EARTHJUSTICE * EARTHWORKS * FRIENDS OF THE EARTH * NATURAL RESOURCES DEFENSE COUNCIL

August 24, 2020

VIA EMAIL

Alaska Department of Environmental Conservation
Division of Water
Wastewater Discharge Authorization Program/401 Certification
555 Cordova Street
Anchorage, AK 99501-2617
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Re: Comments on the Pebble Limited Partnership's application for State water quality certification, Department of the Army Public Notice Reference No. POA-2017-00271

Dear Alaska Department of Environmental Conservation,

Earthjustice, Earthworks, Friends of the Earth, and the Natural Resources Defense Council submit these comments on the Pebble Limited Partnership's (PLP) application for State water quality certification under section 401 of the Clean Water Act for the proposed Pebble Mine, as described in Public Notice Reference No. POA-2017-00271. For the reasons described below, Commissioner Brune should recuse himself from this decision and the Alaska Department of Environmental Conservation (ADEC) should deny certification.

Bristol Bay is home to one of the last great intact wild salmon fisheries on Earth. It produces half of the world's sockeye salmon, generating $1.5 billion a year[1] and 14,000 jobs.[2] It has sustained Alaska Native peoples for millennia. This peerless fishery owes its fecundity to a vast network of pristine headwaters flowing unbroken to the sea across an undeveloped, water-rich landscape.[3]

As the final environmental impact statement (FEIS) prepared by the U.S. Army Corps of Engineers (Corps) shows, constructing the Pebble Mine would interrupt Bristol Bay's network of headwaters because of the sheer size of the facilities needed to exploit its low grade ore, as well

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[1] Institute of Social and Economic Research, *The Economic Importance of the Bristol Bay Salmon Industry* at 1 (Apr. 2013) (ISER 2013) ("In 2010, harvesting, processing, and retailing of Bristol Bay salmon and the multiplier effects of these activities created $1.5 billion in output or sales value across the United States.").
[2] EPA, About Bristol Bay, https://www.epa.gov/bristolbay/about-bristol-bay.
[3] EPA, *Proposed Determination of the U.S. Environmental Protection Agency Region 10 Pursuant to Section 404(c) of the Clean Water Act: Pebble Deposit Area, Southwest Alaska* at ES-1 (July 2014) (Proposed Determination).

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as through a variety of effects on water quantity and quality. It would involve massive tailings dams that would represent a permanent threat to the fishery in their potential for chronic seepage, dam failure, water treatment failure, and susceptibility to extreme weather and seismic events. PLP would need to process and treat a volume of mine contact water unprecedented among North American hardrock mines, in perpetuity.

Hardrock mines notoriously cause violations of water quality standards, and the vast majority of environmental impact statements completed for hardrock mines underestimate the potential for mine activities to cause violations of water quality standards and harm existing uses.[4] Given this systematic pattern of underestimation, the FEIS for the Pebble project likely underestimates the potential water quality impacts of the Pebble Mine. Yet, as detailed below, even the FEIS acknowledges there are still significant uncertainties about whether the project will comply with water quality standards.

In short, the Pebble Mine is the wrong mine in the wrong place. ADEC cannot certify this project under section 401 of the Clean Water Act for three reasons, each of which is sufficient on its own to preclude certification. First, on August 20, 2020, the Corps preliminarily found "discharges at the mine site would cause unavoidable adverse impacts to aquatic resources and . . . those adverse impacts would result in significant degradation to those aquatic resources."[5] This means the project as proposed would violate the Clean Water Act and, therefore, Alaska's water quality requirements.[6] Second, PLP's application and the FEIS defer to future processes information, analyses, and conclusions that are critical to assessing the project's, and the discharges', compliance with water quality requirements.[7] Third, even the limited and insufficient information available indicates that the quantity of habitat destruction in the headwaters of the Bristol Bay watershed required to construct the Pebble Mine constitutes immitigable significant degradation,[8] and that the project will violate water quality criteria for selenium.[9] Under these circumstances, the Clean Water Act and the implementing regulations adopted by EPA and ADEC require ADEC to deny certification.[10] ADEC must also alert both the Corps and applicant of the denial.

As an initial matter, Commissioner Brune should recuse himself from any consideration of PLP's application for water quality certification. While he has stated that as commissioner he

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[4] *See* J. Kuipers & A. Maest, *Comparison of Predicted and Actual Water Quality at Hardrock Mines: The reliability of predictions in Environmental Impact Statements* at ES-8 (2006) ("Nearly all the EISs reviewed reported that they expected acceptable water quality (concentrations lower than relevant standards) after mitigation were taken into account . . . but at the majority of these mines, impacts have already occurred.").
[5] D. Hobbie, Corps, Letter to J. Fueg, PLP at 1 (Aug. 20, 2020) (Hobbie Letter).
[6] *See infra* pp. 19-23.
[7] *See infra* pp. 7-16.
[8] *See infra* pp. 19-23.
[9] *See infra* pp. 24-25.
[10] *See* 33 U.S.C. § 1341(a)(1); 40 C.F.R. § 121.2(a); 18 AAC 70.015(a)(2).

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would "evaluate [the Pebble] project . . . according to how the law tells me to evaluate it,"[11] his work experience and public advocacy demonstrate a long-standing bias towards and support of the Pebble Mine. Prior to his confirmation as ADEC Commissioner in April 2019, Brune worked extensively for mining conglomerate Anglo American, which, until withdrawing from the project, held a 50 percent interest share in the Pebble Mine, and for organizations that promote and advocate for the resource development and extraction industry in Alaska, with a specific focus on mining.[12] Commissioner Brune has also made many public statements in support of the Pebble Mine, including in April 2018, when he tweeted that having "spent a lot of my life learning about this project," he had "no doubt" the Pebble Mine could be "developed

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[11] J. Brooks, *Former public face of Pebble mine could lead the Alaska Department of Environmental Conservation*, ANCHORAGE DAILY NEWS (updated Jan. 29, 2019), https://www.adn.com/politics/2019/01/29/former-public-face-of-pebble-mine-could-lead-the-alaska-department-of-environmental-conservation/. Brune has argued that as he no longer had a financial interest in the Pebble Mine, he would be unbiased in his decision-making.

[12] From June 2011 to February 2014, Commissioner Brune served as the public affairs and government relations manager for Anglo American, a position in which he managed various functions related to Pebble project, including among other things, representing the company on various Pebble Partnership committees and industry associations and overseeing and coordinating "components of NEPA/permitting review on behalf of Anglo American." J. W. Brune, Resume, http://www.akleg.gov/basis/get_documents.asp?session=31&docid=22554 (Brune Resume). From April 2014 to December 2014, he was president of Think Globally, Develop Locally LLC, where he offered "mining[] and environmental consulting for complex resource development projects" including the Pebble Mine. *Id.* And, from August 2000 to June 2011, he worked for the Resource Development Council of Alaska in various positions, including as executive director and projects coordinator / Alaska Mineral and Energy Resource Education Fund executive director, *id.,* a statewide business association for the oil and gas, mining, forest products, tourism, and fishing industries with the purpose of expanding the state's economy through resource development. Resource Development Council, *About Us*, https://www.akrdc.org/about-rdc. From 2011 to 2018, Commissioner Brune held a variety of positions on the board of Alaska Miners Association (AMA), including as board president, Anchorage branch chair, and state oversight committee co-chair, and he served as treasurer of AMA's political action committee from 2012 to 2018. Brune Resume. AMA "works to promote the mining industry in Alaska" and "advocate[s] for the development and use of Alaska's mineral resources." Alaska Miners Association, *About AMA*, http://www.alaskaminers.org/about. Commissioner Brune also served on the board of the Resource Development Council from 2013 to 2018. Brune Resume.

safely and will coexist with the salmon fishery,"[13] and has made additional public statements that the mine would not endanger the region's fisheries.[14] Finally, in his confirmation hearing, Commissioner Brune confirmed that "he would work to promote [Governor] Dunleavy's agenda that 'Alaska is open for business,'"[15] which includes encouraging and advancing mining projects such as the Pebble Mine.[16] Commissioner Brune's lengthy work experience related to and public advocacy in support of the Pebble Mine undermine public confidence that he would review PLP's application for water quality certification impartially. He should recuse himself, as stakeholders have requested.[17]

