

Enclosures to
Statement for the Record

Before the U.S. House of Representatives
Committee on Science, Space, and Technology
Subcommittee on Investigations and Oversight

Written testimony for the Subcommittee on Oversight hearing titled
“EPA’s Bristol Bay Watershed Assessment – A Factual Review of a
Hypothetical Scenario”

Submitted by:
Wayne Nastri

July 29, 2013

Enclosures:

1. Wayne Nastri Curriculum Vitae
2. William M. Riley and Thomas G. Yocom, *Mining the Pebble Deposit: Issues of 404 compliance and unacceptable environmental impacts*, Prepared for the Bristol Bay Native Corporation and Trout Unlimited, Executive Summary (December 2011)
3. Letter from Senator Maria Cantwell, to Elisse B. Walter, Chairman, U.S. Securities and Exchange Commission (March 18, 2013),
4. Institute of Social and Economic Research at the University of Alaska, *The Economic Importance of the Bristol Bay Salmon Industry* (May 13, 2013)
5. Overwhelming Public Support for EPA Action to Protect Bristol Bay Fact Sheet
6. Overwhelming Public Support for EPA Action to Protect Bristol Bay, Second Comment Period Fact Sheet
7. Letter from Dominick A. DellaSala, Ph.D. et, al, to President Barak Obama (April 26, 2013)

Wayne H. Natri

Education:

University of California, Irvine; B.S. (Biological Sciences), 1981
California State University, Long Beach, 1981-1982, Molecular Genetics

Special Qualifications:

Prior to forming E4 Strategic Solutions, Mr. Natri served as Senior Vice President and Co-Chair of the Environment and Energy practice of mCapital Management, a government affairs firm in Washington, DC. He also worked as a Senior Vice President with Dutko Worldwide on primarily environmental matters. Prior to that he was appointed by President George W. Bush as the Regional Administrator for the United States Environmental Protection Agency, Pacific Southwest Region (Region 9). Prior to his appointment as Regional Administrator, he served as the Governor's Appointee to the Governing Board of the South Coast Air Quality Management District. Mr. Natri has been active on a variety of environmental issues over the last twenty years and has held a variety of environmental related positions within private industry, and state and federal government. In private industry, Mr. Natri has worked in the environmental engineering and management field as an Environmental Engineer, Project Manager, Health and Safety Officer, and Operations Manager. He has worked with a variety of media including air, water, soil, and hazardous waste. Mr. Natri served on Cal/EPA's (i.e., Department of Toxic Substances Control - DTSC) Site Mitigation External Advisory Committee. He also served (pro bono) as the Legislative Director for the California Environmental Business Council, and was Editor-in-Chief for the National Association of Environmental Professionals' Environmental News. Mr. Natri has also served in various advisory committees to Cal EPA including CARB's ZEV implementation advisory committee, DTSC's Site Mitigation Program Advisory committee (where he co-chaired the Brownfields Sub-Committee) and Office of Environmental Health Hazards and Assessments - OEHHA's Private Site Manager's Advisory Committee. He has written and had published a variety of papers dealing with environmental audits, regulatory agencies and environmental mediation.

Professional Career:

Co-President and Co-Founder, E4 Strategic Solutions, Inc. 1/13 – Present. Works with clients on a variety of environmental and energy issues including technology development and application, compliance and enforcement, as well as messaging development, outreach and communications.

Senior Vice President, mCapital Management. 3/11 – 1/13. Opened mCapitol Management's Southern California office and Co-Chaired the Environment and Energy practice.

Senior Vice President, Dutko Worldwide. 2/09 – 3/11. Member of the Energy/Environment Team focusing on advancing Clean/Alternative Energy Technologies as well as providing regulatory counsel on environmental matters. Assists clients in working with federal, state and

local government on a variety of issues ranging from technology deployment to regulatory enforcement.

Regional Administrator, United States Environmental Protection Agency. 10/01 – 01/09: Responsible for policy development and operations in USEPA's Pacific Southwest Region. Mr. Nastri had management oversight of nearly 1000 people and an annual budget exceeding \$700 million. As Regional Administrator, he worked closely with other federal agencies, state and local governments, and Indian tribes to develop and enforce regulations under existing environmental laws. Responsibilities also included issuance of permits, compliance monitoring, and enforcement. Mr. Nastri worked closely with the public, industry and all levels of government in a wide variety of voluntary pollution prevention programs and energy conservation efforts. Under Mr. Nastri's leadership, the region was instrumental in the development of diesel emission reduction efforts through development of the West Coast Diesel Collaborative. Mr. Nastri also focused the agency on developing strategies to address marine emissions associated with ocean-going vessels and ports.

President/co-founder, Environmental Mediation, Inc. 2/95-10/01: At EMI, Mr. Nastri was responsible for developing and implementing strategic solutions related to environmental issues including compliance audits, issue assessments, third party peer reviews, investigative/remedial project oversight, legislative monitoring and direct communications with the general media, as well as regulatory, legislative, and executive bodies. Mr. Nastri specialized in air and water quality issues as well as hazardous waste investigation and remediation issues. He was directly responsible for advising EMI clients on investigative techniques, data interpretation, identification and development of remedial options, and remedy acceptance and cost-effectiveness. Mr. Nastri also assists in the development and implementation of targeted communications strategies on behalf of EMI clients. In this capacity, he dealt extensively with media and community groups.

Vice President, The Jefferson Group, Inc. 12/91-10/94: Responsible for management of the California office of The Jefferson Group, a government and public affairs firm. Directed environmental negotiations with local, state and federal agencies as well as participating in regulatory and legislative monitoring. Provided technical advice and project oversight services for environmental projects involving air and water quality as well as site investigation and remediation.

Operations Manager, Program Manager, Branch Health & Safety Officer, RESNA, Inc. 2/88-11/91: Performed a wide variety of duties with RESNA including Phase I site assessments, regulatory compliance audits, negotiations with regulatory agencies related to site cleanup, development of preliminary endangerment assessments, oversight of all health and safety practices, and asbestos inspections. While at RESNA, Mr. Nastri worked on projects involving a wide range of contaminants including pesticides, metals, petroleum hydrocarbons, chlorinated hydrocarbons, polynuclear aromatics and cyanides.

Principal/Project Manager, Minirem Environmental Corporation. 6/86-1/88: Performed numerous audits and inspections on various manufacturing, warehouse, and commercial facilities. Developed the company's 40 hour Health and Safety training program and directly

participated in several hazardous waste cleanup projects (e.g., mercury decontamination, pesticide cleanups, PCB decontamination, etc.).

