American Fisheries Society
Western Division

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June 28, 2013

Office of Environmental Information (OEI)
Docket (Mail Code: 28221T)
U.S. Environmental Protection Agency
1200 Pennsylvania Ave., N.W.
Washington, DC 20460

Re: Docket # EPA-HQ-ORD-2013-0189

The Western Division of the American Fisheries Society (WDAFS)[1] represents scientists and natural resource managers from the states of Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming; U.S. associated entities in the West Pacific Ocean; the Province of British Columbia and the Yukon Territory in Canada; and Mexico. Our mission is to advance sound science, promote professional development and disseminate science-based fisheries information for the global protection, conservation and sustainability of fisheries resources and aquatic ecosystems. Our members, some 3,000 strong, represent a tremendous array of fisheries experts involved in all aspects of the fisheries profession and employed in academia, government agencies, non-governmental organizations, and private consulting.

At our annual conference in 2010, WDAFS membership recognized the potential impact of large-scale mining operations on the valuable and irreplaceable fish populations in the Bristol Bay watershed. The membership voted to approve a resolution that included a call for a comprehensive watershed assessment and review of the available scientific information before any mining operations are initiated.[2] Therefore, we are pleased to review and comment on the U.S. Environmental Protection Agency's (EPA) April 2013 *Draft Assessment of Potential Mining Impacts on Salmon Ecosystems of Bristol Bay, Alaska*.

Our review finds that the 2013 draft assessment correctly recognizes the value of the fisheries resources at risk from mining in the watershed, and provides a rigorous and thorough assessment of the effects of mine development, operations and post-mining management on those resources. However, it is conservative in its estimates of the impacts and the mitigation and remediation

[1] More information on the Western Division of the American Fisheries Society is available at: http://wdafs.org/about-us/.
[2] The WDAFS resolution is available at: http://wdafs.org/download/resolutions/Final%20WDAFS%20Bristol%20Bay%20Resolution.pdf

approaches described would be inadequate to protect or compensate for the loss of the fishery and ecological resources harmed by mine development. After considering these comments and those of other independent experts, we encourage the EPA to finalize this report. Further, based on EPA's assessment and AFS-published recommendations developed from a *Fisheries and Hard Rock Mining* symposium at our 2011 annual conference, we conclude that proposals to develop and mine in the Bristol Bay watershed should be denied.[3]

The Bristol Bay watershed and its fisheries are resources of global importance.
The 2013 draft assessment correctly recognizing the value and uniqueness of the Bristol Bay watershed and the ecosystems, fisheries and cultural resources it supports. The Bristol Bay watershed is almost entirely undeveloped with highly inter-connected surface and groundwater resources, wetlands and streams. It supports high quality commercial, recreational and subsistence fisheries: Bristol Bay's sockeye salmon fishery is the world's largest. A recent economic analysis valued the Bristol Bay fishery in 2010 at $1.5 billion.[4] In addition, these salmon runs are some of the last remaining wild runs in the world, a fact that EPA notes "takes on even greater significance when one considers the condition of Pacific salmon populations throughout their native geographic distributions." In the western United States, Pacific salmon have been eliminated from large percentages of their historic range and, where they persist, their numbers and population viability are reduced. This makes protection of Bristol Bay watershed salmonids and of their "salmon stronghold" ecosystem even more important.

The 2013 draft assessment is well-designed, rigorous and comprehensive.
This version of the watershed assessment has been substantially modified and improved from the first review draft, with new material and analyses that clarify the scope and purpose of the document as well as address reviewers' other comments on the first review draft. It is thorough and has carefully identified the potential multi-layered and cumulative impacts of large-scale mining operations on the natural and cultural environment. It recognizes the uncertainties inherent in this type of evaluation and the reasons for these uncertainties. Specific improvements include:

- Analysis of a range of mining scenarios based on worldwide industry standards as well as available preliminary plans for mine development and operation in the Bristol Bay watershed;
- Consideration of impacts for mine-associated development and transportation corridors;
- Discussion of risks and impacts associated with the post-mining period, as well as during mine development and operation;
- Risk evaluations for a broader range of biological and cultural resources, including resident fish species, aquatic invertebrates, wildlife and Alaska native cultures; and
- Discussion and evaluation of mitigation and remediation during the mine operation and post-mining periods.

