

# Pebble Mine: A case study in science and policy relative to a NON-transboundary mine

Sarah O'Neal (via Carol Ann Woody)

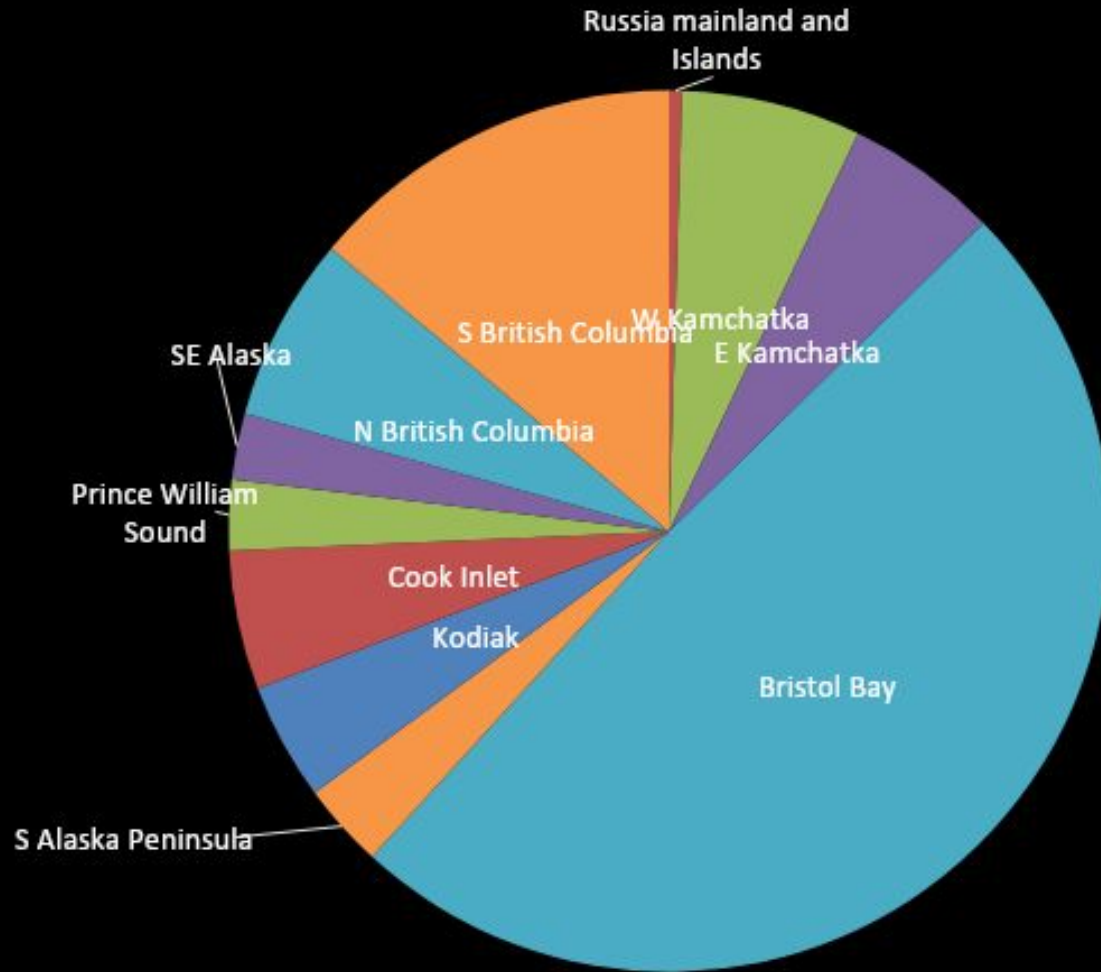
University of Washington

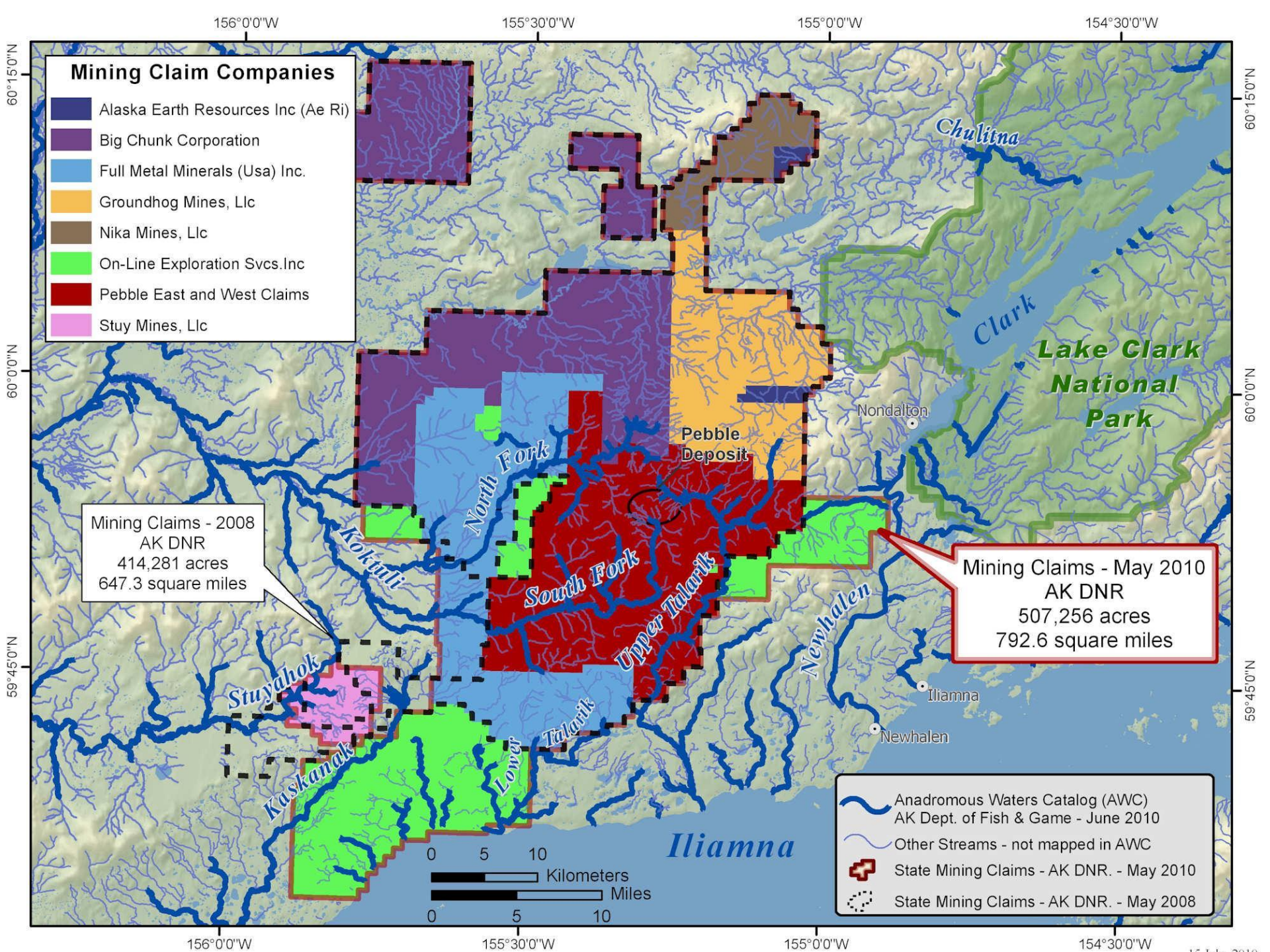
Agua Dulce Freshwater Consulting



Photo: Michael Melford

# Nearly half of the world's sockeye salmon are from Bristol Bay





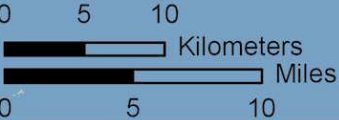
### Mining Claim Companies

- Alaska Earth Resources Inc (Ae Ri)
- Big Chunk Corporation
- Full Metal Minerals (Usa) Inc.
- Groundhog Mines, Llc
- Nika Mines, Llc
- On-Line Exploration Svcs.Inc
- Pebble East and West Claims
- Stuy Mines, Llc

Mining Claims - 2008  
AK DNR  
414,281 acres  
647.3 square miles

Mining Claims - May 2010  
AK DNR  
507,256 acres  
792.6 square miles

- Anadromous Waters Catalog (AWC)  
AK Dept. of Fish & Game - June 2010
- Other Streams - not mapped in AWC
- State Mining Claims - AK DNR. - May 2010
- State Mining Claims - AK DNR. - May 2008



