Bristol Bay Final Report 2014
Frequently Asked Questions

HISTORY AND AUTHORITY

Q: Why did EPA conduct this assessment? Why now, before it has received a mine proposal?
A: EPA initiated this assessment in response to petitions from nine federally recognized tribes and other stakeholders who asked us to take action to protect Bristol Bay's salmon populations. They expressed concern that the Bristol Bay salmon fishery would be at risk from the potential Pebble Mine.

We also heard from other tribes and stakeholders who support development in the Bristol Bay watershed and have requested EPA take no action and allow a typical permitting process to proceed.

EPA performed this assessment to better understand the watershed and its resources. The final assessment will be valuable to the public and for federal, state, and tribal governments as they consider how best to address the challenges of mining and ecological protection in the watershed.

Q: What is the scope of the Bristol Bay Assessment?
A: This scientific assessment focused on the Nushagak and Kvichak watersheds in Bristol Bay, which are open for large-scale resource development. We examined the current environmental conditions and possible short-term and long-term impacts of large-scale mining.

EPA reviewed existing scientific studies and data. The agency focused specifically on potential impacts to salmon because of their ecological, economic and cultural importance in the region. The assessment also looked at how impacts to salmon could impact indigenous subsistence cultures and wildlife.

Q: Has EPA ever done an assessment like this before?
A: Conducting scientific assessments is part of EPA's mission and day-to-day work. EPA has conducted assessments that examine environmental impacts of past actions or potential impacts of future actions, including studies that:

- Predict the future introduction of non-indigenous species to the Great Lakes
- Assess the effects of mountaintop mines and valley fills on aquatic ecosystems in the Central Appalachian Coalfields
- Explore the environmental impacts of human activities in the Waquoit Bay watershed in Massachusetts.

Q: What authority is EPA using for its watershed assessment?
A: EPA conducted this assessment under its Clean Water Act authorities, including Sections 104(a) and (b), which, among other things, direct the agency to:

...conduct and promote the coordination and acceleration of, research, investigations, experiments, training, demonstrations, surveys, and studies relating to the causes, effects, extent, prevention, reduction, and elimination of pollution.

Q:What is Clean Water Act Section 404(c)?
A: Clean Water Act Section 404(c) authorizes EPA to prohibit the specification of any defined area as a disposal site, or to deny or restrict the use of any defined area for specification as a disposal site for dredged or fill material if the discharge will have an unacceptable adverse effect on municipal water supplies, shellfish beds and fishery areas, wildlife, or recreational areas.

SCIENCE AND PEER REVIEW

Q: What does the assessment say about the Bristol Bay fishery?
A: Key statistics on Bristol Bay's productivity and economics:

- Bristol Bay supports the largest sockeye salmon run in the world, producing approximately 46 percent of the world's wild sockeye.
- The annual average run of sockeye in Bristol Bay was approximately 37.5 million fish between 1990 and 2010. In 2009, Bristol Bay's wild salmon ecosystem generated $480 million in direct annual economic expenditures in the region and sales per year and provided employment for over 14,000 full and part-time workers.
- All five species of Pacific salmon spawn and rear in the Bristol Bay watershed: sockeye, coho, Chinook, chum and pink. In addition, the Nushagak River supports one of the world's largest Chinook salmon runs.
- Bristol Bay watershed provides habitat for 35 fish species, more than 190 bird species, and more than 40 terrestrial animals.
- Bristol Bay supports large carnivores such as brown bears, bald eagles, and wolves that depend on salmon; ungulates such as moose and caribou; and numerous waterfowl species.

Q: What kind of information did EPA collect and analyze for the assessment?
A: EPA reviewed existing science and information on:

- Bristol Bay salmon and other fish
- Bristol Bay wildlife
- Bristol Bay marine resources
- Salmon fishery economics
- Geology, hydrology, seismology and other environmental sciences
- Wetlands ecology and stream ecology
- Mining engineering, construction and operation
- Subsistence use data
- Cultural importance of salmon
- Mining industry practices that minimize mining impacts
- Traditional ecological knowledge from tribal elders

Q: How did the assessment change between the May 2012 draft and the April 2013 draft?

A: We revised the May 2012 draft assessment in response to the September 2012 peer review report, as well as the public comments we had received to that point. In doing so, we:

- Reorganized the report to better reflect the ecological risk assessment approach and to clarify the purpose and scope of the assessment.
- Refined the mine scenarios and explained how they are based on worldwide industry standards for porphyry copper mining and specific preliminary mine plans submitted to state and federal agencies related to the Pebble Mine project.
- Incorporated modern conventional mining practices into mine scenarios and clarified that projected impacts assume those practices are in place and working properly.
- Added a smaller mine scenario to represent worldwide median size mine.
- Added a more detailed mine site water balance analysis.
- Added an analysis of drainage of waste rock leachate to streams.
- Incorporated a more detailed analysis of water loss and water quality on stream reach lengths and fish densities.
- Added an appendix evaluating potential compensatory mitigation measures (Appendix J).

Q: How did the assessment change between the April 2013 draft and the final assessment?

A: There were no revisions that changed the basic conclusions of the assessment. In response to additional comments from the public and peer reviewers, the following revisions improved the completeness and accuracy of the assessment:

- Considered risks from cyanide and molybdenum releases.
- Revised tailings dam failure scenarios. This resulted in slightly less severe downstream impacts.
- Considered risks from spillway releases from tailings storage facilities.
- Expanded discussion on potential compensatory mitigation measures (Appendix J).
- Incorporated updated digital elevation model data – this changed the areas of impacted streams and wetlands slightly.
- Deleted minor supporting references that were questioned during the public comment period.