[3] A description of the symposium, sponsored by Trout Unlimited, the Pebble Limited partnership, and the AFS Water Quality Section, and our recommendations were published in *Fisheries* Vol. 37, No. 2 and are available at: http://www.pebblescience.org/pdfs/O'Neal_Hughes_2012.pdf. The entire issue of Fisheries is available at: http://fisheries.org/docs/fisheries_magazine_archive/fisheries_3702.pdf.

[4] This report is available at: http://fishermenforbristolbay.org/wp-content/uploads/2013/02/CFBB-ISER-FINAL-REPORT-5-10-2013.pdf

The 2013 draft assessment is conservative in its estimates of impacts.
This fact is identified throughout the report, but we believe the quantitative risk assessments should include maximum-impact scenarios as well. For example, the Pebble 6.5 Scenario estimates that 5.9 billion metric tons of ore might be removed yet the report acknowledges the deposit contains 10 billion metric tons for ore. As the magnitude of the operation increases, potential impacts will increase accordingly. The report also acknowledges the estimates of salmon range are minimum estimates based on the ability to survey the entire region. We also are concerned that the report does not estimate the impact of the personnel and associated infrastructure on the basin.

Mitigation or remediation cannot adequately protect or compensate for lost fishery and ecological resources harmed by mine development
Appendix J acknowledges the substantial challenges to mitigating the unavoidable salmon losses that will result from routine mine operations or those that will occur as a result of catastrophic spills. We are not only concerned that mitigation and remediation options are not adequate but that the report gives the impression that mitigation is seamless. We have decades of research and practical experience in the lower 48 that demonstrate our inability to replace fish and ecosystem losses with either human-engineered habitats or human-produced hatchery product. Other specific concerns, many of which were addressed, are identified in our July 21, 2012 letter and accompanying document.[5]

There is sufficient information to deny proposals for mine development in the Bristol Bay watershed.
In 2012, the American Fisheries Society's journal, *Fisheries*, reported on a 2011 AFS symposium on *Fisheries and Hard Rock Mining* and published recommendations for policy changes to mining law and regulations.[3] Key among them were recommendations to:

- Designate sensitive lands and waters as off limits to hard rock exploration and development;
- Prohibit mines likely to result in perpetual water pollution and/or requiring perpetual water treatment; and
- Prohibit mine discharges to surface or ground waters that degrade water quality.

Based on our review of 2013 draft assessment and its conservative estimates for persistent negative impacts to stream habitats and water quality, we strongly recommend that the EPA use its authority and issue a denial of use of the area because of unacceptable adverse effects on fishery areas (including spawning & breeding) under Section 404c of the Clean Water Act.

If blanket denial is not an option, for future decision making it is important to evaluate permits in consideration of the large-scale, irreversible changes any large-scale mining operation will have on the resources. The Bristol Bay ecosystem and its fisheries are irreplaceable; therefore EPA should use its regulatory authority to the maximum extent to review any proposed mining operation. The magnitude of potential impacts identified in the draft assessment should require from any project applicant a high level of scientific and technological evidence that damage will

[5] WDAFS cover letter and comments on the 2012 draft "Assessment of Potential Mining Impacts on Salmon Ecosystems of Bristol Bay, Alaska" are available at:
http://wdafs.org/download/resolutions/Bristol%20Bay%20EPA%20Letter%20-%20WDAFS.pdf and
http://wdafs.org/download/resolutions/Bristol%20Bay%20Review%20WDAFS.pdf

not occur from their proposed project. For any permitting, the applicant should address each parameter identified in this report, including those not modeled in the risk assessment.

WDAFS also asks that the EPA initiate a carefully designed, robust, and statistically defensible sampling program to be conducted relative to both surface and groundwater quality and quantity, with attention to the design of a long term monitoring program for waters draining into Bristol Bay. This will be important information in any regulatory process.

The WDAFS applauds the effort, rigor and transparency with which EPA has conducted this watershed assessment and we appreciate the opportunity to provide our review and comments. Please contact me with any questions; we can provide additional information if so desired.

Sincerely,

Christina Swanson, Ph.D.
President

cc: Members, WDAFS Executive Committee, AFS Governing Board