156°0'0"W      155°30'0"W      155°0'0"W      154°30'0"W

60°15'0"N

60°15'0"N

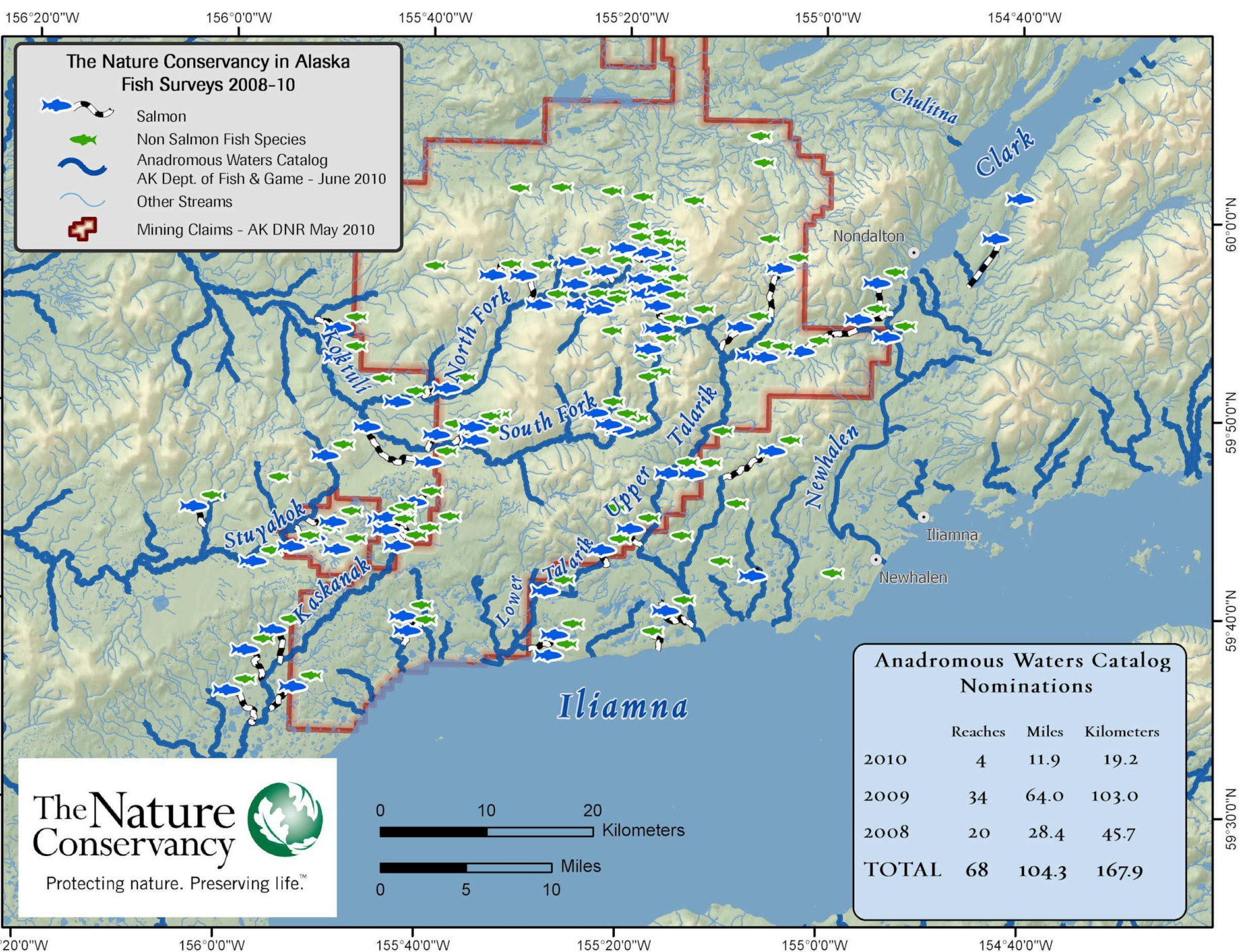
60°0'0"N

60°0'0"N

59°45'0"N

59°45'0"N

156°0'0"W      155°30'0"W      155°0'0"W      154°30'0"W



**The Nature Conservancy in Alaska  
Fish Surveys 2008-10**

- Salmon
- Non Salmon Fish Species
- Anadromous Waters Catalog  
AK Dept. of Fish & Game - June 2010
- Other Streams
- Mining Claims - AK DNR May 2010

