



November 30, 2020

Mr. Brock Tabor
ADEC-Division of Water
410 Willoughby Ave, Suite 303
P.O. Box 118000
Juneau, Alaska 99811

RE: Request for Comments on Scope of ADEC's 2021-2024 Triennial Review

Dear Mr. Tabor:

The Alaska Miners Association (AMA) and the Council of Alaska Producers (CAP) appreciate the opportunity to comment on the State of Alaska Department of Environmental Conservation's (ADEC) request for comments on the scope of the State's 2021-2024 Triennial Review. In preparing our comments, we specifically reviewed the State's Issues Summary to understand ADEC's draft priorities. We have focused our comments on changes that could have direct impacts on our members.

AMA is a professional membership trade organization established in 1939 to represent the mining industry in Alaska. We are composed of more than 1,400 members that come from eight statewide Branches: Anchorage, Denali, Fairbanks, Haines, Juneau, Kenai, Ketchikan/Prince of Wales, and Nome. Our members include individual prospectors, geologists, engineers, suction dredge miners, small family mines, junior mining companies, and major mining companies, and the contracting sector that supports Alaska's mining industry.

Formed in 1992, CAP is a non-profit trade association that represents the interests of Alaska's five large metal mines and several advanced projects. CAP informs members on legislative and regulatory issues, supports and advances the mining industry, educates members, the media, and the general public on mining related issues, and promotes economic opportunity and environmentally sound mining practices.

In reviewing the Issues Summary, we are encouraged that the State has considered revisions to a number of standards that AMA and CAP believe are unnecessarily stringent and/or inflexible. While our member companies strongly support the concepts of maintaining and protecting aquatic life and human health uses of the State's waters, some of Alaska's Water Quality Standards have little or no scientific basis nor do they provide tangible benefits to the citizens of Alaska. In fact, the State of Alaska continues to have among the most stringent water quality standards in the United States, including:

- ADEC applies many uses and standards to all surface and ground water in the State regardless of actual or reasonably foreseeable uses. Most States provide discretion in applying standards (other than those designed to protect fishable/swimmable uses) selectively where uses such as drinking water and irrigation are not reasonably foreseeable for specific waterbodies.

- ADEC has shown reluctance to consider removing uses even where evidence is clear that existing conditions preclude specific uses of a waterbody.
- ADEC universally applies some secondary maximum contaminant levels (MCLs) to all waters of the State. EPA has never suggested or required this and it is generally without precedent in other States.

Compliance with Alaska's Water Quality Standards that are inflexible or overly stringent causes our members and other municipal and industrial dischargers to expend significant unnecessary resources that could be much better spent otherwise protecting human health and the environment and providing economic benefits to Alaskans.

In the following discussions, AMA and CAP provide comments on specific issues identified in ADEC's Issues Summary as well as several other areas important to our members.

Human Health Criteria and Methylmercury

AMA and CAP members have followed closely, with great interest, ADEC's efforts to consider potential revisions to the State's human health criteria, including the activities of the Human Health Technical Working Group. These are very complex scientific topics that are beyond the scope of this comment letter. It is, however, appropriate for AMA and CAP to comment on the process moving forward.

First, we were disappointed in the underrepresentation of industrial and municipal dischargers in the Technical Working Group. We believe that having only two such representatives led to an overemphasis on how to make the criteria as stringent as possible without the appropriate balance of considering the significant implications of implementing overly conservative approaches. In any evaluation, there must be some balance between risks and benefits.

At a broad level, AMA and CAP understand that the need for potential revisions to Alaska's human health criteria has public interest and that some aspects of the criteria, e.g., use of appropriate fish consumption rates (FCRs) may need changes. However, no one element of the criteria such as FCRs or Relative Source Contributions (RSCs) should be considered in isolation.

We strongly concur with a number of the alternative viewpoints expressed in Appendix G of the 2018 Final Working Group Report. Specifically, for the reasons cited in Appendix G, AMA and CAP do not support inclusion of salmon in the FCR. Given their high consumption rates in many areas of Alaska and that their exposure is often almost entirely in marine waters, their inclusion could lead to very low, and in many cases unattainable, criteria that have no human health benefits.