Principal and Co-founder, Frontline Technology. 11/85-5/86 Primarily responsible for marketing research and development of automated biomedical instruments (e.g., nephelometric, fluorescence polarization, photometric, enzyme-linked immunosorbent assays, etc.). Principal research and development role focused on optimization of chemical reactions for photometric analysis.

Project Manager, Ocean Scientific. 2/85-10/86: Managed company's largest research and development project for an automated clinical chemistry analyzer (\$6 million) consisting of eight engineers (mechanical, electrical, software) and three technicians. In addition to management responsibilities, Mr. Nastri also served as the project chemist and worked on optimizing photometric and nephelometric rates of reaction.

Laboratory Technologist, Research Associate, and Product Manager, ICL Scientific. 6/81-1/85: As a research and development chemist, Mr. Nastri was responsible for development of human protein isolation techniques, enzyme-linked immunosorbent assays, and therapeutic drug control panels. Using human serum samples, Mr. Nastri isolated and purified specific proteins (e.g., alpha-2-macroglobulin) through affinity chromatography. Antibodies were developed for the proteins and then utilized in combination with markers and optimized for instrument automation. Mr. Nastri was also responsible for product training to end users (hospital and laboratory personnel), conducting marketing research and development of product budgets and forecasts.

Publications:

- Nastri, Wayne H., Megan L. Cambridge, "Putting the Environmental Project Together: From Non-Compliance to Revitalization", Technical Papers of the 13th Annual Environmental Management and Technology Conference West, Advanstar Expositions, Duluth, MN, 1997, pp 87-90
- Nastri, Wayne H., "The Importance of Mediation", Technical Papers of the 12th Annual Environmental Management and Technology Conference West, Advanstar Expositions, Duluth, MN, 1996, pp 157-161
- Poulsen, Dennis R., Wayne H. Nastri, "Negotiating with Environmental Regulatory Agencies", Environmental News, Environmental Engineers & Managers Institute of AEE, Atlanta, GA, 1996, pp 1-3
- Nastri, Wayne H., "Challenges Associated with Environmental Audits", CEBC Chronicle, San Jose, CA, 1996, pp 8-10

Personal References

Available on request

MINING THE PEBBLE DEPOSIT:

Issues of 404 compliance and unacceptable environmental impacts

EXECUTIVE SUMMARY

A number of groups have petitioned the United States Environmental Protection Agency (EPA) to initiate action under Section 404(c) of the Clean Water Act (CWA) to protect the fisheries of Bristol Bay from large-scale hardrock mining of the Pebble deposit in the headwaters of the Kvichak and Nushagak River drainages in southwestern Alaska. The Bristol Bay Native Corporation and Trout Unlimited have asked the authors of this report – both Clean Water Act experts with long and distinguished government careers – to prepare this report analyzing known information about mining the Pebble ore deposit and the potential impacts of doing so, and recommending potential 404(c) restrictions.

In order for EPA to consider 404(c) action, there must be a proposed discharge of dredged or fill material into the “waters of the United States,” including wetlands, and there must be a probability that the discharge(s) would result in unacceptable adverse environmental impacts as these are defined in federal regulations. In determining whether the potential impacts are unacceptable, EPA considers whether the proposed discharges would comply with federal regulations governing the issuance of permits for such discharges.

READ THE FULL REPORT www.savebristolbay.org/mining-the-deposit-report



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“Mining the Pebble Deposit: Issues of 404 compliance and unacceptable environmental impacts” evaluates publicly available plans to mine the Pebble deposit, concluding that these plans would not comply with federal regulations. There appear to be less damaging alternatives available to the project sponsors to extract copper than mining the Pebble deposit. Even the smallest initial 25-year phase described by the project sponsors would result in the permanent destruction of well over 9200 acres of fish and wildlife habitat, including the loss of over 30 miles of stream habitats. The secondary and long-term downstream impacts may be far greater, as the mining operation would require the impoundment of billions of tons of waste rock and tailings, as well as the potential need for storage and perpetual treatment of very large quantities of waste water from seepage and runoff.

Compared to past projects where EPA determined impacts to fish and wildlife habitats were unacceptable pursuant to its 404(c) authority, the impacts of mining the Pebble deposit are unparalleled. The report concludes that from a regulatory standpoint, these impacts are environmentally unacceptable.

The report recommends restrictions that EPA could proactively impose on regulated discharges of dredged or fill material (i.e., mine waste) from mining the Pebble deposit. These restrictions include prohibitions on discharges of dredged or fill material:

- 1) into salmon spawning and rearing habitat;
- 2) that fails testing requirements to demonstrate that the material is not toxic to aquatic life; and
- 3) where its runoff or seepage would require treatment in perpetuity.

These restrictions are rooted in well-established precedents and long-standing practices and policies within the CWA 404 program.

Asserting these restrictions proactively could further the goals of the Clean Water Act by providing certainty and associated time and money savings to industry and the public- including the indigenous peoples of the region to whom the United States has a trust responsibility- as to what will be required of any proposed plan to mine that deposit.



Terry Gunn

ABOUT THE AUTHORS

William M. Riley had a distinguished career with USEPA working for nearly 25 years in the Seattle Office (Region 10). He retired in 2007 as the Director of the Office of Environmental Assessment and previously served as National Environmental Policy Act Coordinator, Regional Mining Coordinator, and Aquatic Resources Unit Manager.

Thomas G. Yocom is a former National Wetlands Expert for the U.S. Environmental Protection Agency, retiring in 2005. He previously served as a fishery biologist for the U.S. Fish and Wildlife Service and the National Marine Fisheries Service. He has been a Wetlands Regulatory Scientist for the Huffman-Broadway Group since 2006.

United States Senate

WASHINGTON, DC 20510-4705

March 18, 2013

The Honorable Elisse B. Walter
Chairman
U.S. Securities and Exchange Commission
100 F St., N.E.
Washington, DC 20549-1090

Dear Chairman Elisse B. Walter,

I am writing to express concern about potential discrepancies in the filing materials provided to the U.S. Securities and Exchange Commission (SEC) by Northern Dynasty Minerals, the Canadian company proposing to construct the Pebble Mine in the headwaters of Bristol Bay, Alaska. Specifically, Northern Dynasty may have provided inaccurate information regarding potential mine specifications and other aspects of their project to mislead investors, many of whom live in my state, and in their filing documents at the SEC.

Northern Dynasty Minerals submitted its "Wardrop Report" to meet filing requirements with the SEC on February 24th, 2011.^[1] Northern Dynasty subsequently informed the SEC and investors that the proposed Pebble Mine design and specifications are feasible and permissible in a press release from 2011 that is also currently on file with your agency.^[2] Concurrent with this filing, the EPA has been conducting a watershed assessment to determine potential long term impacts to the environment and its economic and cultural significance, as is required for this type of mining project. The Watershed Assessment is a science based document with an ongoing public process. According to EPA's Draft Watershed Assessment, the same Wardrop Report submitted to the SEC was used to inform potential future mining scenarios in its Bristol Bay Watershed Assessment.