APPLICABLE LEGAL STANDARDS

I. Clean Water Act section 401.

Clean Water Act section 401 prohibits federal agencies from authorizing discharges to intrastate waters of the United States unless the relevant state certifies that there is a "reasonable assurance" the project generating the discharge complies with water quality requirements, or unless the state waives such certification.[18] Specifically, a state must certify compliance with water quality standards, effluent limitations, new source performance standards, toxics

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[13] J. Brune, Tweet (Apr. 19, 2018), https://twitter.com/jasonbrune/status/987118966714847237. Other examples of Commissioner Brune's support of the Pebble Mine include a tweet he sent in celebration of Earth Day 2018, stating "[t]he best way to celebrate #earthday is of course to Think Globaly [sic], Develop Locally! Nobody does responsible resource development better than Alaskans! . . . #openPebble . . . ." J. Brune, Tweet (Apr. 22, 2018), https://twitter.com/hashtag/openallofNPRA?src=hashtag_click. In 2017, he tweeted that one item on his Christmas list –"New partner for @PebbleProject & begin permitting process. Check." – could be checked, J. Brune, Tweet (Dec. 20, 2017), https://twitter.com/jasonbrune/status/943549450663870464, and celebrated Halloween with a "Pebble Is Back!" jack-o-lantern, J. Brune, Tweet (Oct. 30, 2017), https://twitter.com/jasonbrune/status/925256411440848896.

[14] I. Ross, *At Brune's confirmation hearing, public testimony centered on Pebble ties*, KDLG (Mar. 19, 2019), https://www.kdlg.org/post/brunes-confirmation-hearing-public-testimony-centered-pebble-ties#stream/0.

[15] *Id.*

[16] At a recent mining conference, Governor Dunleavy, with Commissioner Brune in attendance, gave mining companies "an open invitation to set up shop in the state of Alaska." S. Lasley, *Alaska gov welcomes mining investments*, NORTH OF 60 MINING NEWS (Jan. 24, 2020), https://www.miningnewsnorth.com/story/2020/01/24/news/alaska-gov-welcomes-mining-investments/6147.html.

[17] K. Carscallen, Commercial Fishermen for Bristol Bay, Email to M. Dunleavy, Governor, Re: Formal request for recusal or removal of Commissioner Jason Brune from permitting decisions related to the Pebble Mine project (Aug. 17, 2020).

[18] *See* 33 U.S.C. § 1341(a); *id.* § 1341(a)(3) (establishing a procedure to revoke 401 certification if there is no longer "reasonable assurance" of compliance).

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restrictions, and other appropriate state law requirements.[19] ADEC may not certify a project under section 401 in circumstances that "will not assure compliance with Alaska's water quality standards."[20]

EPA's interpretation of section 401, as codified in its current regulations, requires ADEC to certify that PLP's entire project—not merely the dredge and fill discharges under Clean Water Act section 404 for which PLP seeks certification—will comply with state water quality requirements.[21] However, on July 13, 2020, EPA promulgated new regulations purporting to limit the scope of states' section 401 certification to the specific discharge for which an applicant seeks certification.[22] The effective date for those regulations is September 11, 2020.[23] While the Corps circulated a Notice of Application for State Water Quality Certification for the Pebble Mine on July 24, 2020, ADEC will likely issue its decision sometime after September 11, 2020. The Corps notice does not specify whether ADEC's decision process will conform to the new regulations.

In this context, the various dredge and fill activities for which PLP seeks certification cause, or are directly connected to, the majority of the project's water quality impacts. Those activities would destroy freshwater habitat, disrupt hydrogeological conditions, and force PLP to collect and treat wastewater in perpetuity. Therefore, it is not clear ADEC could decline to consider any of the project's water quality impacts under either the current or the new set of regulations. Nonetheless, the ambiguity about which set of regulations ADEC plans to apply frustrates public comment by creating ambiguity as to the scope and form of, and the process for, ADEC's review.[24] ADEC should therefore initiate a new public comment period after clarifying whether it intends to conform to the new regulations. At a minimum, ADEC must provide that clarity in its final decision on PLP's application for section 401 certification. If ADEC views any issue raised in these comments as falling outside the scope of its review, ADEC should clearly so state.

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[19] *Id.* § 1341(a)(1) ("Any applicant for a Federal license or permit . . . shall provide the licensing or permitting agency a certification from the State . . . that any such discharge will comply with the applicable provisions of sections 1311, 1312, 1313, 1316, and 1317 of this title."); *id.* § 1341(d)("Any certification provided under this section shall set forth any effluent limitations and other limitations, and monitoring requirements necessary to assure that any applicant for a Federal license or permit will comply with [sections 1311, 1312, 1316, or 1317], and with any other appropriate requirement of State law . . . ."); *see also PUD No. 1 of Jefferson Cty. v. Wash. Dep't of Ecology,* 511 U.S. 700, 711-23 (1994) (holding that a state could condition its section 401 certification on minimum flow requirements necessary to protect designated uses).
[20] *Miners Advocacy Council, Inc. v. State, Dep't of Envtl. Conservation*, 778 P.2d 1126, 1140 (Alaska 1989).
[21] *See PUD No. 1 of Jefferson Cty.*, 511 U.S. at 712 (citing 40 C.F.R. § 121.2(a)(3)).
[22] 85 Fed. Reg. 42,210, 42,210 (July 13, 2020).
[23] *Id.*
[24] *See id.* at 42,229-35 (discussing how EPA's new regulations would change the scope of issues relevant to 401 certification); *id.* at 42,235-81 (discussing numerous other changes to 401 certification form and process).

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II. Alaska's water quality requirements.

One component of Alaska's water quality standards is a table of numeric and qualitative water quality criteria for pollutants that correspond to specific designated uses in the receiving waters.[25]

Another component of Alaska's water quality standards is its antidegradation policy.[26] The Clean Water Act requires all states to enact an antidegradation policy and implementation methods.[27] Alaska's antidegradation policy mandates that ADEC make antidegradation analysis and findings for section 401 certifications.[28] The policy establishes three tiers of protection for water, corresponding to three tiers of water quality; the higher the quality, the better the protection.[29] The policy also mandates that, for all waters where water quality exceeds the levels necessary to protect fish, shellfish, wildlife, and recreation, the water may only be degraded if ADEC finds that "the resulting water quality will be adequate to fully protect existing uses of the water."[30] The quality necessary to support existing uses must be "maintained and protected."[31]

For waters that are cleaner than is necessary to support the propagation of fish, shellfish, and wildlife and recreation ("Tier 2 waters"), the antidegradation policy provides additional safeguards.[32] Most waters in Alaska are Tier 2.[33] "Tier 2 is presumed for all water as the default protection level for all parameters" absent certain exceptions not applicable here.[34] ADEC may not allow a reduction in the quality of Tier 2 waters, unless an exception applies, without finding that 1) lowering water quality is necessary to accommodate important economic or social development in the area where the waters are located; 2) there will be no violation of applicable water quality criteria or whole effluent toxicity limit; 3) water quality adequate to fully protect existing uses will be maintained; 4) for point sources, all discharges will be treated and controlled to achieve the highest statutory and regulatory requirements; and 5) for non-point sources, all discharges will be treated and controlled to achieve all cost-effective and reasonable best management practices.[35]

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[25] *See* 18 AAC 70.020(b).
[26] 18 AAC 70.010(b).
[27] 40 C.F.R. § 131.12.
[28] 18 AAC 70.016(a)(1)(B).
[29] 18 AAC 70.016(a); 18 AAC 70.015(a)(1)-(3).
[30] 18 AAC 70.015(a)(2)(C); *see also* 40 C.F.R. § 131.12(a)(2) ("In allowing such degradation or lower water quality, the State shall assure water quality adequate to protect existing uses fully.").
[31] 18 AAC 70.015(a)(1).
[32] *See* 18 AAC 70.015(a)(2).
[33] ADEC, Division of Water, *Antidegradation*, https://dec.alaska.gov/water/water-quality/standards/antidegradation ("Water Quality Tiers" tab).
[34] 18 AAC 70.016(c)(1).
[35] 18 AAC 70.015(a)(2).

