not Considered</u>

The U.S. Army Corps of Engineers confirmed that they sample for selenium, but they have neither studied, nor considered, selenium levels in relation to water management. Therefore, no information exists regarding how dam operations impact selenium levels in the reservoir or downstream in the Kootenai River, a concern raised by the local

[6] No Selenium Technical Subcommittee member recommended using the 75th percentile.

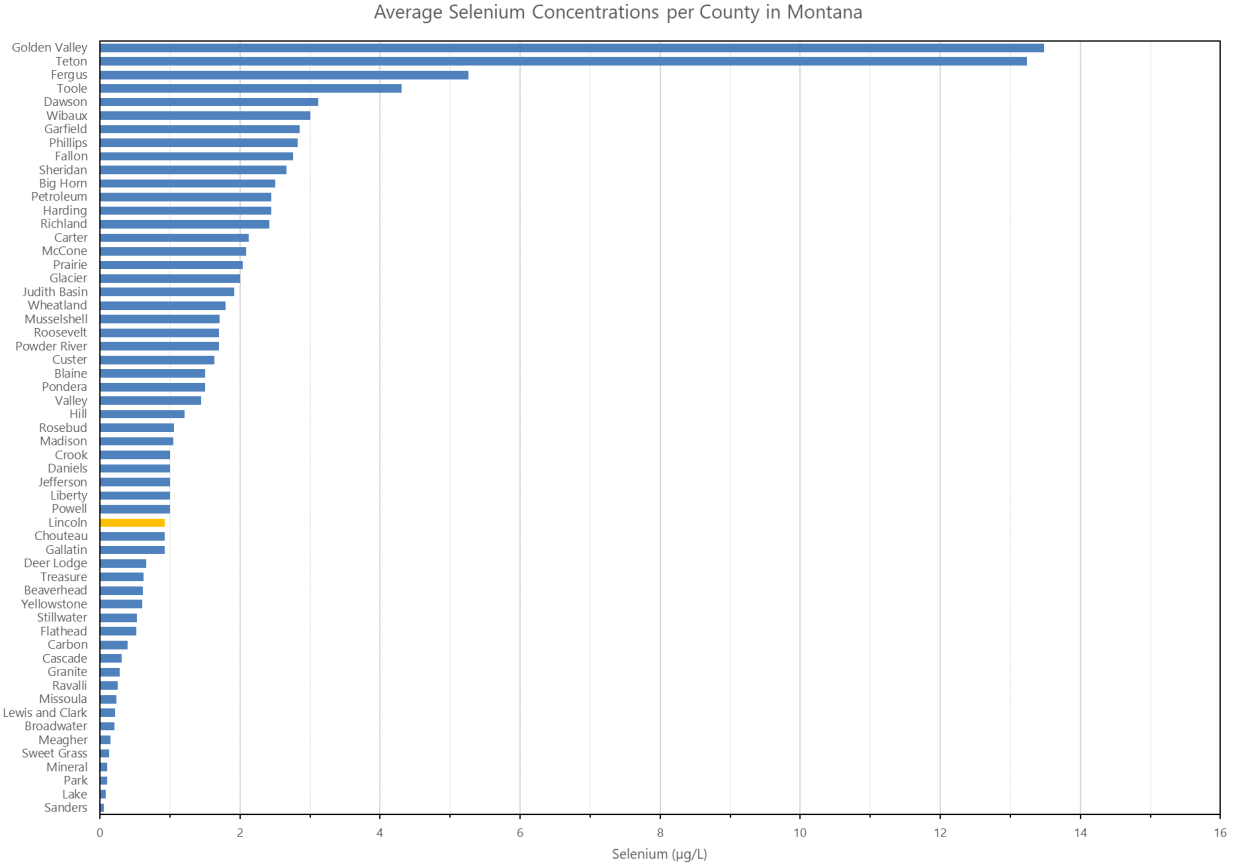
legislators and County Commissioners and one of the focal points of HJ37. As noted by the BER, "[s]ince Lake Koocanusa is a long linear reservoir, with a hydraulic residence time on the order of three quarters of a year, it is believed it partitions selenium uniquely compared to other waterbodies." Specifically, "Kds vary seasonally as a function of runoff and controlling reservoir factors such as biogeochemical processing." *See* BER Response to Comment 174. As evidenced by the federal guideline that limits selenium in rivers at a higher level (3.1 micrograms per liter) than in lake (1.5 micrograms per liter), when the waterbody behaves more like a river with flowing water, selenium water quality levels may be higher than waterbodies that behave like a lake without flowing water. Since Lake Koocanusa, as a reservoir controlled by a dam with water releases that vary seasonally, has "unique" water flow condition, further investigation into the impacts of water release management on selenium levels should be completed.