Q: Did EPA use data from the Pebble Limited Partnership?
A: Yes – The assessment uses data from the Pebble Limited Partnership and cites the Environmental Baseline Document approximately 70 times. We also relied on the State's Anadromous Water Catalog which includes fish data collected by PLP.

Q: How were the peer review panelists selected?
A: Consistent with guidelines for the peer review of highly influential scientific assessments, EPA asked an independent contractor (Versar, Inc.) to assemble a group of experts to evaluate the draft Bristol Bay assessment. Versar evaluated 68 candidates nominated during a public comment period and sought other experts to complete the peer review panel. These reviewers were selected based on a variety of factors, including: demonstrated expertise through relevant peer reviewed publications, absence of conflicts of interest, and willingness to commit adequate time for a thorough review of the draft assessment.

Q: What areas of expertise are relevant to the peer review and were sought for members of the peer review panel?
A: Potential nominees in one or more of the following areas were solicited: (1) metals (particularly porphyry copper) mining, (2) salmon fisheries biology, (3) surface, subsurface, or watershed hydrology, (4) aquatic ecology, (5) biogeochemistry, (6) seismology, (7) ecotoxicology, (8) wildlife ecology, and/or (9) indigenous Alaskan cultures.

Q: Who were the peer review panel members?
A: The twelve peer review panel members and their areas of expertise are:
1. Mr. David Atkins, Watershed Environmental, LLC. (Expertise in mining and hydrology)
2. Mr. Steve Buckley, WHPacific/NANA Alaska (Expertise in mining and seismology)
3. Dr. Courtney Carothers (Expertise in indigenous Alaskan cultures)
4. Dr. Dennis Dauble, Washington State University (Expertise in fisheries biology and wildlife ecology)
5. Dr. Gordon Reeves, USDA Pacific NW Research Station (Expertise in fisheries biology and aquatic biology)
6. Dr. Charles Slaughter, University of Idaho (Expertise in hydrology)
7. Dr. John Stednick, Colorado State University (Expertise in hydrology and biogeochemistry)
8. Dr. Roy Stein, Ohio State University (Expertise in fisheries and aquatic biology)
9. Dr. William Stubblefield, Oregon State University (Expertise in aquatic biology and ecotoxicology)
10. Dr. Dirk van Zyl, University of British Columbia (Expertise in mining and biogeochemistry)
11. Dr. Phyllis Weber Scannel (Expertise in aquatic ecology and ecotoxicology)
12. Dr. Paul Whitney (Expertise in wildlife ecology and ecotoxicology)

Q: Why did EPA conduct a peer review of this assessment?
A: Peer review is the evaluation of a product by experts in that field who were not involved in that product's development. It is a tool EPA uses to ensure that only high quality, sound science is released and used by the Agency.

MINING

Q: How did EPA develop its mining scenarios?
A: EPA developed a series of realistic mining scenarios based on a mine plan published by Northern Dyanasty Minerals, as well as other mining industry references and consultation with mining experts. The mine scenarios depict modern permitted mines operating in compliance. Eventual mine plans may differ, but would still have the basic elements – a mine pit and large quantities of waste rock and tailings that would have to be managed and stored in perpetuity.

Q: How could mining affect the Bristol Bay salmon fishery?
A: Some of our key findings regarding salmon and mining include:
- Depending on the size of the mine footprint, EPA estimates 24 to 94 miles of streams and 2 to 7.6 square miles of wetlands would be destroyed.
- EPA estimates 9.3 to 33 additional miles of salmon-supporting streams would be impacted by streamflow alterations caused by water use at the mine.
- Extensive quantities of toxic waste and wastewater would have to be successfully collected, stored and treated. The waste would have to be managed during mining and long after mining concludes.

- Consistent with the recent record of similar mines operating in the United States, polluted water from the mine site could enter streams through uncollected runoff, in spite of best management practices.
- An estimated 50 miles of stream length would have contaminant levels toxic to salmon or their food webs.
- A variety of water collection and treatment failures are possible, ranging from operational failures resulting in short-term releases of untreated leachates to long-term failures to operate water treatment systems.
- A transportation corridor to Cook Inlet crossing many streams and wetlands would put sockeye salmon spawning areas in and near Iliamna Lake at risk.
- Consistent with the recent record of similar mines currently operating in North and South America, pipeline failures along the transportation corridor could release toxic copper concentrate or diesel fuel into salmon-supporting streams or wetlands.
- Effects on fishery resources from full or partial failure of a dam at a tailings storage facility could be catastrophic.

PUBLIC PARTICIPATION

Q: How did the EPA involve the Public?
A: In the beginning of the assessment process, we asked the public to send us information on the Bristol Bay environmental resources. Throughout the process, EPA met with numerous groups and heard their concerns and ideas. We produced two drafts of the assessment and requested public comment on both drafts. We asked the public for input on peer reviewers and peer review questions.

Q: How many comments did EPA receive? A: EPA received approximately 233,000 comments on the first draft and approximately 895,000 comments on the second draft. We heard spoken comments at eight public meetings during the first comment period, attended by approximately 2,000 people. We reviewed and considered ALL comments received during the public comment periods.

Q: What did the public comments say?
A: It is difficult to generalize –we received a large number of comments and they addressed many different aspects of the assessment. Some comments were very general and some provided specific information and suggestions about the assessment. Most of the comments were supportive of our assessment, some were not. Some commenters thought that we overstated the risks from mining; others thought that we understated the risks. Many provided suggestions for improvement to the information in the assessment; some provided new technical and scientific information. EPA reviewed and considered all comments as we revised the assessment. Shortly we will be releasing a response to the public comments so commenters can see how we considered their comments.

Q: How many meetings did EPA hold?
A: EPA staff have participated in dozens of meetings with Alaska Native tribes, businesses, stakeholders and communities over the past two years.