The waters affected by the proposed section 404 discharge and other elements of the Pebble Mine are of "pristine quality,"[36] and are entitled to at least Tier 2 protections for all parameters. Based on sampling described in the FEIS, "the baseline surface water resources can generally be characterized as cool, clear waters with near-neutral pH that are well-oxygenated, low in alkalinity, and generally low in nutrients and other trace elements."[37] While "[w]ater quality data occasionally exceeded the maximum criteria for concentrations of various trace elements in some individual sample measurements[,] . . . in no instance did the mean concentration of trace elements exceed the most stringent water quality guidelines."[38] There is no evidence that any parameter in the relevant waters "persistently exceeds water quality criteria" such that a Tier 1 designation would be justified.[39]

There is no applicable exception to Alaska's water quality standards. Mixing zones, for example, are not authorized "in a spawning area of any of the five species of anadromous Pacific salmon found in the state," nor can they "adversely affect the present and future capability of an area to support spawning, incubation, or rearing" of those species.[40] ADEC therefore could not authorize a mixing zone in the headwaters of the Bristol Bay watershed. Likewise, the water quality impacts and habitat degradation associated with the project extend well beyond any treatment works "installed" or "designed" by PLP that would qualify for exemption from water quality standards.[41]

CRITICAL UNCERTAINTIES AND MISSING INFORMATION PRECLUDE ADEC FROM DETERMINING THAT THE PEBBLE PROJECT WILL COMPLY WITH STATE WATER QUALITY REQUIREMENTS.

PLP's current proposal leaves too many questions unanswered for there to be meaningful analysis of the impacts to water quality. The FEIS suffers for this and fails to provide ADEC

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[36] *See* EPA, *An Assessment of Potential Mining Impacts on Salmon Ecosystems of Bristol Bay, Alaska* at 1-1 (Jan. 2014) (Watershed Assessment).
[37] FEIS at 3.18-7.
[38] *Id.*
[39] *See* 18 AAC 70.016(c)(1)(C)(i).
[40] 18 AAC 70.240(e). For this reason, EPA's analysis assumed ADEC would not grant any exception to water quality criteria. *See* Watershed Assessment at 8-3.
[41] 18 AAC 70.010(c) (referring to treatment works authorized under either the solid waste disposal rules, 18 AAC 60, or under the wastewater disposal rules, 18 AAC 72); 18 AAC60.990(144) ("'[T]reatment works' has the meaning given in AS 46.03.900."); AS 46.03.900(33) ("'[T]reatment works' means a plant, disposal field, lagoon, pumping station, constructed drainage ditch or surface water intercepting ditch, incinerator, area devoted to sanitary land fills, or other works installed for the purpose of treating, neutralizing, stabilizing, or disposing of sewage, industrial waste, or other wastes."); 18 AAC 72.990(43) ("'[N]ondomestic wastewater treatment works' means a plant, device, structure, or other works designed to treat, neutralize, or stabilize nondomestic wastewater or sludges."); *see, e.g.*, ADEC, Waste Management Permit for Red Dog Mine, Permit No. 0132-BA002 at 3 (1.1.4) (Dec. 2, 2009) (explaining that the mine pits at Red Dog Mine are considered to be part of the treatment works).

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with sufficient information to issue a 401 certification for the Pebble project. Instead of grappling with crucial water quality issues, the FEIS assumes there will be compliance with water quality standards and defers to Alaska to ensure integral analysis is completed. This problem is pervasive in the FEIS, but we highlight several examples of how the "approve now, analyze and address later" approach prevents ADEC from being able to certify that this project and its discharges will meet water quality standards. In addition to falling short of legal requirements, certifying the project despite outstanding water quality issues is unacceptable in Bristol Bay, where there is no margin of error for Alaskans who depend on the fish these pristine waters support.

I. There is no reasonable assurance PLP's water treatment system will prevent violations of water quality standards.

The FEIS admits that "[u]ntreated contact water released into the downstream drainages would contain elevated levels of aluminum, arsenic, beryllium, cadmium, copper, lead, manganese, mercury, molybdenum, nickel, selenium (a metalloid), silver, and zinc in exceedance of the most stringent [Water Quality Criteria]."[42] Thus, the ability of the project to comply with water quality criteria depends on the success of the treatment system PLP decides to employ.

Here, there is no assurance that PLP's proposed water treatment approach will be effective. As the Corps explains in the FEIS, "the specific configurations of treatment processes have not been commercially demonstrated," "the approaches have not been demonstrated elsewhere at the scale of the Pebble mine," and "[t]he technical viability of this strategy . . . require[s] further evaluation . . . to demonstrate that the configurations can achieve the suggested water quality."[43] Even the so-called mitigation measures the FEIS discusses are based on assumptions about the conceptual treatment system and are largely plans to undertake further evaluation and analysis that is needed now.[44] In light of these substantial uncertainties about the proposal's technical viability, EPA noted in its comments on the preliminary FEIS that "violations of water quality standards [. . .] [are] reasonably foreseeable."[45] Indeed, the FEIS recognizes that the information provided by PLP "appears to be optimistic," especially as to selenium.[46] Review by an independent consultant, André Sobolweski, Ph.D., found that PLP's proposal relies on "unproven technologies" and "is not supported by testwork, scientific and technical literature or case studies," leading PLP to project "unrealistic treatment performance

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[42] FEIS, Executive Summary at 106.
[43] *Id.*, App. K at 4.18-49.
[44] *Id.*, App. M at M-5, Tbl. M-1 ("Revisit liner defect assumptions at pyritic TSF and main WMP based on final liner design and specifications; and update groundwater, water balance, and water quality model predictions in final design."); *id.* at M-21, Tbl. M-1 ("Further evaluate whether engineering and construction for such significant changes to the treatment processes can be completed within the 3-year period of available mine site water storage capacity.") (internal reference omitted); FEIS at 5-30 to 5-31, Tbl. 5-2.
[45] EPA, Comments on Pebble Pre-FEIS, Fish Worksheet at 4 (Mar. 26, 2020) (EPA PFEIS Comments).
[46] FEIS, App. K at K4.18-50.

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and unattainable effluent concentrations for regulated contaminants."[47] For example, PLP's plan fails to account for predictable salt buildup in the closed-loop water management circuit that will exceed treatment capacity within six years.[48]

The entire water treatment system approach relies on unidentified "long-term adaptive management strategies"[49] with an assumption that protections will be adopted as they are identified. The FEIS contemplates that the treatment strategies for TDS and salt might be ineffective,[50] and admits that "over the life of the mine, it is possible that [Alaska Pollutant Discharge Elimination System (APDES)] permit conditions may be exceeded . . . as has happened at other Alaska mines."[51] For example, the FEIS notes there are concerns about "potential long-term increased TDS levels [that] may require further investigation as design progresses, and/or adaptive management strategies [to be] implemented during operations."[52] No solution to this threat is identified in the FEIS and there is no explanation as to how water quality criteria for TDS would be met despite such increases. The mere fact that other Alaska mines have exceeded their effluent limitations, presumably due to unforeseen circumstances, does not excuse regulatory authorities from requiring PLP to address water quality problems that are foreseeable even now.

Even if the Pebble Mine only involved a typical volume of wastewater in a typical Alaska watershed, PLP's water treatment proposal would be too unsubstantiated to satisfy the section 401 reasonable assurance standard. Given the unprecedented 6.8 billion gallons of wastewater the mine would need to process during operations annually, on average (11.8 billion gallons annually during phase 1 of closure)[53] and the importance of the Bristol Bay headwaters, the proposal's inadequacy is even starker.

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[47] A. Sobolewski, Review of water treatment plants proposed in FEIS for Pebble Project at , 16, 18 (Aug. 23, 2020) (Sobolewski 2020).
[48] *Id.* at 7.
[49] FEIS at 4.18-13.
[50] *Id.* at 5-32, Tbl. 5-2 ("If proposed treatment strategies for managing TDS treatment and salt buildup in the pyritic TSF prove to be ineffective, modify the WTPs with additional unit processes to maintain approved discharge requirements. Further evaluate whether engineering and construction for such significant changes to the treatment processes can be completed within the 3-year period of available mine site water storage capacity.") (internal reference omitted); *see also id.*, App. K at K4.18-50.
[51] *Id.* at 4.18-13.
[52] *Id.* at 4.18-22.
[53] Average annual water treatment during operations, based on 50th percentile (29 cubic feet per second (cfs) converted to billions of gallons per year). Knight Piésold Ltd., *Pebble Project: Pebble Mine Site Operations Water Management Plan* at 37, Tbl. 4.2 (July 6, 2018). Average annual water treatment during closure phase 1, based on 50th percentile (50 cfs converted to billions of gallons per year). Knight Piésold, *Pebble Mine Site – Closure Water Management Plan* at 23, Tbl. 5.1 (Sept. 21, 2018). The average annual water treatment plant discharge drops to 30 cfs in Phase 3 of closure and to 13 cfs at Phase 4. *Id.*

"If the [water] treatment strategy proves to be ineffective," the Corps acknowledges, "modification to the treatment system would be required, which may include the modification of the treatment plants with additional unit processes, such as further [reverse osmosis] trains and/or salt removal techniques such as thermal evaporation."[54] The success of PLP's plan thus depends on the notion that the project's water ponds are large enough to store untreated water while PLP implements any necessary changes.[55] PLP's "contention" is that the ponds will be sufficient to store up to three years' worth of wastewater.[56] However, PLP has not yet demonstrated that it could complete engineering and construction in those three years—a question that likewise "requires further evaluation"[57] before there can be any assurance that the project will not cause water quality violations due to flaws in the unproven water treatment plan.