We also strongly urge ADEC to implement the alternative viewpoints described under Issue 3 in Appendix G related to criteria implementation. Potential changes to the mercury and methylmercury criteria are of particular concern to a number of our members. Any criteria based on FCRs raise significant questions regarding the selection of appropriate fate and transport assumptions and implementation procedures. This is further complicated by existing, elevated mercury levels in Alaska. Without careful decision-making in establishing appropriate criteria, there is potential to make large regions of Alaska into areas with many impaired waterbodies. Not only could this cause significant implementation concerns for ADEC, impairment designations could actually preclude critical economic development in these regions.

Given the potential of the recent Supreme Court Maui Decision to require village sewage lagoons to get APDES permits, it is possible that some changes to human health criteria could make these permits required for the villages, yet impossible to grant. For that reason, we urge ADEC to test the potential changes to human health criteria on 1) representative water quality data from many regions in Alaska, particularly the Kuskokwim and

Yukon rivers; and 2) on representative small municipal treatment plants and village sewage lagoons effects to nearby surface water to ensure that ADEC is not creating a problem it cannot easily solve.

Aluminum

Compliance with ADEC's water quality standards for aluminum is an issue faced by many of our members; in some cases, it has significant implications for water management, treatment, and discharge decisions. In 2018, EPA promulgated new aluminum aquatic life criteria that reflect improved science in understanding aluminum's potential effects on freshwater species. ADEC is not required to adopt the new standards and at a broad level, we note that only 19 states have statewide aluminum standards: 31 states do not. Further, no other Region 10 state currently has a statewide aluminum standard; although we recognize that EPA is in the process of finalizing standards for Oregon (under Court Order). Therefore, we recommend that ADEC conform Alaska's standards to other states – and eliminate aluminum aquatic life standards altogether.

If ADEC and/or EPA determine that aluminum standards must be retained, AMA and CAP support adopting EPA's standards with flexibility in how they are implemented. Specifically, aluminum, frequently as a component of aluminum silicate, is a large component of natural clay, which is itself a huge component of natural turbidity in Alaska waters. While this is most obvious in glacial watersheds, there are large numbers of Alaska watersheds which carry significant turbidity (and therefore aluminum) loads during annual flood conditions or even sometimes during average or low flows. In these situations, the aluminum in the clay is not bioavailable to fish.

Stating the aluminum standards as total recoverable severs the aluminum water quality standards from any meaningful relationship to aquatic life effects on fish. We strongly recommend that Alaska consider alternative methods to reflect the appropriate form of the aluminum standards (and how to measure them) and/or allow permittees to propose alternative methods. We are aware that EPA has been working on technical implementation guidance to address these issues that is consistent with the approach used in developing the standards in Oregon. This information should provide valuable references for ADEC's work on aluminum.

Ammonia

As indicated in the Issues Summary, EPA's 2013 freshwater aquatic life ambient chronic criterion for ammonia (mg TAN/L) is 2.4 times more stringent than the State's current criterion at pH 7 and 20°C. (The 2013 acute criterion is 1.4 times more stringent than the State's current criterion at pH 7 and 20°C.) The EPA chronic criterion is based on data from toxicity studies of 16 aquatic vertebrate and invertebrate genera, of which, the most sensitive may not even occur in all/many waters of the State, e.g. as even EPA recognized in developing its [Technical Support Document for Conducting and Reviewing Freshwater Mussel Occurrence Surveys for the Development of Site-specific Water Quality Criteria for Ammonia](#) (EPA 800-R-13-003, August 2013).

For permittees to suddenly be required to spend significant resources in either meeting the new ammonia criteria or conducting a recalculation or other flexibilities procedure is counterproductive as such resources could be better expended on matters benefitting human health and the environment. Additionally, if a permittee were nevertheless obliged to meet the new criteria (i.e., decrease the ammonia concentration of its treated effluent), there is no assurance that application of a currently available, practicable ammonia-reducing technology (or technologies) would not result in unforeseen negative impacts upon a receiving water's aquatic ecosystem or other water quality aspects.