**Anadromous Waters Catalog  
Nominations**

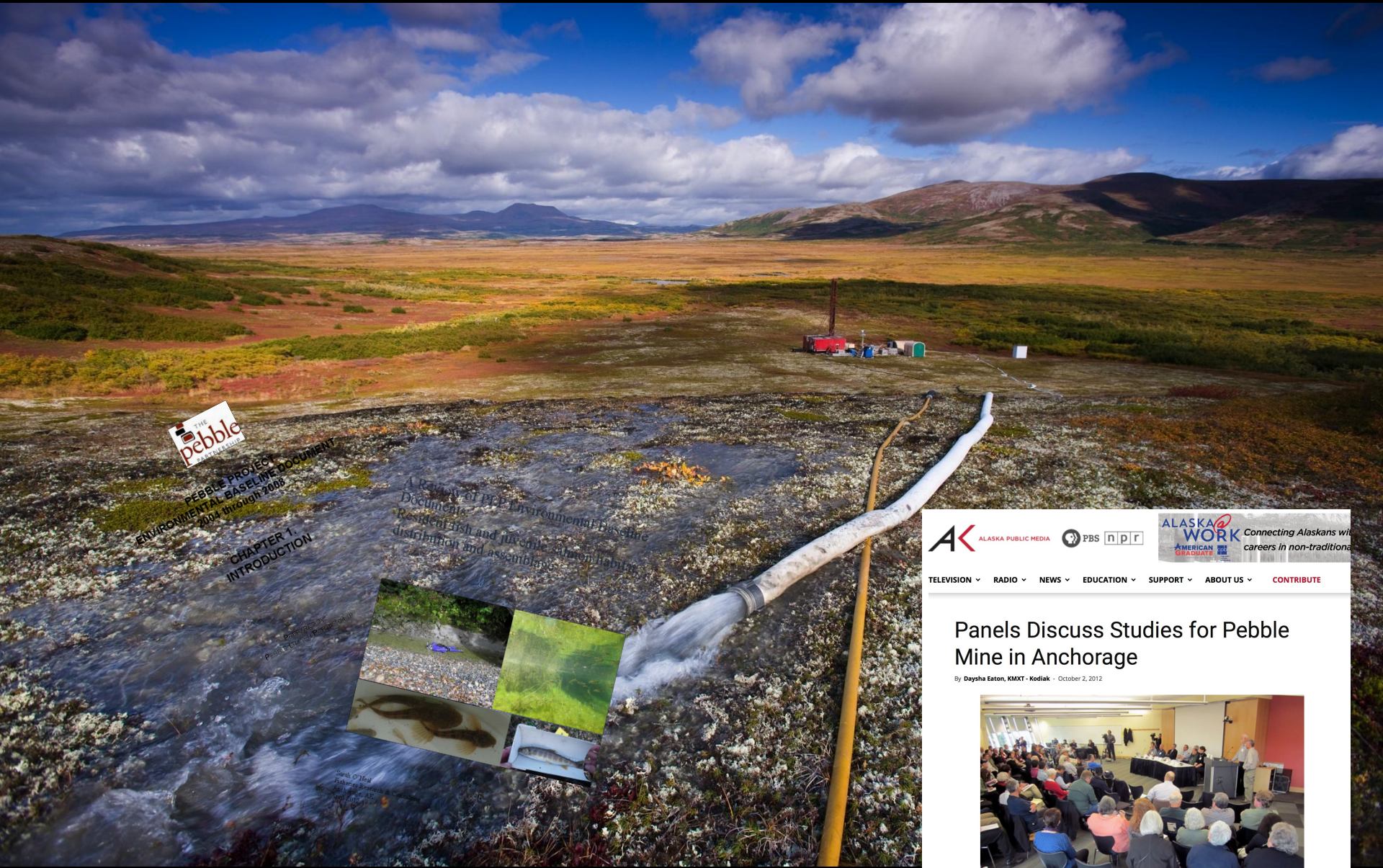
|              | Reaches   | Miles        | Kilometers   |
|--------------|-----------|--------------|--------------|
| 2010         | 4         | 11.9         | 19.2         |
| 2009         | 34        | 64.0         | 103.0        |
| 2008         | 20        | 28.4         | 45.7         |
| <b>TOTAL</b> | <b>68</b> | <b>104.3</b> | <b>167.9</b> |