The FEIS suggests the State of Alaska should work with PLP to resolve water treatment plan deficiencies in future permitting—presumably, in the context of an application for an APDES permit.[58] However, notwithstanding any future APDES permitting process, ADEC cannot reasonably certify the Pebble Mine will comply with water quality standards when it is already apparent that PLP's treatment plan faces significant, potentially intractable compliance problems.

III. There is no reasonable assurance that other project impacts are consistent with water quality requirements.

There is no reasonable assurance existing uses for fish habitat will be fully protected due to changes in water temperature resulting from proposed mine-related discharges under both Clean Water Act section 404 and 402, as well as from other mine impacts. Temperature is included among the State of Alaska's water quality criteria, with stricter standards for areas fish use for migration, spawning, rearing, and egg and fry incubation.[59] Fish spawning, incubation, and rearing processes are highly sensitive to water temperature. Warmer water discharged from the water treatment plants may adversely affect aquatic organisms in receiving streams.[60] But the FEIS arbitrarily dismisses the effect of elevated water temperatures on the grounds that the changes will be small, because it fails to recognize that even small changes can have significant

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[54] FEIS, App. K at K4.18-50.
[55] *Id.*
[56] *Id.*
[57] *Id.*
[58] *See id.*, App. K at K4.18-49 ("The technical viability of this strategy would require further evaluation during the permitting phase with the State of Alaska to demonstrate that the configurations can achieve the suggested water quality."); FEIS at 4.18-13 ("The technical viability of the WTPs would require further evaluation during the permitting phase with the State of Alaska to demonstrate that the configuration can achieve the suggested water quality.").
[59] *See* 18 AAC 70.020(b), Tbl. at (10)(A)(iii), (10)(C).
[60] K. Zamzow *et al.*, Selenium Issues in the Pebble Project Draft EIS Position Paper, U.S. Army Corps of Engineers at 13 (Apr. 2019).

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ecological effects, especially when considered cumulatively.[61] It entirely ignores science emphasizing the importance of local adaptation of fish to the water temperatures in which they have existed.[62] Similarly, the FEIS ignores the consequences of changing environmental conditions on the timing of life-history events.[63] Instead, it bases its conclusions on an inappropriate standard, "optimal temperatures," which ignore the influence of local adaptation, a critical consideration according to EPA.[64] Conclusions about stream temperature based on data of where salmon spawn and where groundwater enters streams are not enough to fully determine the impacts.[65]

The FEIS is clear that plans to minimize impacts to fish habitat have not even been developed beyond the most basic level. It states PLP will work with Alaska Department of Fish & Game to determine how to distribute excess site water amongst three watersheds, and "further optimize the project water discharge strategy through state permitting," including by evaluating "alternate discharge strategies, discharge locations, or the use of constructed wetlands to further optimize the plan."[66] Yet-to-be developed plans like this are not sufficient to provide reasonable assurance fish habitat will be protected.

There is no reasonable assurance that acid-generating rock will not cause violations of water quality criteria. To begin with, there is an underlying problem with the FEIS's method for identifying and separating potentially acid-generating (PAG) rock from non-acid-generating ("non-PAG" or "NPAG") rock in that there is no apparent method for segregating contaminant-leaching rock. This makes it very difficult to understand the quantity of PAG rock involved and whether PLP's plans are reasonable. EPA raised concerns about this, and asked that the Corps provide "the criteria that will be used to distinguish NPAG and non-metal leaching (ML) waste from PAG and ML waste and discuss how the NPAG/PAG determinations will be made during active mining."[67] EPA went on to explain that "[t]hese details are typically provided in EISs for mining projects and are necessary to evaluate the effectiveness of the NPAG/PAG separation and potential environmental impacts from tailings and waste management."[68] The FEIS adopted EPA's recommendation, but describes the method as only "possibly" reasonable because it "[w]ould require design changes to accommodate increased volumes of tailings and waste rock designated as PAG."[69]

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[61] G. Reeves, PhD., Review of the Assessment of Water Temperatures at 1 (Aug. 20, 2020) (Reeves); *see also* M. Schweisberg, Pebble Mine Final Environmental Impact Statement (FEIS): Anticipated Adverse Impacts to Wetlands at 9-11 (Aug. 22, 2020) (Schweisberg 2020).
[62] Reeves at 1-4.
[63] *Id.* at 3-4.
[64] *Id.* at 4.
[65] EPA PFEIS Comments, Fish Worksheet at 2, 6.
[66] FEIS at 5-27, Tbl. 5-2 (citing PLP 2020-RFI 071d).
[67] EPA, Comments – Pebble Project Preliminary Draft EIS, Chapter 2 at 4 (Dec. 21, 2018) (EPA PDEIS Comments).
[68] *Id.*
[69] FEIS, App. M at M-5, Tbl. M-1.

Regardless, there will certainly be large quantities of PAG rock and those will be placed in the pit lake. The FEIS fails to explain how a neutral pH will be achieved in the pit lake despite the fact that it is a deposit for acid generating rock.[70] The FEIS seems to arrive at this conclusion because it assumes that submerging waste rock reduces the risk of leaching acid or contaminants. But there is no analysis of the remaining risk, despite there clearly being a likelihood of leaching.[71] The FEIS fails to include key contaminant sources in the water quality model, including tertiary waste rock and hydrologic fluxes from waste rock piles. It also predicts unrealistically low leachate contaminant concentrations from quarried rock fill,[72] and does not address EPA's assertion that humidity cell tests are only of limited reliability and downstream conditions will create different risks for acid generation.

The FEIS underestimates the problem of "flushing" that occurs from rain on stored waste rock. Following flushing events, contaminants flow into ground and surface water. The FEIS uses unreasonable data and assumptions to model this issue.[73] EPA asked for analysis to demonstrate how this was reasonable, but the FEIS fails to provide it.[74] Each of the failures of the water quality modeling related to waste rock increases the risk that contaminated contact water will seep into off-site ecosystems,[75] causing violations of water quality criteria.

There is no reasonable assurance the bulk tailings storage facility or pyritic tailings storage facility will not leak and cause violations of water quality criteria. The unlined bulk tailings storage facility will require monitoring and maintenance in perpetuity. With an incomplete design and a need to plan for generations, there is no way to understand how PLP will ensure water quality criteria are met for the duration of potential impacts. For example, the Corps states that "it would be important to continue maintaining the pit lake as a hydraulic sink long-term to control metal releases to the environment" because "hardness and trace metals (Al, As, Cd, Cu, Fe, Hg, Mn, Mo, Ni, Pb, Sb, Se, and Zn) in the near-surface (upper 30 feet) pit lake water would exceed discharge limits in a stratified pit lake" otherwise.[76] ADEC recognized the danger of assuming the lake would stratify in its comments, and it does not appear that the FEIS

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[70] K. Zamzow, PhD., Comments on Pebble FEIS on discharge of selenium at 4 (Aug. 15, 2020) (Zamzow FEIS Selenium Comments).
[71] A. Wlostowski, PhD., Comments on Pebble Project Final EIS at 1 (Aug. 7, 2020) (Wlostowski 2020); EPA PFEIS Comments, Water and Sediment Quality Worksheet at 8 ("It is not clear from the discussion (or Appendix N) how the depth (or what depth) of water cover *over both* the PAG waste rock and the pyritic tailings is going to be attained and then maintained during operations to minimize potential for oxidation by dissolved oxygen. We additionally recommend changing text from 'prevent' to 'minimize.'").
[72] Wlostowski 2020 at 1-2.
[73] *Id.* at 3.
[74] EPA PFEIS Comments, Water and Sediment Quality Worksheet at 11 ("By excluding the first flush of elevated metal/metalloid concentrations in the source term calculations, the concentrations during mine operations will be underestimated . . . We continue to recommend that the modeling include the first flush effect in its calculations.").
[75] Wlostowski 2020 at 3.
[76] FEIS, App. K at K4.18-42.

provided any explanation for what would happen if the pit lake did not in fact stratify[77]—only that "upset conditions resulting in an unplanned discharge can be avoided, as there is time to address any problems with the WTP before flows reverse."[78] The bulk storage facility thus represents a significant source of myriad potential violations of water quality criteria.