For these reasons, AMA and CAP encourage ADEC to leave in place, or perhaps adopt as site-specific criteria, the current freshwater aquatic life ambient ammonia criteria for existing permittees who are able to

sufficiently demonstrate that meeting such criteria has been protective of existing designated uses and has not otherwise been detrimental to the biota of their receiving waters, e.g., through assessment of historic water quality and biological monitoring data. In addition, where existing or new permittees may not be able to demonstrate such, we encourage ADEC to adopt EPA's flexibilities provisions along with the new criteria, i.e., the Recalculation Procedure for Site-specific Criteria Derivation, variances, revisions to designated uses, dilution allowances, and/or compliance schedules.

Copper

AMA and CAP support ADEC in considering developing and implementing guidance to allow for use of the biotic ligand model (BLM) in establishing site-specific criteria for copper.

Manganese

The current manganese standard of 50 ug/l was adopted as a human health criterion due to its organoleptic effects. At that concentration, manganese can cause laundry staining, odor, and taste issues but does not affect fish nor human health. It is also a widespread element in Alaska's waters and many natural waters have concentrations above that level. The current standard needlessly places many Alaskan waters into the category of naturally impaired and creates unnecessary permitting and compliance issues for our members.

For these and other reasons, only 18 states have a statewide manganese standard; 32 do not. No other Region 10 state has a freshwater manganese standard. Oregon previously had a manganese standard, but EPA allowed Oregon to remove it a few years ago.

Given the widespread reluctance of almost two thirds of American states to adopt any manganese standard, the fact that all Region 10 states lack a standard, and the fact that EPA allowed Oregon to remove its manganese standard, we believe that Alaska should repeal the statewide manganese standard. Given our vast geography, with most of our waters without domestic use, a manganese standard based on staining, odor, and taste is inappropriate, and not required by EPA.

Should the State determine, and/or EPA require a standard, 300 ug/l is a much more appropriate standard because it relates to human health, though we believe the redundant safety factors built into that standard make 300 ug/l too conservative. A standard at that level would at least help to significantly reduce the number of Alaskan waters that would be considered naturally impaired due to manganese.

Selenium

Regarding ADEC's consideration of how EPA's 2016 selenium criterion may ultimately be implemented in Alaska, please note in EPA's Aquatic Life Ambient Water Quality Criterion for Selenium – Freshwater 2016 the absence of – as the figure's title indicates – the State of Alaska from Figure 2.1, "Selenium in Surficial Soils and Aquatic Sediments in counties of the Conterminous United States." Of additional yet no less significant note, among the list of eight fish genera upon which the EPA's 2016 selenium criterion is based, the three most sensitive species (representing three of the most sensitive of the eight different genera) are not commonly recognized as occurring in any or most of the State of Alaska. In fact, the brown trout (*Salmo trutta*, representing the third most sensitive genus upon which the EPA 2016 selenium criterion is based) is documented as being native to Europe, North Africa and Western Asia and is regarded as an invasive species by the State of New York.

The above facts notwithstanding, EPA's 2013 freshwater aquatic life ambient chronic criteria (water column concentrations) for selenium are 3.3 and 1.6 times more stringent than the State's current criteria for lentic and lotic waters, respectively. However, EPA's selenium criterion includes recommendations to states,

including information to help develop site-specific criteria that account for differing local conditions. Additionally, EPA has released technical support materials to assist states in addressing various other implementation questions.

For permittees to suddenly be required to spend significant resources in meeting the new selenium criterion – or otherwise complying with it – is counterproductive as such resources could potentially be available for other matters benefitting human health and the environment. Additionally, if permittees were nevertheless obliged to meet the new criteria (i.e., decrease selenium concentrations in their treated effluent), there are few (if any) known practicable industry-scale selenium removal technologies available. Nor is there any assurance that application of such would not result in unforeseen negative impacts upon a receiving water's aquatic ecosystem or other water quality aspects.

For these reasons, AMA and CAP encourage ADEC to leave in place, or perhaps adopt as site-specific criteria, the current freshwater aquatic life selenium criteria for existing permittees who are able to sufficiently demonstrate that meeting such criteria has been protective of existing designated uses and has not otherwise been detrimental to the biota of their receiving waters, e.g. through assessment of historic water quality and biological monitoring data. In addition, where existing or new permittees may not be able to demonstrate such, we encourage ADEC to fully utilize EPA's recommendations and technical support materials regarding development of relevant local selenium criteria.