^[1] <http://www.sec.gov/Archives/edgar/data/1164771/000106299311000722/0001062993-11-000722-index.htm>

^[2] <http://www.sec.gov/Archives/edgar/data/1164771/000106299311000722/exhibit99-1.htm>

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According to EPA's Draft Watershed Assessment released on May 18, 2012, "An Assessment of the Potential Mining Impacts on Salmon Ecosystems of Bristol Bay, Alaska" (EPA910-R-12-004d), the proposed Pebble Mine threatens Bristol Bay salmon and the thousands of jobs which rely on them.^[3] Bristol Bay salmon support a multi-million dollar commercial fishing industry that includes thousands of Washington state jobs. In total, Bristol Bay produces roughly half of the world's wild sockeye salmon with a total value of over \$480 million dollars, and supporting over 14,000 jobs. In addition to commercial fisheries, recreational salmon fisheries yield \$75 million for Washington state businesses alone. Bristol Bay salmon are integral to subsistence harvest as well. The annual estimated net economic value of subsistence harvest of salmon in Bristol Bay is between \$84.3 and \$193.7 million.^[4]

Ecosystem degradation is of serious concern to many investors. Last year, nearly 30 investor organizations representing over \$170 billion in assets urged the EPA to complete a scientific assessment to determine the Pebble Mine's potential impact on salmon. These investor organizations hold over 13 million shares in Anglo American PLC, a UK-based mining company with a 50% stake in the proposed Pebble Mine.^[5]

Recently, however, the Northern Dynasty Minerals referred to the very same Wardrop Report as a "fantasy proposal" when it delivered formal testimony to the EPA in August of 2012.^[6] This contradictory use of the Wardrop Report is extremely concerning as it is unclear whether Northern Dynasty Minerals is misleading investors by attracting investment for a "fantasy proposal" or it is intentionally providing fraudulent testimony to the EPA.

^[3] EPA's Draft Bristol Bay Watershed Assessment, "An Assessment of the Potential Mining Impacts on Salmon Ecosystems of Bristol Bay, Alaska," May, 2012, available at: http://www.epa.gov/ncea/pdfs/bristolbay/bristol_bay_assessment_erd_2012_vol1.pdf

^[4] An Assessment of Potential Mining Impacts on Salmon Ecosystems of Bristol Bay, Alaska; Appendix E: Bristol Bay Wild Salmon Ecosystem Baseline Levels of Economic Activity and Values, available at:

<http://cfpub.epa.gov/ncea/bristolbay/recordisplay.cfm?deid=241743>

^[5] Trillium Asset Management, "Largest Open Pit Mine in North America Cause for Investor Concerns— Investors Representing \$170 Billion Urge EPA to Safeguard Alaska's Bristol Bay," April 12, 2011, available at: <http://www.trilliuminvest.com/news-articles-category/advocacy-news-articles/largest-open-pit-mine-in-north-america-cause-for-investor-concerns-%e2%80%93-investors-representing-170-billion-urge-epa-to-safeguard-alaska-%e2%80%99s-bristol-bay/>

^[6] Dan Fiorucci, "Public Weighs In on Pebble Mine at EPA Hearing," August 7, 2012, available at: <http://www.ktuu.com/news/ktuu-public-gets-one-more-chance-to-weighin-on-pebble-before-scientists-do-20120807,0,7102116.story>

I urge you to investigate this matter immediately. Due to the importance of this issue to Washington State and the Pacific Northwest, I would greatly appreciate being informed about all developments on this matter.

Sincerely,



Senator Maria Cantwell

The Economic Importance of the Bristol Bay Salmon Industry



prepared for the

Bristol Bay Regional Seafood Development Association

by

Gunnar Knapp
Mouhcine Guettabi
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April 2013

THE ECONOMIC IMPORTANCE OF THE BRISTOL BAY SALMON INDUSTRY

EXECUTIVE SUMMARY

By any measure, the Bristol Bay sockeye salmon fishery is very large and valuable. It is the world's most valuable wild salmon fishery, and typically supplies almost half of the world's wild sockeye salmon. In 2010, harvesting, processing, and retailing Bristol Bay salmon and the multiplier effects of these activities **created \$1.5 billion** in output or sales value across the United States.

In 2010, Bristol Bay salmon fishermen harvested 29 million sockeye salmon worth \$165 million in direct harvest value alone. That represented 31% of the total Alaska salmon harvest value, and was greater than the total value of fish harvests in 41 states. Salmon processing in Bristol Bay increased the value by \$225 million, for a total first wholesale value after processing of \$390 million. The total value of Bristol Bay salmon product exports in 2010 was about \$250 million, or about 6% of the total value of all U.S. seafood exports.

In 2010, the Bristol Bay sockeye salmon fishery supported 12,000 fishing and processing jobs during the summer salmon fishing season. Measuring these as year-round jobs, and adding jobs created in other industries, the Bristol Bay salmon fishery created the equivalent of almost 10,000 year-round American jobs across the country, and brought Americans \$500 million in income. For every dollar of direct output value created in Bristol Bay fishing and processing, more than two additional dollars of output value are created in other industries, as payments from the Bristol Bay fishery ripple through the economy. These payments create almost three jobs for every direct job in Bristol Bay fishing and processing.

United States domestic consumption of Bristol Bay frozen sockeye salmon products has been growing over time as a result of sustained and effective marketing by the industry, new product development and other factors. This growth is likely to continue over time, which will result in even greater output value figures for the industry's economic impacts across the U.S.

The economic importance of the Bristol Bay salmon industry extends far beyond Alaska, particularly to the West Coast states of Washington, Oregon and California.

Bristol Bay fishing boats

- » About one-third of Bristol Bay fishermen and two-thirds of Bristol Bay processing workers live in West Coast states.
- » Almost all major Bristol Bay processing companies are based in Seattle.
- » Most of the supplies and services used in fishing and processing are purchased in Washington state.
- » Significant secondary processing of Bristol Bay salmon products occurs in Washington and Oregon.

The economic importance of the Bristol Bay salmon industry goes well beyond the value, jobs, and income created by the fishing and processing which happens in Bristol Bay. More value, jobs and income are created in *downstream industries* as



Bristol Bay salmon are shipped to other states, undergo further processing, and are sold in stores and restaurants across the United States. Still more jobs, income and value are created in other industries through *multiplier impacts* as Bristol Bay fishermen and processors and downstream industries purchase supplies and services, and as their employees spend their income.