Though the pyritic tailings storage facility is lined, the FEIS predicts there will be impacts to groundwater associated with it in the medium term that would last until this facility is removed for closure.[79] EPA commented that there are too many details about this facility missing to ensure a 100 percent capture of seepage: specifically, the location and capacity of the underdrains installed to capture seepage from the bulk TSF.[80] The FEIS failed to provide those details,[81] and thus still cannot ensure a 100 percent capture of seepage. and the mitigation measures are only generically described. The FEIS assumes submerged potentially acid-generating rock and tailings will render the materials non-reactive, but there is potential for submerged mine waste to leach contaminants.[82] This assumption "risks under designing mine water treatment facilities relative to site needs" and "increase[s] the risk that effluent waters will exceed state and federal water quality standards."[83]

The proposal provides an unrealistic plan of how long-term pyritic tailings will be dealt with upon closure. There is no detail about design, alignment, or reliability.[84] And "[m]oving the content of the pyritic Tailings Storage Facility (TSF) to the pit at closure does not appear to be reasonable, practicable or safe."[85] It is not reasonable to assume PLP will actually bury 88 percent of a world-class metals resource under acidic waste and render it inaccessible, or that doing so would actually contain the acidic metal-laden waste from waterways in perpetuity.[86] Nor is it clear that this closure plan is consistent with Alaska's policy "to encourage . . . the development of its resources by making them available for maximum use consistent with the public interest."[87]

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[77] Alaska Dep't of Natural Res. (ADNR), Comments on Pebble Preliminary Final EIS, Enclosure 2 at 7 (Mar. 23, 2020) (ADNR PFEIS Comments).
[78] FEIS, App. N at 81.
[79] FEIS at 4.17-26.
[80] EPA, Comments on the Draft Environmental Impact Statement for the Pebble Project at 4 (July 1, 2019).
[81] FEIS at 2-24.
[82] Wlostowski 2020 at 13-14.
[83] *Id.* at 14 and n.7.
[84] ADNR PFEIS Comments at 9 ("[I]t is not clear that the PFEIS has considered risks, impacts, or mitigation of changes in operations or failures in the closure and post-closure periods and the respective obligations of the applicant.").
[85] *Id.* at 3.
[86] U.S. Dep't of the Interior, Comments on Draft Environmental Impact Statement for Pebble Limited Partnership's Proposed Pebble Mine Project, Alaska, Enclosure 2 at 1 (July 1, 2019) (DOI Comments).
[87] Alaska Const. art. VIII, § 1.

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Spills, dam failure, and geologic hazards are also threats for mining projects like this, and could produce substantial violations of water quality criteria, but none of these risks have been adequately analyzed to provide ADEC with reasonable assurance that their chance of occurrence would be sufficiently minimized. A spill from any of these facilities could release multiple contaminants and there is "[n]o support for conclusion that metals would be diluted to below ADEC groundwater cleanup levels."[88] There has been no assessment of a tailings dam failure, which would result in numerous water quality criteria violations.[89] It is not "too remote and speculative" to consider such a failure, and the mere conceptual status of the dam design raises significant concerns about the ability to evaluate the stability of the mine site embankments.[90] Nor has there been a thorough assessment of the geologic hazards, including shallow local earthquakes, despite the mine site being near Lake Clark Fault.[91] Without a failure scenario or geologic hazards analysis, ADEC has no ability to consider reasonably impacts to water quality or resources.

PLP's failure to account for potential changes in precipitation and other aspects of the environment due to climate change is another reason that predictions about the mine's water quality impacts are unreliable. In estimating potential precipitation for design purposes for project components like the tailings dams, PLP plans to use "historic data collected in the vicinity of the Pebble site, without a specific adjustment to account for possible long-term climatic change."[92] Contrary to the Corps' half-hearted assertion,[93] that approach is not reasonable. Moreover, even the Corps cautioned that PLP must still address "the risk of an event that is larger or smaller than anticipated (based on the historic data)."[94] Yet, the FEIS's only description of what PLP has done to provide a margin of safety against future climate change is that PLP based its probable maximum precipitation and depth-duration-frequency estimates on

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[88] ADNR PFEIS Comments, Enclosure 2 at 6. The analysis of spill risks in the transportation corridor is also insufficient and "the FEIS leaves a false sense of security regarding the true risks of and impacts from diesel spills associated with the project." S. Lubetkin, A review of Pebble Project Final EIS Section 4.27, Spill risk: current data compilations and consequences of probability analyses at ii (Aug. 19, 2020).

[89] FEIS, Executive Summary at 104 ("Tailings fluids (contact water used to mix the bulk tailings slurry, and pyritic supernatant fluid) would contain concentrations of some metals that exceed WQC. Tailings fluids from both releases would have elevated concentrations of the following metals relative to the applicable WQCs: antimony, arsenic, beryllium, cadmium, copper, lead, manganese, mercury, molybdenum, selenium, silver, and zinc, with the addition of cobalt for the pyritic tailings release.").

[90] *Id.*, App. K at K4.27-9 ("At the current conceptual level of bulk TSF design, there is uncertainty regarding the ability of the tailings to drain sufficiently. . . Although the design is intended to promote unsaturated conditions, most of the tailings may remain saturated throughout operations and potentially into post-closure."); EPA PFEIS Comments, Spill Risk Worksheet at 2.

[91] B. Higman, Letter to U.S. Army Corps of Engineers, Re. Final Pebble EIS (Aug. 18, 2020).

[92] FEIS at 4.16-30.

[93] *Id.* (stating that PLP's approach "seems reasonable").

[94] *Id.*

data from 1976-2017, instead of the *entire* historical record that dates back to 1942, which would produce lower estimates.[95] The Corps erroneously concludes that this use of the historic data is sufficiently conservative because precipitation conditions "may" revert to something like those observed before 1976 due to a potential shift in the Pacific Decadal Oscillation, and "the apparent change in extreme precipitation might not continue."[96] However, that is essentially wishful thinking, contrary to predictions in the Fourth National Climate Assessment that heavy precipitation events will increase in frequency and intensity.[97] It cannot serve as a basis for permitting or section 401 certification.

In analyzing the proposal's impacts on fish, the FEIS likewise fails to account for climate change as a source of potential cumulative stress. As the U.S. Fish and Wildlife Service warned, the Corps' analysis "potentially understates the impacts to aquatic habitats and fish" because it fails to account for climate-related changes to hydrologic and thermal regimes.[98] For example, "distributions of fish species and life stages will likely shift upstream within stream networks in response to climatic warming, creating a situation where actual patterns of habitat use no longer align with those assessed . . . ."[99] Indeed, the FEIS acknowledges "water temperature changes from mine operations could impact eggs and alevins in spawning gravels, primarily through increased metabolism, growth, and changes in time of emergence."[100] One result is that

> [f]ry could emerge too early at suboptimal periods of the year and experience poor feeding, growth, and survival. The timing of hatch, and emergence in spring, are critical for survival; individuals that emerge early are more likely to establish feeding territory and competitive dominance than those that emerge later; however, if hatchlings emerge too early, they may experience high predation and reduced prey availability.[101]

Yet the FEIS fails to assess how these impacts, when combined with climate change, will affect fish.