Temperature

ADEC is considering introduction of a water temperature standard based on the Seven Day Average of Daily Maximum (7-DADM). This standard would replace the current biologically-based standards which use values designed to be protective of aquatic life (i.e., salmonids) during specific life stages and in other waters consider site-specific requirements needed to preserve normal species diversity or to prevent appearance of nuisance organisms.

In many regions of Alaska, the 7-DADM temperatures are lower than the current biologically based standards for part or all of the discharge season. The 7-DADM temperatures are therefore anticipated to be lower than the temperature of discharge water from many treatment plants now meeting the current temperature standards. Compliance with a temperature standard based on 7-DADM at these operations would likely require modifications to allow cooling of treated water prior to discharge, adding additional complexity and energy consumption to the system. For example, mixing of treated and natural waters in off-channel treatment works or cooling of discharge water with heat exchangers or refrigeration units that may be required to meet the 7-DADM standard, particularly in late summer to late spring when receiving water temperatures are lowest. Alternatively, discharge during periods when receiving water temperatures are similar to current biologically based standards either may not be possible as receiving waters may not reach these temperatures or may require very significant increases in site water storage and water treatment plant capacity.

To provide an example of how this may affect a mining operation, as water quality standards have become stricter and more broadly applied, advanced treatment such as reverse osmosis (RO) is proposed or being implemented at several mining operations in Alaska. RO systems consume much more energy than lime precipitation treatment systems but are efficient at concentrating metals and other constituents in reject water and producing ultra-clean permeate that is discharged. RO systems work more efficiently as water temperature increases, and in some applications where feed water temperatures are very low, water may be heated prior to treatment. If the 7-DADM temperature standard is implemented it may be necessary to cool the permeate water, adding an additional energy requirement to an already energy-intensive treatment process.

ADEC's Issues Summary does not describe the benefit of changing the current biologically based standards to one based on 7-DADM. In addition, an evaluation of the economic costs to operators of public and industrial wastewater treatment systems or ancillary environmental impacts such as greenhouse gas emissions for generation of energy required to operate measures to lower discharge water temperature are not presented. Given the potentially significant implications to mining projects and other industrial and municipal dischargers, we strongly urge ADEC to fully define and evaluate the benefits and implementation costs of any proposed changes to the temperature standards.

Turbidity

A number of mining projects are located in areas where naturally occurring turbidity levels are high. Therefore, we support ADEC's efforts to better understand how changes to turbidity levels from natural background conditions can affect aquatic life, considering similar work being done in other States. We believe this could lead to more flexible statewide criteria and/or better approaches to developing site-specific criteria. However, ADEC also needs to recognize the applicable criteria for other designated uses. If these other criteria are not also considered there would be no benefit to our members and only risk of more stringent standards. In that case, we do not support work on the turbidity standards especially since ADEC has not demonstrated where aquatic life is being adversely affected under the existing standards.

Dissolved Inorganic Substances, Total Dissolved Solids (TDS)

As indicated in the Issues Summary, the current criteria were adopted in 1999. TDS is a measure of inorganic salts, organic matter, and other dissolved materials in water. The current TDS criterion for drinking water supply and aquatic life is 500 mg/L. A demonstration of "no adverse effect" is allowed for the 500-1000 mg/L TDS range for aquatic life criteria under Note 12 of the criteria table in 18 AAC 70.020(b). ADEC further notes that there is literature that shows that effects on fish and other aquatic life can occur at lower levels than the current minimum criterion of 500 mg/L.

AMA and CAP encourage ADEC to exercise great care in considering establishing more stringent aquatic life criteria for TDS. It is clear that TDS toxicity is directly correlated to the nature of the ions that contribute to the TDS. There is little or no scientific evidence from laboratory or field studies that the most common ions (e.g., calcium and magnesium) that generally comprise TDS in most waters in Alaska adversely impact aquatic life. In fact, many pristine waters in Alaska that support healthy aquatic life populations have natural TDS levels that approach or exceed 500 mg/L. In contrast to ADEC's vague reference to a handful of studies that suggest potential TDS-related impacts below 500 mg/L, it is generally accepted that essential minerals like calcium and magnesium are often beneficial to the health of aquatic life. AMA and CAP specifically encourage ADEC to review the work done on TDS in the Red Dog and Kensington Mine discharges and receiving waters that show no adverse TDS-related effects on anadromous and resident fish.