4. <u>The Basis for the Standard Sets Bad Precedent</u>

Previously, during the 2020 rulemaking, the BER asserted that the rulemaking was necessary to "incorporate the best available science for selenium toxicity and protect selenium-sensitive aquatic life in the Kootenai watershed." 19 Mont. Admin. Reg. 1792 (October 9, 2020). That statement has been proven false. Regarding "best available science," it is apparent that not even the seven experts convened in the Selenium Technical Subcommittee could reach consensus or even a majority agreement on a water quality standard based on the "best available science." A co-author of the original model used by EPA to develop the national guideline testified that DEQ did not follow "best practices" or scientifically sound modeling techniques and the BER's final agency action and order confirms the same.

Further, DEQ now states that key modeling choices were actually "**risk decisions," not science**. DEQ Response, pp. 3, 7. Teck presented information indicating that several other surface waters throughout Montana have even greater selenium concentrations than Lake Koocanusa, some with documented impacts to fish. *See* Teck "Background Paper" (February 28, 2022).

In fact, analysis of data provided in DEQ's Response reveals that most of Montana's counties have surface waters with larger average selenium concentrations than Lincoln County, where Lake Koocanusa is:



Further analysis of the data provided with DEQ's response reveals that, across Montana, the average selenium concentration in lakes is greater than the 0.8 microgram per liter set for Lake Koocanusa. Yet for all those other waters, the statewide standard of 5 micrograms per liter remains applicable and protective of the environment, according to DEQ.

Lake Koocanusa was treated differently. At the end of the day, the only reason DEQ has given for doing this is its "risk decisions" judgment. The substance, process, and authority for DEQ reaching these "risk decisions" has not been explained. They remain vague, arbitrary, and unsupported by valid data. DEQ's "risk decisions" resulted in a water quality standard that will, as DEQ testified, be used in an assessment, ultimately resulting in an impairment determination and creation of a Total Maximum Daily Load (TMDL) for Lake Koocanusa. *See* Testimony of A. Steinmetz (February 28, 2022). DEQ's "risk decisions" appear to create an impairment despite fish tissue data in compliance with the standard, in spite of confirmation that Montana's Lake Koocanusa has not seen

an increasing trend in selenium, in spite of the BER's most recent decision that the standard violates the law, and in spite of the fact that other waterbodies in Montana with higher levels of selenium and with documented aquatic and bird impacts are governed by a much higher standard. That is not "best available science," instead, it is arbitrary and capricious science.

Second, regarding protection of aquatic life in the watershed, the most sensitive species is White Sturgeon, which do not exist in Lake Koocanusa but do exist downstream in the Kootenai River.[7] The federal guideline established by EPA recommends water quality standards for rivers at 3.1 micrograms per liter and for lakes at 1.5 micrograms per liter. Both recommended standards are specifically designed to protect White Sturgeon, but DEQ did not adopt both.

DEQ's "risk decisions," applied only to Lake Koocanusa, are arbitrary, capricious, unexplained, unwarranted and inconsistent with their decision to set the Kootenai River standard at the federal guideline. Arbitrary and capricious "risk decisions" not based on the best available science are wrong and set a bad precedent. This bad precedent is concerning because many surface waters across Montana have even higher selenium levels than found in Lake Koocanusa.