Economic Impacts of the Bristol Bay Salmon Industry in 2010

Annual average employment: 9,800 jobs	Output value: \$1.5 billion	Income: \$500 million
Fishing & processing in Bristol Bay		
12,000 seasonal jobs (=2,000 annual jobs)	\$390 million	\$140 million
Shipping, secondary processing & retailing after Bristol Bay		
1,000 jobs	\$110 million	\$40 million
Multiplier impacts in other industries		
6,800 jobs	\$970 million	\$320 million

Overview of the Bristol Bay Salmon Industry

Bristol Bay is located in southwestern Alaska. Each year tens of millions of sockeye salmon return to spawn in the major river systems which flow into Bristol Bay. The large lakes of the Bristol Bay region provide habitat for juvenile sockeye salmon during their first year of life.

For well over a century, Bristol Bay salmon have supported a major salmon fishing and processing industry. Most of the harvest occurs between mid-June and mid-July. At the peak of the fishing season, millions of salmon may be harvested in a single day.

Only holders of limited entry permits (issued by Alaska's state government) and their crew are allowed to fish in Bristol Bay. There are permits for two kinds of fishing gear: drift gillnets (operated from fishing boats) and set gillnets (operated from shore). There are approximately 1,860 drift gillnet permits and approximately 1,000 set net permits. Drift gillnet permits average much higher catches and account for most of the total catch. About one-third of the permit holders are from West Coast states.

A Bristol Bay salmon fisherman



Bristol Bay Salmon Industry Permit Holders, by State of Residence, 2010						
Permit Type	Alaska	Washington	Oregon	California	Other States & Countries	Total
Drift Gillnet	845	642	98	109	156	1,850
Set Gillnet	629	127	38	34	99	927
Total	1,474	769	136	143	255	2,777

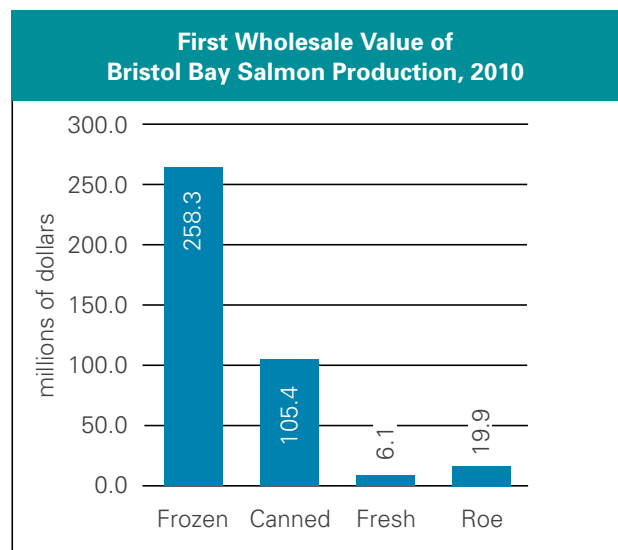
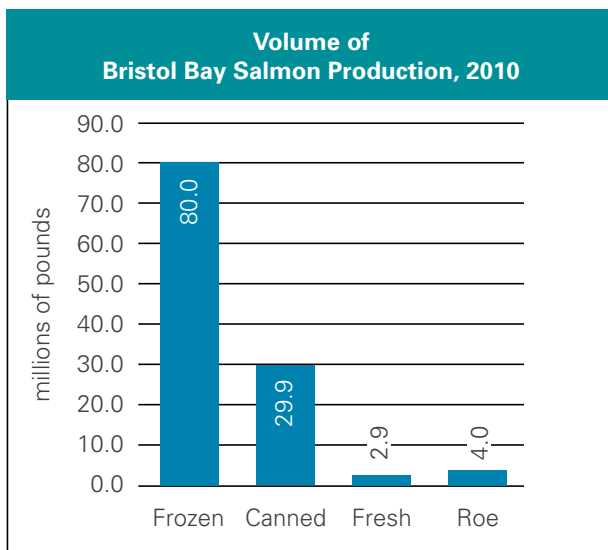
For each permit holder, who is usually a captain, there are typically two to three additional crew members. About 7,000 fishermen fished in Bristol Bay in 2010.

The Bristol Bay salmon harvest is processed by about 10 large processing companies and 20 smaller companies employing about 5,000 processing workers at the peak of the season in both land-based and floating processing operations. Most of the workers are from other states and live in bunkhouse facilities at the processing plants.

Bristol Bay salmon are processed into four major primary products: frozen salmon, canned salmon, fresh salmon, and salmon roe. Frozen salmon includes both headed and gutted (H&G) salmon as well as salmon fillets.



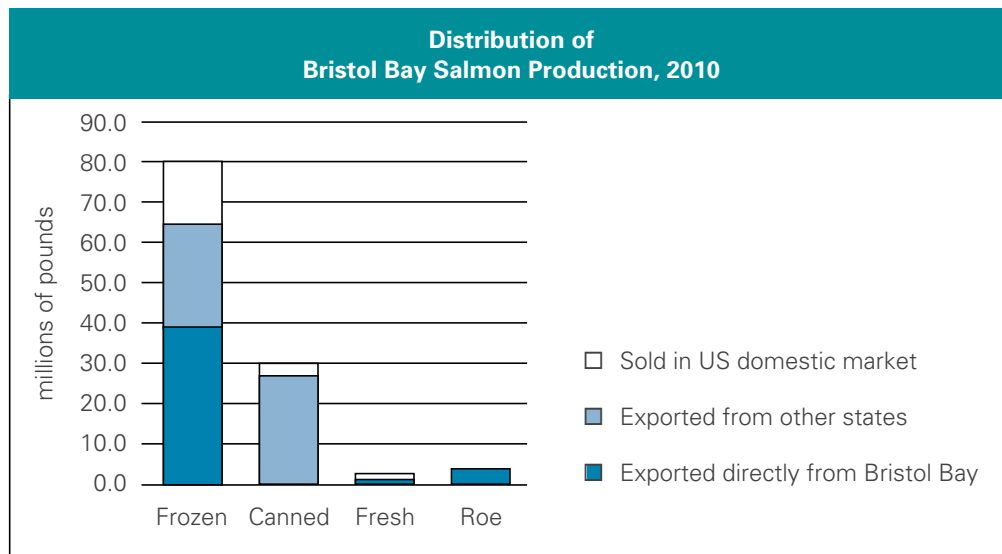
Frozen and canned salmon account for most of the volume and value of Bristol Bay salmon production.