Beyond considering the aquatic life criterion for TDS, AMA and CAP strongly encourage ADEC to re-consider, with a much higher priority, the statewide applicability of the drinking water criterion of 500 mg/L (and the related sulfate and chloride criteria of 250 mg/L). This represents the secondary MCL that is solely based on potential taste effects; there is no evidence of any adverse health effects. It is striking that the State does not apply this criterion to public water systems, where water is actually consumed directly by residents. In fact, EPA has discouraged applying the secondary MCL to surface water because it potentially could lead to reductions in the natural levels of essential minerals for aquatic life. In addition, lowering the TDS level can lead to lower hardness, which can then increase the toxicity of metals in the discharge and receiving water. Overall, the provision to allow TDS levels up to 1,000 mg/L for aquatic life protection has little or no value to dischargers because of the underlying drinking water criterion. EPA has previously supported the State's removal of secondary MCLs from the State's Water Quality Standards.

Drinking Water and Irrigation Standard Applicability to All State Waters

Many States (e.g., California) apply common sense approaches to applying standards to specific waterbodies beyond the requirements to be swimmable and fishable. Such applications are based on their actual and reasonably foreseeable use as public water supply systems or for irrigation. In almost all States that do this, they consider where drinking water or irrigation intakes are (or could be located) on a segment-by-segment basis. At a broad level, it is important to emphasize that the State's drinking water criteria are not based on occasional use of a stream but rather the consumption of several liters of water every day for many decades. The majority of the waters in Alaska have no reasonable potential for such drinking water supply or irrigation use based on limited proximity to developed areas. Moreover, in mineralized areas where our members are generally located, metals levels already exceed drinking water criteria, and the waterbodies should not be used as water supplies. The importance of this issue is highlighted because ADEC has adopted a general policy of not wanting to remove designated uses even where such uses are clearly not attainable.

AMA and CAP members spend significant resources ensuring their discharges meet criteria based on non-existent human health and irrigation risks. Such dollars could be much better spent for the economic and environmental benefits of Alaska's citizens. We strongly encourage ADEC to consider more flexibility in determining the applicability of State's drinking water and irrigation criteria and make this a high priority for the 2021-2024 triennial review.

Conversion Factors

It is well understood that the aquatic life toxicity of many metals is based on their dissolved form; metals attributable to solids in a waterbody are generally not toxic in the water column. States are, however, typically required to establish discharge permit limits based on total recoverable or total metal concentrations. This is achieved by developing permit limits using translators and/or conversion factors to adjust total concentrations in a discharge to their equivalent dissolved level in the receiving water. ADEC uses statewide conversion factors based on EPA's national recommendations. Because these factors are applied statewide, they are naturally very conservative. Other States have specific procedures to allow development of waterbody-specific translators that reflect the actual ratios of total to dissolved metal concentrations. Such ratios are generally based on representative water quality monitoring in receiving waters. These ratios can be especially relevant where waterbodies have high levels of solids that lead to substantially higher ratios of total to dissolved metals. Unfortunately, Alaska's current Water Quality Standards make establishing waterbody-specific conversion factors and translators very difficult. Under the 2021-2024 triennial review, AMA and CAP strongly encourage ADEC to develop regulations and guidance that facilitate reasonable development of appropriate translators. Note that EPA has developed specific guidance on determining waterbody-specific translators, e.g., in its June 1996 document: The Metals Translator Guidance for Calculating A Total Recoverable Permit Limit from A Dissolved Criterion.

We appreciate the opportunity to provide input on this important topic and look forward to continuing to work with ADEC on how to improve the State's Water Quality Standards program.

Sincerely,



Deantha Skibinski
Executive Director
Alaska Miners Association



Karen Matthias
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