**The Nature Conservancy**

Protecting nature. Preserving life.™



# Industry Science



PEBBLE PROJECT  
ENVIRONMENTAL BASELINE DOCUMENT  
2004 through 2008  
CHAPTER 1  
INTRODUCTION

A Review of PEP Environmental Baseline Documents:  
Resident fish and juvenile salmon habitat  
distribution and assemblage



Prepared by  
Pebble Funding Program

Small O'Neal  
Fishery Research  
San Francisco  
April 2012

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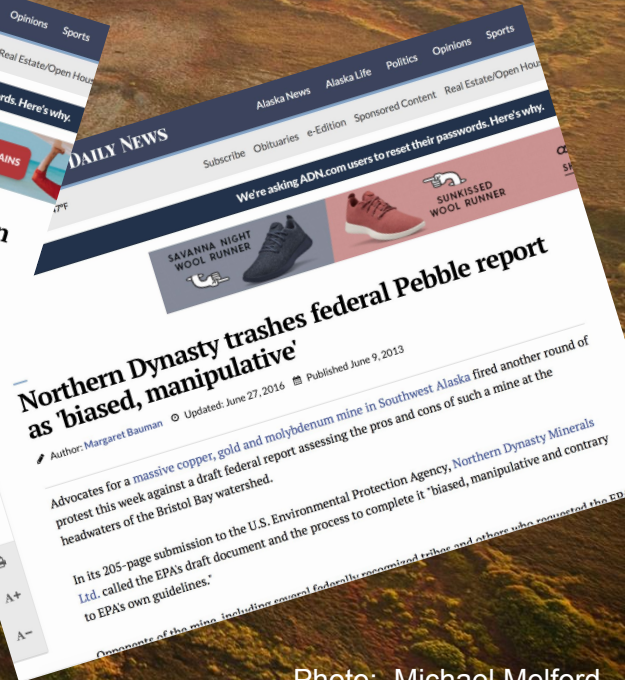
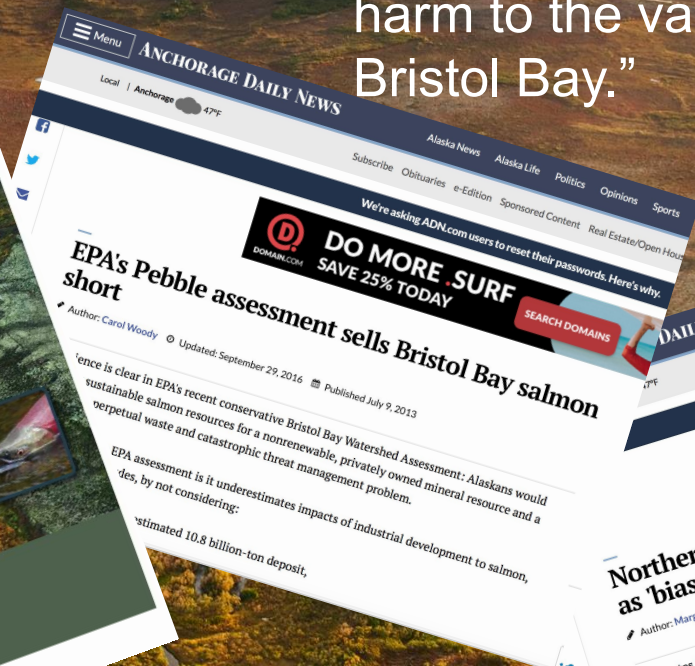
## Panels Discuss Studies for Pebble Mine in Anchorage

By Daysha Eaton, KMXT - Kodiak - October 2, 2012

PHOTO: MICHAEL MEMMORD

# (Former) Agency Science

CONCLUSION: "The Assessment found that mining the headwaters of these river systems could cause harm to the valuable fishery in Bristol Bay."