About half of Bristol Bay frozen salmon is exported directly from Bristol Bay, primarily to Japan and China. Most of the remaining frozen salmon is shipped to Washington state where much of it is repackaged and/or reprocessed into secondary products such as fillets, portions and smoked salmon. Some of these products are exported while the rest are sold in the US domestic market.

Bristol Bay canned salmon is shipped to warehouses in Washington and Oregon where it is stored, labeled, and sold by processors over the course of the year, mostly to the United Kingdom and other export markets.

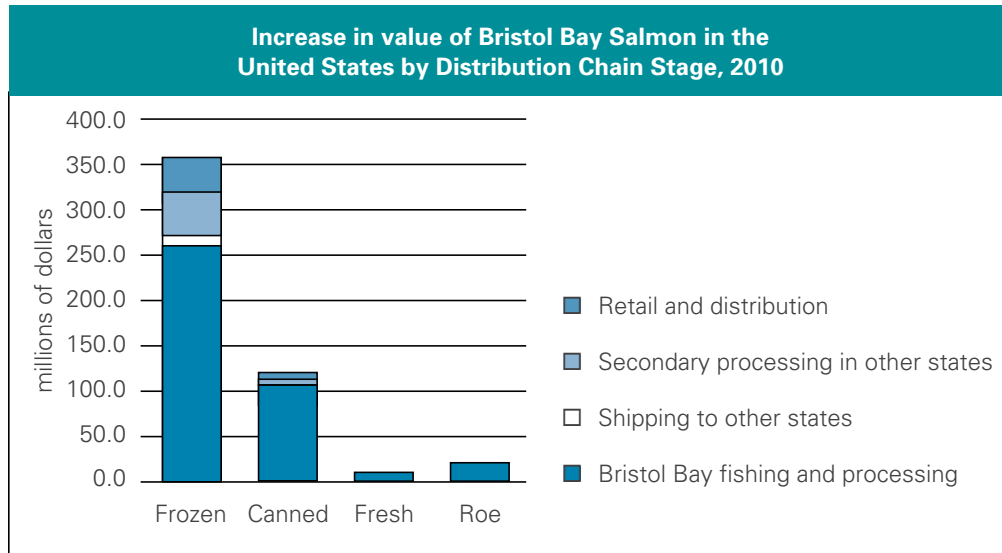
The total value of Bristol Bay salmon product exports in 2010 was about \$252 million, or about **6% of the total value of all U.S. seafood exports.**



The value of Bristol Bay salmon increases at each stage in the distribution chain. Because a large share is exported, most of the increase in value in the United States occurs in Bristol Bay fishing and processing. About one-fifth of the total increase in value occurs in later stages of the distribution chain.

Containers for shipping Bristol Bay salmon products





Economic Impacts of the Bristol Bay Salmon Industry

Economic impacts of the Bristol Bay salmon industry are the jobs, income and output value created by the fishery—or the jobs, income and output value that would not exist if the industry did not exist. Economic impacts include:

- » *Direct economic impacts:* Jobs, income and output value in businesses directly involved in harvesting, processing, and retailing Bristol Bay salmon.
- » *Multiplier economic impacts:* Jobs, income and output value created in other industries as Bristol Bay fishermen, processors and downstream industries purchase supplies and services, and as their employees spend their income.

We estimated both direct and indirect economic impacts for three stages of the distribution or value chain for Bristol Bay salmon in the United States:

- » Fishing and primary processing in Bristol Bay
- » Shipping to other states and secondary processing
- » Distribution and retailing (nationwide transportation, wholesaling and retailing of Bristol Bay salmon products in stores and restaurants throughout the United States)¹

¹ The economic effects of distribution and retailing of Bristol Bay salmon are technically economic contributions rather than economic impacts, because if Bristol Bay salmon did not exist stores would sell other products instead, which would still create jobs, income and output value. Because no data are available for Bristol Bay salmon retail volumes and prices, our estimates of economic contributions for this stage are based on the simple assumption that distribution and retailing increases the value of Bristol Bay salmon products by an average of 50%.

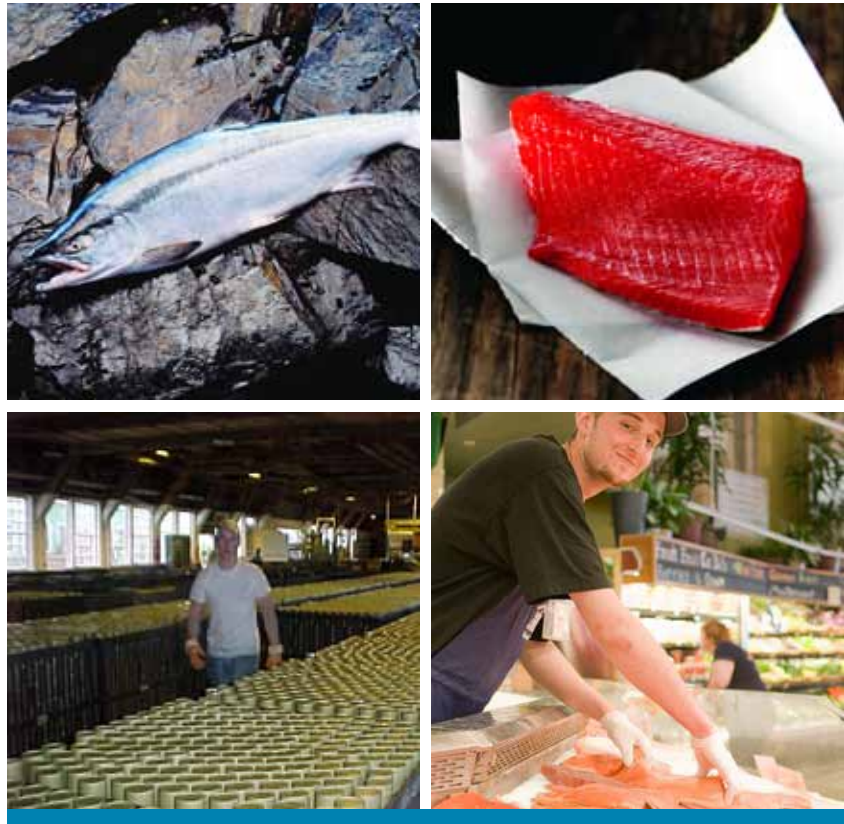
We estimated economic impacts for the United States as well as for Alaska, Washington, Oregon and California in 2010. To estimate economic impacts, we used IMPLAN input-output modeling software which tracks the ripple effects of payments between industries at both the national level as well as within individual states.

Our economic impact estimates do not account for the fact that Bristol Bay salmon fishing and processing helps to cover a significant share of the fixed costs of many Alaska and Pacific Northwest fishermen and processors, or for the economic benefits of Bristol Bay salmon exports in helping to offset the large United States seafood trade deficit. Thus our estimates of the economic importance of the Bristol Bay seafood industry are conservative.