Fugitive dust generated by mine activities, including blasting, drilling, wind erosion from stockpiles and overburden, and dust plumes from vehicles, threatens to affect water quality via chemical toxicological effects and physical effects, such as turbidity.[102] Yet, the Corps failed to meaningfully analyze such impacts. The water quality impacts model in the DEIS failed to include fugitive dust impacts from overland runoff or contaminant loading from fugitive dust

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[95] *Id.* at 4.16-30 to 4.16-31.
[96] *Id.*; *see also id.* at 3.16-21 (noting "the mechanisms behind the [Pacific Decadal Oscillation] are not well understood").
[97] *See id.* at 3.16-22.
[98] DOI Comments, Enclosure 1 at 2.
[99] *Id.*
[100] FEIS at 4.24-23.
[101] *Id.* (citation omitted).
[102] K. Zamzow *et al.*, Fugitive Dust Issues in the Pebble Project draft EIS at 4-5 (May 30, 2019) (Zamzow *et al.* Fugitive Dust Issues).

leaching into groundwater.[103] The Corps failed to assess the water quality impacts from combined pollutant loadings: trace elements from fugitive dust might increase potential for negative synergistic impacts among pollutants. The Corps also failed to assess the water quality impacts from fugitive dust related to turbidity, which can adversely affect fish and aquatic ecosystems.[104] Without such analysis it is impossible to certify that there will not be violations of water quality standards.

The FEIS fails to address realistically impacts on streamflow due to mining activities. The Watershed Model, used to support the hydrologic projections in the FEIS, "uses simplified, lumped, and undocumented parameters to represent virtually every aspect of the hydrologic system, the model is a highly under-constrained system" and "should not be used in a predictive sense to simulate the hydrologic impacts of mining."[105] Similarly, there is crucial data missing from the new groundwater model in the FEIS, and the FEIS admits that the groundwater inflow rates to the open pit and seepage from the TSF are both highly uncertain.[106] Without adequate assessment of the hydrologic systems, including groundwater, it is impossible to know what the full impacts to streamflow and habitat will be.

In sum, there are too many uncertainties, unspecified plans, and unresolved problems associated with PLP's proposal to provide a reasonable assurance that the project or its discharges will comply with water quality requirements.

AVAILABLE INFORMATION DEMONSTRATES THAT THE PEBBLE PROJECT WILL NOT COMPLY WITH ALASKA'S WATER QUALITY REQUIREMENTS.

I. The Pebble Project will violate Alaska's antidegradation requirement.

Regardless of whether ADEC's section 401 certification review complies with EPA's existing regulations or those effective September 11, 2020, the relevant portions of the project will reduce the quality of waters subject to Tier 2 protections by dredging and/or filling well over

[103] *Id.*
[104] FEIS at 4.24-4, Tbl. 4.24-1; Zamzow *et al.* Fugitive Dust Issues at 23, 25.
[105] C. Wobus, PhD., Comments on Pebble Project Final EIS at 15 (Aug. 19, 2020).
[106] *Id.* at 17-18.

2,000 acres of wetlands[107] and 105.4 miles of streams under a 20-year mine scenario.[108] Therefore, in order to certify the project under section 401, ADEC must determine whether the project complies with Alaska's antidegradation policy.[109] It does not.

A. Lowering water quality is not necessary to accommodate important social or economic development.

Alaska's antidegradation policy prohibits ADEC from granting section 401 certification unless lowering water quality for this project is necessary to accommodate important social or economic development in the Bristol Bay region.[110] ADEC cannot make that required finding, because any social or economic development that the proposed Pebble Mine would generate pales in importance compared to the vital Bristol Bay salmon fishery the mine would jeopardize. As State officials recognized in 1984 when confronted with rising interest in instream placer mine development:

> The Bristol Bay salmon fishery is, and historically has been, *the most valuable economic resource in the Bristol Bay region*; providing a major portion of all the salmon harvested in the State of Alaska and the world annually. Bristol Bay area residents rely heavily on this salmon resource to support their livelihood and economy through commercial, sport, and subsistence fishing activities. The existence and future success of the Bristol Bay salmon fishery depends on the maintenance of anadromous stream habitat for salmon spawning and rearing. Essential conditions for successful salmonid spawning, egg, and fry development are clear, cool, well-oxygenated water, and gravel that is free of sediment, highly permeable. and stable. Salmon are a renewable resource and the continued propagation and production of Bristol Bay salmon for commercial, sport, and

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[107] FEIS at 4.22-13; *see also id.* at 4.22-111, Tbl. 4.22-40.

[108] *Id.* at 4.24-8, 4.24-42. The FEIS also indicates that an expansion would result the loss of an additional 35 miles of anadromous stream habitat. FEIS at 4.24-64, Tbl. 4.24-4. All told, the mine would have direct and indirect permanent and temporary adverse impacts to at least 4,613 acres of wetlands and 191 miles of streams. Schweisberg at 1 (citing the FEIS). Additionally, "an expansion of the preferred alternative with the Northern Transportation Corridor would impact at least a total of 15,198 acres of wetlands and waters and at least a total of 548 miles of streams." *Id.* at 21. A 78-year mining scenario would destroy vastly more: 228 miles of stream and over 8,000 acres of wetlands. FEIS at 4.22-114. The FEIS indicates that an expansion would result the loss of an additional 35 miles of documented anadromous stream habitat. FEIS at 4.24-64, Tbl. 4.24-4. However, there have been questionable changes during the EIS process, with no apparent field verification, as to the amount of wetlands that will be damaged by the project. *See* T. Yocom, The Alaska District of the Corps of Engineers' Revised Preliminary Jurisdictional Determinations for POA-2017-271 Inappropriately Reduces Estimates of the Direct Impacts of the Pebble Mine Project to Wetland and Aquatic Areas by Over 1200 Acres (Aug. 19, 2020) (Yocom 2020a).

[109] 18 AAC 70.015(a)(2).

[110] 18 AAC 70.015(a)(2)(A).

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> subsistence harvest constitutes a significant surface use of stream waters and stream bed gravel in the Bristol Bay area. Through maintenance of water quality, stream habitat, and fishery management practices, the Bristol Bay salmon fishery should continue to prosper in the future and contribute to the regional and state economy.[111]

By comparison, instream placer mining was only "a minor component of the Bristol Bay economy."[112] Moreover, like the large-scale open pit hardrock mine that PLP proposes, placer mining was incompatible with protecting the fishery.[113] The Alaska Department of Natural Resources therefore closed approximately 213,697 acres of anadromous streams to new mineral entry.[114] These acres remain closed.[115]

The importance of the Bristol Bay salmon fishery has not diminished in the intervening 36 years. The number of jobs it supports has grown from more than 10,000[116] to more than 14,000.[117] It produces approximately half of the world's sockeye salmon, generating $1.5 billion a year.[118] It is vital to Alaska Native tribes in the region, "who have maintained a salmon-based and subsistence-based way of life for at least 4,000 years."[119] In 2017, when EPA began the process to withdraw its proposal to protect Bristol Bay from excessive habitat damage associated with mining the Pebble deposit, the agency received over *one million* public comments, the "overwhelming majority" of which supported imposing protections.[120] The vast majority of tribal governments and the overwhelming majority of citizens in the region who participated in the process delivered the same message.[121] Like instream placer mining, any social or economic development generated by the proposed Pebble Mine, which would damage and threaten the Bristol Bay salmon fishery in a variety of ways,[122] is not important compared to the existing, sustainable social and economic development supported by the fishery.

B. Some water quality criteria will be violated, and as to other criteria there is insufficient information to determine whether they will be violated.

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[111] *See* ADNR, Bristol Bay Area Plan, Mineral Order No. 393, Attachment 2 at 1 (Sept. 13, 1984) (Mineral Order No. 393) (emphasis added).
[112] *Id.*, Attachment 2 at 3
[113] *Id.*, Attachment 2 at 4-8.
[114] *Id.*, Attachment 1 at 9.
[115] Bristol Bay Area Plan at 3-99 ("[t]his revision of the Bristol Bay Area Plan retains the mineral closing and opening orders," including Mineral Order No. 393).
[116] Mineral Order No. 393, Attachment 2 at 2.
[117] EPA, About Bristol Bay.
[118] ISER 2013 at 1 (harvesting, processing, and retailing of Bristol Bay salmon created $1.5 billion in output or sales value in 2010).
[119] Watershed Assessment at ES-1.
[120] 83 Fed. Reg. 8,668, 8,668 (Feb. 28, 2018).
[121] *Id.*
[122] *See, e.g.*, *supra* pp. 7-16; *infra* pp. 19-25.