# NGO and University Science

- EPA protocol (was EMAP now NARS)
- Physical habitat
- Diatoms
- Macroinvertebrates
- Fish

Additional

- eDNA
- Evaluation of non-traditional bioindicators (sculpin)
- Comparison between science and permitting

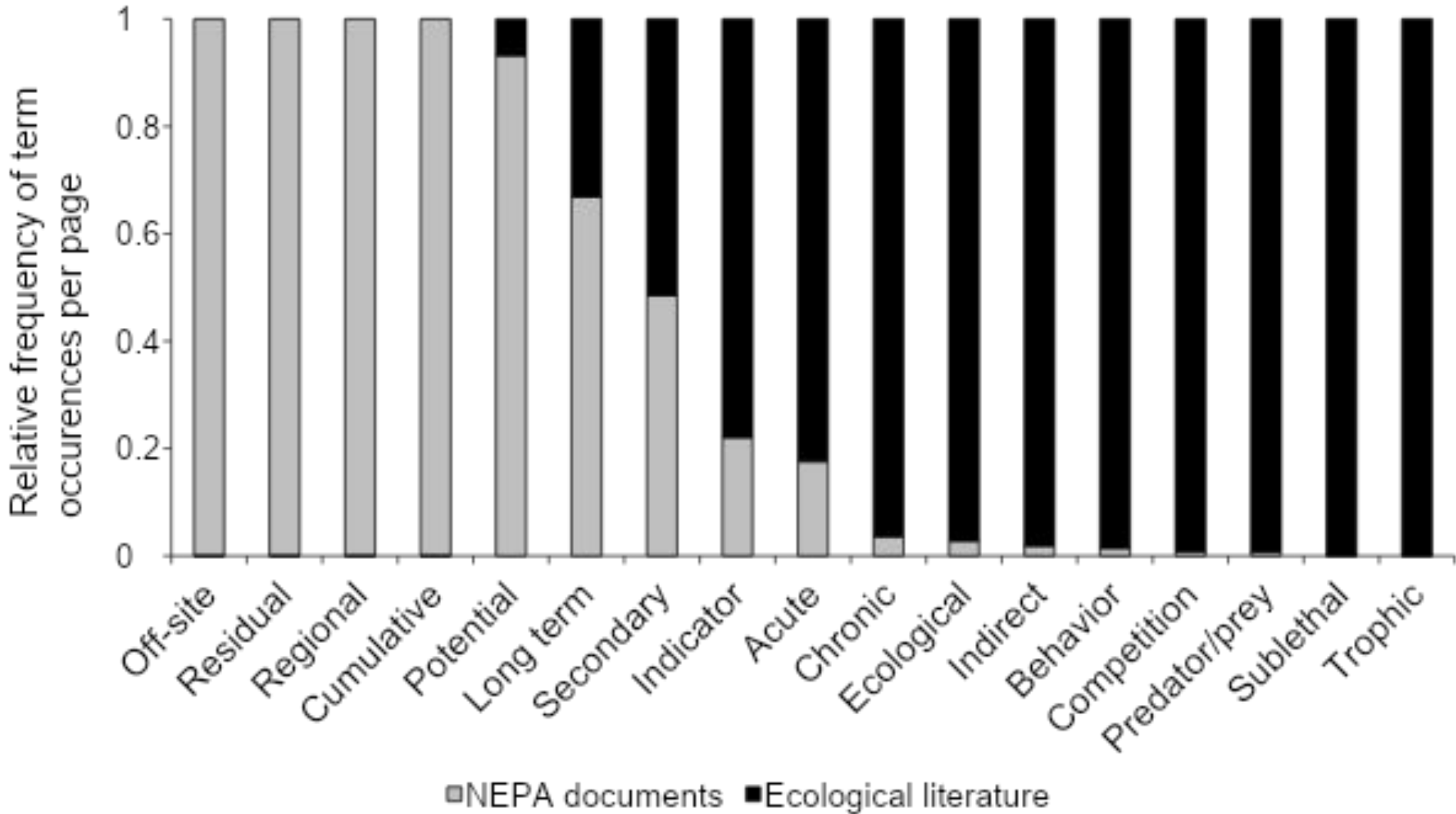
Baseline Biological Surveys in Wadeable Streams  
of the Kvichak and Nushagak Watersheds, Bristol Bay,  
Alaska  
July, 2012