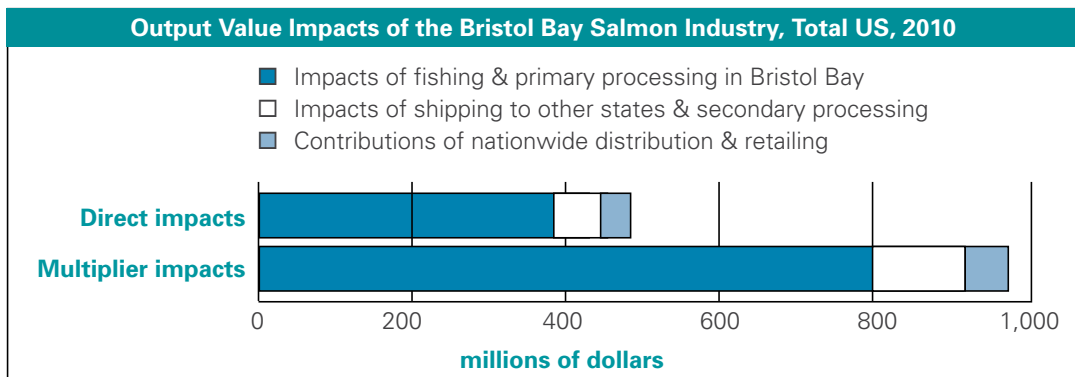
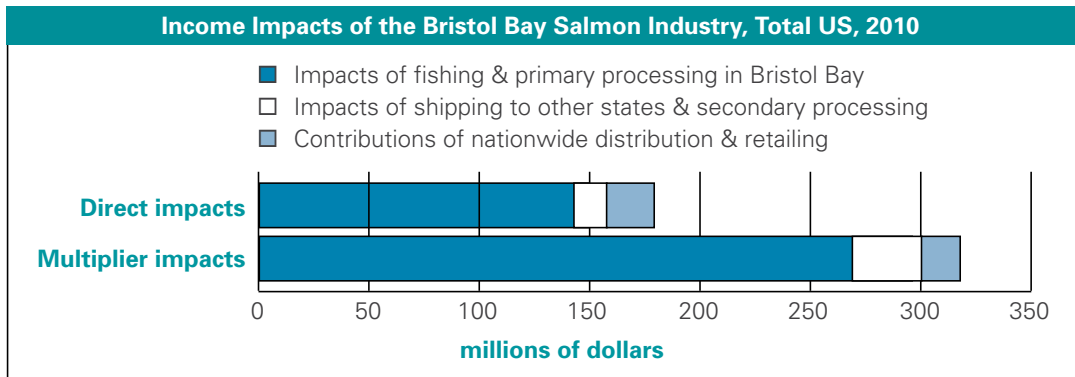
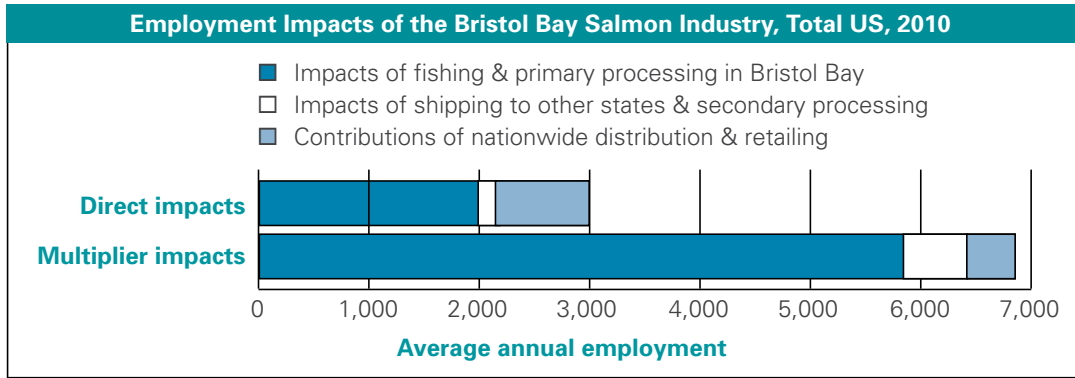
In 2010, almost 12,000 people worked in the Bristol Bay salmon industry during the fishing season, which occurs primarily in June and July. Of these, about 4,400 were Alaska residents, while most of the others were residents of West Coast states.

To compare Bristol Bay seasonal jobs lasting about two months with other year-round employment impacts, we converted them to annual average employment by dividing seasonal employment by six. Expressed as annual average employment, in 2010, almost 10,000 American jobs were created in harvesting, processing, and retailing Bristol Bay salmon and through the multiplier effects of these activities.

In 2010, Americans earned \$500 million from harvesting, processing, and retailing Bristol Bay salmon and the multiplier effects of these activities.



Seasonal Jobs in the Bristol Bay Salmon Industry, by State of Residence, 2010						
	Total US	Alaska	Washington	Oregon	California	Other States
Fishing	7,035	3,734	1,948	362	345	646
Processing	4,886	635	1,279	1,781	208	983
Total	11,921	4,369	3,227	2,143	553	1,629



In 2010, \$1.5 billion in output value was created in the United States in harvesting, processing, and retailing Bristol Bay salmon and the multiplier effects of these activities.

The tables below provide additional details of our economic impact estimates. A large share of the impacts occur in West Coast states—reflecting the fact that about one-third of Bristol Bay fishermen and two-thirds of Bristol Bay processing workers live in West Coast states; almost all major Bristol Bay processing companies are based in Seattle; most of the supplies and services used in fishing and processing are purchased from Washington; and significant secondary processing of Bristol Bay salmon products occurs in Washington and Oregon.