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As described in these comments, ADEC cannot find that the project complies with Alaska water quality requirements because available information shows that water quality criteria for selenium will be violated,[123] and as to other criteria there is insufficient information to determine whether they will be violated.[124]

C. Existing uses will not be protected.

According to Alaska's antidegradation policy, "existing water uses . . . must be maintained."[125] While EPA recognizes that any dredging and filling of wetlands is apparently in tension with the Clean Water Act's requirement to protect existing uses, it has emphasized that filling of wetlands amounting to significant degradation cannot be certified under section 401.[126] States are free to adopt a more stringent interpretation of their antidegradation policies, but cannot interpret their policies less stringently.[127] Even if ADEC's interpretation is no more stringent than EPA's, ADEC should deny section 401 certification here because the Pebble Mine would cause significant degradation in the Bristol Bay headwaters.

Many waters at the Pebble Mine site that would be destroyed by mine construction, as well as connected waters that would be affected by mine construction, support fish propagation and recreation. The dredging and filling necessary for the Pebble Mine will harm these existing uses through the direct destruction and fragmentation of waters, dewatering, flow alteration, and the reduction of water quality in parameters such as turbidity and temperature. These effects are within the scope of ADEC's section 401 certification regardless of whether ADEC's section 401 certification review complies with EPA's existing regulations or those effective September 11, 2020, because they are caused by the discharge for which PLP seeks section 401 certification.

Under the 404(b)(1) Guidelines, effects that would cause or contribute to significant degradation include:

> (1) Significantly adverse effects of the discharge of pollutants on human health and welfare, including but not limited to effects on . . . plankton, fish, shellfish, wildlife, and special aquatic sites;
>
> (2) Significantly adverse effects of the discharge of pollutants on life stages of aquatic life and other wildlife dependent on aquatic ecosystems . . . ;
>
> (3) Significantly adverse effects of the discharge of pollutants on aquatic ecosystem diversity, productivity, and stability. Such effects may include, but are not limited

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[123] *See infra* pp. 24-25.
[124] *See supra* pp. 7-16.
[125] 18 AAC 70.015(a)(1).
[126] *See* EPA, *Water Quality Standards Handbook*, Ch. 4 at 7 (2012), https://www.epa.gov/sites/production/files/2014-10/documents/handbook-chapter4.pdf.
[127] *Id.*

to, loss of fish and wildlife habitat or loss of the capacity of a wetland to assimilate nutrients, purify water, or reduce wave energy; or

(4) Significantly adverse effects of the discharge of pollutants on recreational, aesthetic, and economic values.[128]

In January 2014, after extensive consultation with stakeholders, peer review, and public comment, EPA published an ecological risk assessment, "An Assessment of Potential Mining Impacts on Salmon Ecosystems of Bristol Bay, Alaska" ("Watershed Assessment"). The Watershed Assessment evaluated the effect of potential large-scale mine development such as the Pebble Mine on the region's salmon fishery.[129] The footprint effects associated with major mine components for the smallest mine scenario EPA considered included the loss of 24 miles of streams, including 5 miles of documented anadromous streams; streamflow alterations exceeding 20 percent in another 9 miles of streams; loss of approximately 1,100 acres of wetlands and 100 acres of ponds and lakes; and a variety of resulting indirect effects on the quality of downstream habitat.[130] These losses would eliminate salmon spawning habitat and "reduce availability of and access to hydraulically and thermally diverse habitats that provide foraging opportunities and important rearing habitats for juvenile salmon."[131] "Local habitat loss would be significant, because losses of stream habitat leading to losses of local, unique populations would erode the population diversity key to the stability of the overall Bristol Bay salmon fishery."[132] Although EPA could not "be certain of the full extent of the implications of these losses," the agency explained, "it is apparent that impacts of this magnitude could compromise the sustainability of fish populations within the S[outh]F[ork]K[oktuli River], N[orth]F[ork]K[oktuli River], and U[pper]T[alarik]C[reek] watersheds, as well as downstream fishery areas."[133] In short, the habitat loss associated with the smallest mine EPA considered would cause significant degradation. Moreover, EPA's conclusion about the significance of effects did not turn on any specific mine scenario.[134]

While the FEIS for the Pebble Mine does not attempt to quantify losses resulting from PLP's proposal in a manner that allows a full apples-to-apples comparison with the scenarios analyzed in the Watershed Assessment, independent experts have determined losses from PLP's proposal would exceed those EPA projected in its smallest mine scenario.[135] One parameter that

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[128] 40 C.F.R. § 230.10(c).
[129] Watershed Assessment at ES-2.
[130] *Id.* at 14-2.
[131] *Id.*
[132] *Id.* at 14-1 to 14-2.
[133] Proposed Determination at 4-13.
[134] Proposed Determination at 4-13 (explaining that placing mine components in different locations than those assessed "likely would result in even greater impacts, in terms of spatial extent and/or the number of salmon species affected." (citation omitted)).
[135] D. Albert, Direct loss of salmon streams, tributaries, and wetlands under the proposed Pebble Mine compared with thresholds of unacceptable adverse effects in the EPA Proposed Determination pursuant to Section 404(c) of the Clean Water Act (Jun. 1, 2019).

can be compared without expert analysis is the number of acres of wetlands, lakes, and ponds that would be destroyed through dredge and fill while constructing the major mine site components. The smallest mine scenario EPA considered would destroy approximately 1,200 acres of these waters.[136] By comparison, the FEIS states that PLP's proposal would destroy 2,051 acres of wetlands.[137] Moreover, that figure is likely an underestimate.[138]

Despite analyzing a vastly more destructive project than EPA's smallest hypothetical mine, the FEIS reaches a conclusion that contradicts EPA's, stating that under normal operations the Pebble Mine "would not be expected to have a measurable effect on fish numbers and result in long-term changes to the health of the commercial fisheries in Bristol Bay."[139] However, the FEIS fails to explain that conclusion or address why it differs from EPA's conclusions and analysis in the Watershed Assessment. It is overly simplistic to use percentage estimates of habitat loss to determine impacts. "Downstream, integrated impacts of changes in streamflow, groundwater-surface water exchange, water temperatures, water quality, and food web effects" must all be considered.[140]

Moreover, despite the FEIS's optimistic predictions about the project's impacts, the Corps informed PLP on August 20, 2020 that based on the agency's factual determinations, "discharges at the mine site would cause unavoidable adverse impacts to aquatic resources and, preliminarily . . . those adverse impacts would result in significant degradation to those aquatic resources."[141]

ADEC's section 401 certification must account for the findings in the Watershed Assessment, which reflect peer reviewed, expert analysis conducted by the primary federal agency charged with environmental protection and implementing the Clean Water Act.[142] It must also account for the Corps' preliminary finding that, as proposed, the project would cause significant degradation in violation of the Clean Water Act.[143] These findings compel ADEC to deny section 401 certification.

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[136] Proposed Determination at ES-4.
[137] FEIS at 4.22-25, Tbl. 4.22-3 (Total Wetland Impacts (Acres) for the Combined Watershed Area).
[138] *See* Yocom 2020a.
[139] FEIS, Executive Summary at 87.
[140] S. O'Neal, Technical comments regarding fish and aquatic habitat in the Pebble Project Draft Environmental Impact Statement at 8 (July 1, 2019).
[141] Hobbie Letter at 1.
[142] In 2019, EPA withdrew its Proposed Determination. 84 Fed. Reg. 45,749 (August 30, 2019). However, EPA did not withdraw the Watershed Assessment.
[143] Hobbie Letter at 1; *see also* U.S. Army Public Affairs, *Army finds Pebble Mine project cannot be permitted as proposed* (Aug. 24, 2020), https://www.army.mil/article/238426/army_finds_pebble_mine_project_cannot_be_permitted_as_proposed.