5. DEQ's Implementation Will Bring Unwanted Federal Regulation to Montana

Despite the fact that the Board of Environmental Review had, just three days prior on February 25th, invalidated the selenium standard by finding that it is more stringent than the federal guideline and that the rulemaking did not comply with state law (*see* Testimony of V. Marquis and Testimony of K. Orr (February 28, 2022)), DEQ testified on February 28th that it intends to implement the standard by first completing an assessment of Lake Koocanusa and then proceeding with a TMDL to address impairment. *See* Testimony of A. Steinmetz (February 28, 2022). Thus, DEQ seems to have already presumed that the lake is impaired. This will have real and adverse impacts for Montana, given that EPA and the Tribes testified to ongoing conversations with the U.S. Department of State and the International Joint Commission. *See* Testimony of J. Gildea and R. Janssen (February 28, 2022). By creating a scenario that leads to an impairment (i.e.: setting a standard lower than the existing water quality),

[7] Joe Beaman, lead selenium scientist with EPA concluded that "selenium concentrations in sturgeon eggs do not show an increasing trend between 2015 and 2019" in the Kootenai River downstream from Lake Koocanusa." *See* J. Beaman Comments, p. 8 (available in Appendix A of DEQ's Derivation of a Site-Specific Water Column Selenium Standard for Lake Koocanusa).

Montana risks abdicating its authority to regulate water quality within its borders to federal and international entities. The local community does not want that (*see* Testimony of J. Letcher (January 27, 2022) and neither should the State of Montana.

6. <u>There is No Downstream Liability</u>

Idaho DEQ cited only mountain whitefish data as supporting an impairment listing of Idaho's portion of the Kootenai River. Idaho DEQ has adopted the federal guideline for selenium of 1.5 micrograms per liter for lakes, not Montana's lower standard. The Kootenai River in Idaho and Montana are subject to the same water quality standard of 3.1 micrograms per liter, which is the federal guideline for rivers. Additionally, the 3.1 standard is higher than the level sought for Lake Koocanusa (0.8), higher than the federal guideline applicable to lakes (1.5), and nearly three times higher than the existing water quality in Lake Koocanusa (near 1.0). No one claimed that the water quality in the Kootenai River exceeds Idaho's standard of 3.1, nor does it make sense that water from Lake Koocanusa (at 1.0) would contribute to such an exceedance. Further, no one presented evidence that fish tissue in Lake Koocanusa exceeds the standard. It is left unexplained and unexplainable how Lake Koocanusa, which is compliant with the federal guidelines, could cause a downstream water to exceed federal guidelines.

As pointed out by Teck during the rulemaking, there is no legal basis to presume that Montana will be liable to Idaho for selenium. *See* Teck's November 23, 2020 Letter, p. 16. While upstream states may be liable to downstream states for water pollution caused by the upstream state's *permitted* discharges, where there is no permitted discharge to regulate, there is no liability. *Arkansas v. Oklahoma,* 503 U.S. 91 (1992).

The Kootenai Tribes of Idaho confirmed that they are not placing blame on the state of Montana. Idaho DEQ echoed that it is "unusual" for them to get involved in another state's water quality standard setting process. *See* Testimony of M. Nelson; Testimony of S. Young (February 28, 2022). Therefore, implications of liability to Idaho are unfounded and unsupported.

<u>Conclusion</u>

Analysis of the valid/usable Lake Koocanusa data reveals no increasing selenium and no fish tissue exceedances of the standard. Analysis of the DEQ modeling conducted to support the rulemaking reveals that the model was not properly calibrated, and it consistently over-predicts selenium levels, resulting in an overly stringent standard.

DEQ failed to follow best practices and did not create a scientifically defensible modeling process. Through testimony from stakeholders and experts, it is apparent that use of the rule will result in an impairment listing, which is likely to trigger federal and international entities exercising authority over Montana water quality. Further, the standard has already been invalidated by the BER. The rule is therefore void and not scientifically defensible. DEQ should be directed to initiate rulemaking to adopt the federal guideline of 1.5 micrograms per liter for Lake Koocanusa's water quality standard.

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