Employment Impacts of the Bristol Bay Salmon Industry, 2010 (annual average employment)							
Impact Driver		Total US	AK	WA	OR	CA	Other States
Fishing and primary processing in Bristol Bay	Direct impacts*	1,987	728	538	92	357	271
	Multiplier impacts	5,852	1,338	2,237	163	249	1,865
	Total impacts	7,839	2,066	2,775	255	606	2,137
Shipping to other states and secondary processing	Direct impacts	191		156	15		
	Multiplier impacts	563		229	24		
	Total impacts	754		385	39		
Total impacts		8,592		3,160	294		
Nationwide distribution and retailing**	Direct contributions	787	Note: Total US may exceed sum of estimates shown for individual states; see report for technical explanation. *Direct employment impacts of fishing and processing in Bristol Bay were calculated by dividing seasonal employment by 6. **Based on conservative assumption that distribution and retailing increases value by 50%.				
	Multiplier contributions	425					
	Total contributions	1,212					
Total impacts & contributions		9,804					

Income Impacts of the Bristol Bay Salmon Industry, 2010 (millions of dollars)							
Impact Driver		Total US	AK	WA	OR	CA	Other States
Fishing and primary processing in Bristol Bay	Direct impacts	144	50	48	8	19	18
	Multiplier impacts	268	62	98	7	12	90
	Total impacts	412	112	146	15	31	108
Shipping to other states and secondary processing	Direct impacts	13		11	1		
	Multiplier impacts	30		12	1		
	Total impacts	43		23	2		
Total impacts		455		169	17		
Nationwide distribution and retailing*	Direct contributions	23	Note: Total US may exceed sum of estimates shown for individual states; see report for technical explanation. *Based on conservative assumption that distribution and retailing increases value by 50%.				
	Multiplier contributions	20					
	Total contributions	42					
Total impacts & contributions		497					

Output Value Impacts of the Bristol Bay Salmon Industry, 2010 (millions of dollars)							
Impact Driver		Total US	AK	WA	OR	CA	Other States
Fishing and primary processing in Bristol Bay	Direct impacts	390	127	198	13	19	32
	Multiplier impacts	801	161	288	19	37	297
	Total impacts	1,191	288	486	32	56	329
Shipping to other states and secondary processing in WA & OR	Direct impacts	68		56	4		
	Multiplier impacts	111		37	3		
	Total impacts	179		93	6		
Total impacts		1,370		580	38		
Nationwide distribution and retailing*	Direct contributions	46	Note: Total US may exceed sum of estimates shown for individual states; see report for technical explanation. Output value allocated among states based on the residency of fishing and processing workers and business locations. * Based on conservative assumption that distribution and retailing increases value by 50%.				
	Multiplier contributions	61					
	Total contributions	106					
Total impacts & contributions		1,476					

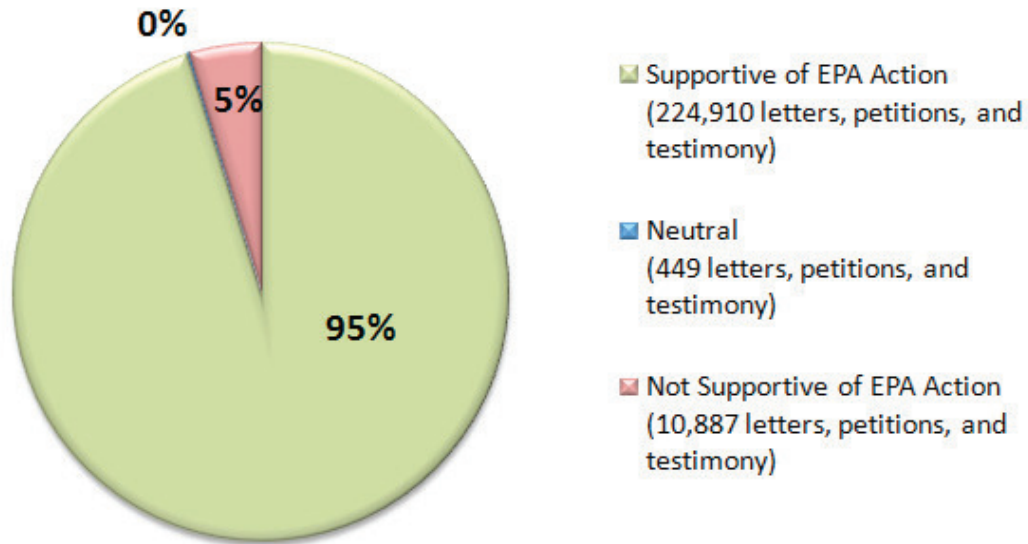


Conclusions

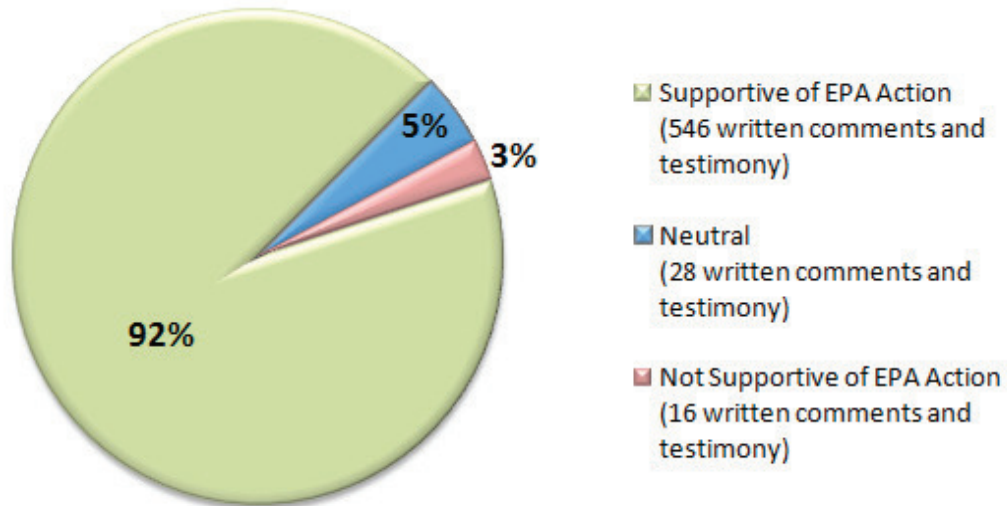
The Bristol Bay salmon fishery is the world's most valuable wild salmon fishery. It contributes well over \$1 billion in value and about 10,000 jobs to the United States economy every year, across multiple industries and states. It has operated continuously for more than 120 years and can continue to provide significant and widespread economic benefits across multiple industries and states for the foreseeable future.