The proposed loss of wetlands and aquatic habitat is significant by any measure. "[A] failure by the Corps to require that the applicant fully offset its 20-year proposed project impacts would result in unprecedented net losses of wetland and aquatic habitats beyond those of any copper mine ever proposed in the United States."[144]

PLP's January 2020 compensatory mitigation plan would not reduce these losses below the threshold of significant degradation. PLP proposes just three kinds of compensatory mitigation:

- Improving municipal wastewater treatment and collection infrastructure in three villages;
- Upgrading some existing culverts to reduce barriers to fish movement and improve access for up to 8.5 miles of salmon-bearing streams and rivers; and
- Cleaning up marine debris from about 7.4 miles of beach.[145]

These projects "are very small in scale," "far from the proposed mining impacts," and "in some important cases are not even in the Bristol Bay region."[146] As one expert explained, they "have little or nothing to do with the quantity and quality of wetlands, streams, and open water bodies that the Pebble Mine Project would permanently destroy, or the important ecological functions that those habitats are providing and have provided for thousands of years."[147] In other words, "PLP's plan, as proposed, results in a 100% net loss of wetland and aquatic acreage and functions."[148]

PLP's January 2020 compensatory mitigation plan also consists entirely of out-of-kind actions. The Corps has since determined "in-kind compensatory mitigation within the Koktuli River Watershed will be required to compensate for all direct and indirect impacts caused by discharges into aquatic resources at the mine site."[149]

Even if PLP updates its compensatory mitigation plan, it is not realistically possible to reduce the mine's habitat impacts below the significant degradation threshold. That is because the relevant watersheds "are largely unaltered by human activities; thus, opportunities for restoration or enhancement are very limited, and . . . likelihood of success appears to be very low."[150] Analysis of potential compensatory mitigation measures led EPA to question in 2014 "whether sufficient mitigation measures exist that could address impacts of the type and

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[144] T. Yocom, The Pebble Project Draft Compensatory Mitigation Plan (January 2020) provides no habitat replacement or preservation to offset thousands of acres of wetland and aquatic habitats that the Pebble Mine Project would destroy, degrade, or fragment at 12 (Aug. 19, 2020) (Yocom 2020b).
[145] See PLP, DRAFT Compensatory Mitigation Plan at 32-33 (Jan. 2020).
[146] R. Borden, Review of the January 2020 Pebble Project Compensatory Mitigation Plan at 1 (Feb. 11, 2020).
[147] Yocom 2020b at 11.
[148] *Id.*
[149] Hobbie Letter at 1.
[150] Watershed Assessment, App. J at 13.

magnitude described in the [Watershed Assessment]"[151]—impacts which, in the case of the smallest mine scenario, are less extensive than PLP's current proposal. The fact that PLP has failed to develop a satisfactory compensatory mitigation plan after all its years of work on the project speaks for itself.

For all these reasons, the proposed section 404 discharge would not protect existing uses and would violate Alaska's antidegradation policy. Moreover, ADEC must look beyond the specific discharge for which PLP seeks certification and consider the entire activity.[152] That broader scope encompasses even more evidence that the Pebble Mine will harm existing uses in the watershed.[153]

D. The Pebble Project does not employ the most effective and practicable methods of pollution prevention, control, and treatment.

For Tier 2 waters, Alaska's antidegradation policy requires that "the methods of pollution prevention, control, and treatment applied to all waste and other substances to be discharged are found by the department to be the most effective and practicable."[154] The proposed Pebble Mine does not satisfy this standard.

For many of its proposed pollution prevention, control, and treatment methods, neither PLP nor the Corps has provided sufficient detail, analysis, or scientific support for ADEC to determine whether they would be effective *at all*, much less whether they meet the 'most effective and practicable' standard.[155] For others, such as PLP's plan to treat wastewater for selenium, it is clear the proposed method is not effective.[156]

Where the FEIS discusses the practicability of alternative pollution control approaches, the discussion is often conclusory and unsupported. For example, the FEIS dismissed dry stack tailings (also known as filtered tailings) as a practicable method for the Pebble Project and eliminated the method from further analysis.[157] There is extremely limited explanation for this conclusion—only that "[t]he option would greatly complicate the logistics of the milling

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[151] *Id.* at 38.
[152] *See supra* p. 5.
[153] *See supra* pp. 7-16; *infra* pp. 23-25.
[154] 18 AAC 70.016(c)(7)(D)(ii).
[155] *See supra* pp. 7-16; FEIS, App. M at M-2 to M-24, Tbl. M-1 (listing potential mitigation measures but providing no support, little detail, and sometimes no explanation at all for the vast majority of the document's exceedingly brief assessments of those measures' effectiveness and "reasonable[ness]"); D. Chambers, Significant Omissions in the Pebble Project EIS Final Environmental Impact Statement (Aug. 19, 2020) (discussing issues that are lacking "in sufficient detail in an EIS to provide a technical reviewer to develop a level of confidence to provide sufficient assurance that the mine development proposed can reasonably be assumed to meet those technical goals").
[156] *See infra* pp. 24-25.
[157] FEIS, App. B at B-69 to B-70; *id.*, App. K at 4.27-4.

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operation to include frequent clogging of filters, the need for an emergency slurry TSF when the filter plant is down for maintenance, and the large number of personnel and equipment needed to transport and place the filtered tailings."[158] This does not suffice to explain why the Pebble Project will not adopt a storage method that is cited as the best available technology.[159] Indeed, "[t]here are no overriding technical impediments to more widespread adoption of filtered tailings technology."[160] Without analysis of dry stack tailings, it is inappropriate to conclude that the Pebble Project will employ the most effective and reasonable method for controlling tailings.

II. The Pebble Project will not meet Alaska's water quality criteria for selenium.

There is no reasonable assurance that PLP's proposed water treatment plan will meet Alaska's water quality criteria for selenium—in fact, expert review indicates the resulting effluent *will* exceed criteria.

Wastewater from the Pebble Mine would contain selenium at concentrations requiring treatment prior to discharge. In a previous version of PLP's application for a section 404 permit, PLP proposed a biological treatment system to address selenium.[161] In the updated version of the treatment plan reflected in the FEIS, that proposal is replaced with a chemical treatment system that would transform selenium to a solid state and trap it in tailings.[162]

While noting that PLP's previous proposal was flawed in other ways not adequately addressed,[163] reviewing expert Dr. Sobolewski characterized the company's decision to abandon biological treatment in favor of chemical treatment for selenium as "a retrenchment from established norms and industry practices,"[164] that "cannot possibly be justified on any grounds."[165] According to Sobolewski, the chemical treatment process "goes against current practice and is not supported by any published experimental design or case study;"[166] it "*will be ineffective* and result in exceedances of ADEC standards during mine operation."[167] If the Pebble Mine employs this chemical treatment system, Sobolewski found, discharges from the water treatment plants will exceed the state's water quality criteria for selenium (0.005 mg/L)

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[158] *Id.*, App. B at B-70.
[159] Independent Expert Engineering Investigation and Review Panel, *Report on Mount Polley Tailings Storage Facility Breach* at 122 (Jan. 30, 2015).
[160] *Id.*
[161] Sobolewski 2020 at 7.
[162] *Id.*
[163] *Id.* at 15.
[164] *Id.* at 7.
[165] *Id.* at 17.
[166] *Id.* at 7.
[167] *Id.* at 1.

within six years of operation.[168] Violations of the selenium standard will have effects on local aquatic life, including fish, frogs, and birds.[169]

EPA similarly predicted "mercury and selenium discharges would exceed water quality standards at closure,"[170] adding that because discharge water quality is predicted to exceed water quality criteria for mercury and selenium, "the conclusion [in the DEIS] that the WTP processes are expected to be effective is not accurate."[171] The Corps only responded to this comment in the FEIS by updating the water treatment process to the untested chemical treatment system and admitting: "[T]here is some concern that during operations, waste products high in selenium and salt placed in the pyritic TSF may, over time, lead to increased TDS concentrations in the main WMP…"[172] The resulting change to inflow conditions at the water treatment plants would then "warrant additional design consideration, or development of adaptive management strategies to ensure that mine site WTPs are capable of and effective at meeting treatment goals over the duration of time that treatment would be required."[173] But no such strategies are described, let alone any adequate to address the fact that absent a biological treatment system effluent will violate selenium standards within six years.

CONCLUSION

ADEC should deny section 401 certification because the proposed Pebble Mine cannot be constructed without violating the Clean Water Act and Alaska's antidegradation policy, because PLP's current water treatment plan would result in violations of water quality criteria for selenium, and because with respect to other aspects of the project PLP has not provided sufficient information to support a reasonable assurance that the mine will comply with Alaska's water quality requirements.

Thank you for your careful attention to these comments.

Sincerely,

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[168] *Id.* at 8.
[169] Zamzow FEIS Selenium Comments at 1-4; *see also* S. Fennessy, Comments on the Pebble Mine Final EIS on selenium and impacts to waterbirds (Aug. 21, 2020).
[170] EPA, PDEIS Comments, Section 4.18 – Water and Sediment Quality at 30.
[171] *Id.* at 14.
[172] FEIS, App. K at K4.18-50.
[173] *Id.*

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