Overwhelming Public Support for EPA Action to Protect Bristol Bayⁱ

All Public Comments & Public Hearing Testimony on the EPA Draft Bristol Bay Watershed Assessment



Bristol Bay Region Public Comments and Testimony



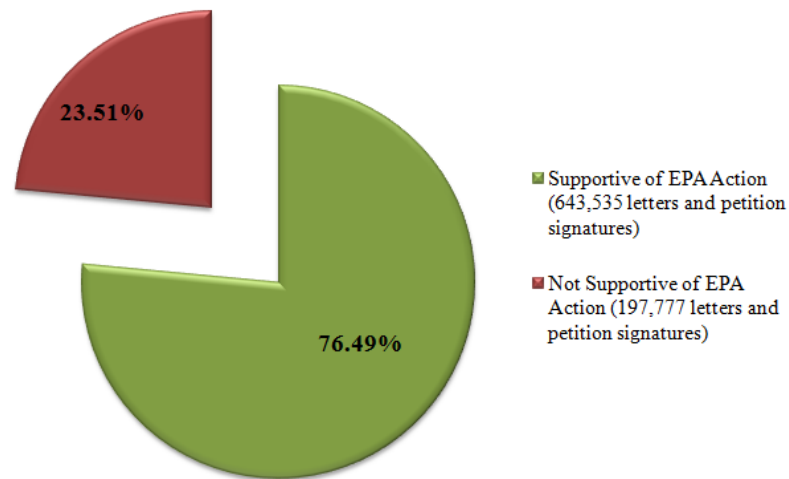
For additional information: Daniel Cheyette, Bristol Bay Native Corporation, (907) 278-3602

ⁱ Numbers compiled from all individual written public comments, mass mailings, and public hearing testimony found in the EPA Bristol Bay Watershed Assessment docket at www.regulations.gov. Charts exclude late comments. Bristol Bay regional chart excludes all comments submitted via national organizations. "Neutral" refers to comments that do not take a position on EPA involvement or 404c action, i.e. some science reports and comments, neutral requests for extension of time, etc.

Overwhelming Public Support for EPA Action to Protect Bristol Bay¹

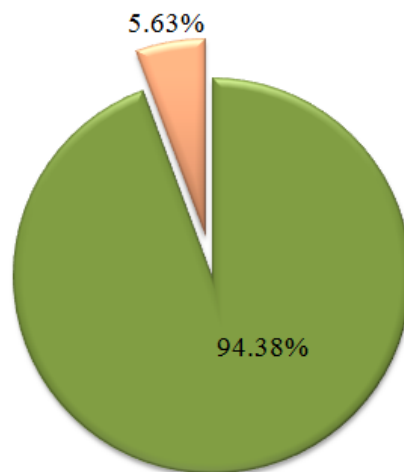
An Analysis of the Second Public Comment Period of the EPA Bristol Bay Watershed Assessment

All Public Comments on EPA Bristol Bay Watershed Assessment, Second External Review Draft



Comments from Bristol Bay Region on EPA Watershed Assessment, Second External Review Draft

- Bristol Bay Comments Supportive of EPA Action (151 individual letters)
- Bristol Bay Comments Not Supportive of EPA Action (9 individual letters)



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¹ Numbers compiled from an analysis of all individual written public comments, mass mailings, and petitions available for review as of July 29, 2013 on the EPA Bristol Bay Watershed Assessment Revised External Review Draft docket at www.regulations.gov. Bristol Bay regional chart excludes all mass mailings and petition signatures submitted via national organizations.

April 26, 2013

President Barack Obama
The White House
1600 Pennsylvania Avenue NW
Washington, DC 20500

Dear Mr. President:

As scientists with backgrounds in ecology and other natural resource-related disciplines, we are writing to express our deep concerns with the prospect of large-scale mining in the unique and biologically rich Bristol Bay watershed of Southwest Alaska.

We also write to thank the Environmental Protection Agency (EPA) for preparing a comprehensive assessment of the potential impacts to fisheries, wildlife and native cultures from large-scale gold and copper mining, such as may be proposed at the Pebble Mine. This approach of reviewing the assets and vulnerabilities of a valuable and high-functioning ecosystem and considering up front a range of possible mining scenarios should help the agency make sound policy recommendations.

The watershed assessment is particularly important for protecting a region in which a healthy and diverse fish population is central to the wellbeing of people, other wildlife, the economy and a subsistence way of life that dates back thousands of years. The agency is to be commended for initiating this effort rather than waiting to rely on the narrow scope of review that might be taken when a single permit application is filed.

In our view, EPA's draft *Bristol Bay Watershed Assessment* aptly identifies the outstanding ecological and cultural values at risk from a mine on the scale of the Pebble discovery or from other mine operations that would likely follow an initial mine opening in the region. The Bristol Bay area, comprised of the Nushagak and Kvichak river watersheds, the headwaters of three other pristine rivers, and the largest undeveloped lake on Earth, is one of the most productive, beautiful, and bountiful landscapes on the continent. Undeveloped watersheds are a rarity throughout the world and Bristol Bay's pristine watersheds support a world-class salmon fishery, which includes all five salmon species native to Alaska and the largest sockeye salmon runs in the world. Annual salmon returns, fully unsupported by hatcheries, typically average in the millions. The Bristol Bay Sport Management Area also supports abundant sport and subsistence fisheries. Together, this keystone fishery and the diverse habitats of the region are home to abundant populations of brown bears, gray wolves, and bald eagles. Caribou and moose frequent the areas' wetlands.

We believe that the geographic scope of the assessment is appropriate not only because the Kvichak and Nushagak basins include roughly half of the total land area that drains to the Bay, but also because there are currently mine leases on more than half a million acres in these highly productive basins. In addition, the metal-bearing waste produced by a single mine could, as EPA notes, run upwards of seven billion tons, or as other scientists have estimated, even

exceed ten billion tons¹. The need to manage and permanently contain a volume of mine tailings even close to these numbers in a harsh yet vulnerable environment would be an enormous challenge.

We would also note that the mine impact scenarios used to estimate risks to fisheries, though based on an industry report for the Pebble prospect,² may actually be overly optimistic about such challenges and about the overall management of a large mine. This is particularly important given the sensitivity of aquatic life to very low levels of metals and the potential for effects that could result in a long-term decline of fish populations. In addition, it appears that true cumulative impacts were underestimated, as the project scope was limited and did not include full impacts related to power, port, transportation, and additional human infrastructure development that would likely occur.

We understand that no specific mining proposal has yet been put forward for approval and that the agency has been criticized for utilizing hypothetical mine scenarios for assessment of impacts. We disagree strongly with these criticisms and believe that the use of credible mining scenarios is appropriate for this sort of forward-looking analysis. We would also note that the nature of metal mining, with its high potential for encountering unanticipated conditions, means that nearly any major mine plan is subject to change. Indeed, the footprints of many mines that have operated over decades are far larger than initially planned.

Again, we applaud EPA for its effort to establish a solid science-based summary from which to evaluate likely impacts to Bristol Bay from large-scale mine development. We believe that the preponderance of evidence shows clearly that gold and copper mining in the Bristol Bay watershed threatens a world-class fishery and uniquely rich ecosystem, and we urge the Administration to act quickly to protect the area.

Sincerely,

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¹ Ghaffari, H., R. S. Morrison, M. A. Deruijeter, A. Živković, T. Hantelmann, D. Ramsey, and S. Cowie. 2011. Preliminary assessment of the Pebble Project, Southwest Alaska. Wardrop, Vancouver, BC.

² *Ibid.*

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