Report prepared for:  
Alaska Department of Environmental Conservation  
Anchorage, Alaska

Report prepared by:  
D. Bogan, R. Shaffel, and D. Rinella  
Alaska Natural Heritage Program  
University of Alaska Anchorage

# Terminology



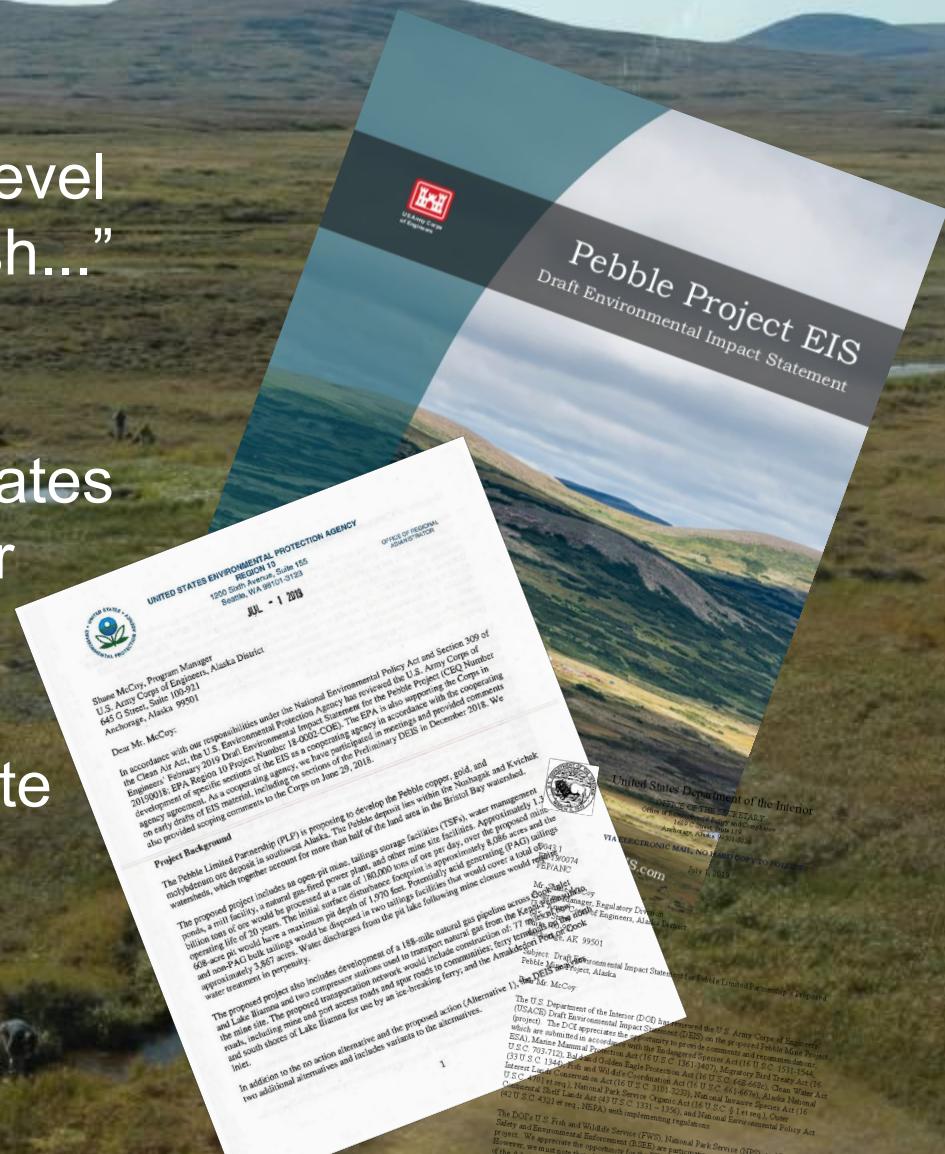


# (New) Agency “Science”

CONCLUSION: “No population-level impacts would be expected for fish...”

EPA: The draft EIS lacks critical information and likely underestimates the risk the project poses to water quality and aquatic resources

DOI: The DEIS was so inadequate that it precludes meaningful analysis



# Thank you, and questions?



Renewable Resources Foundation

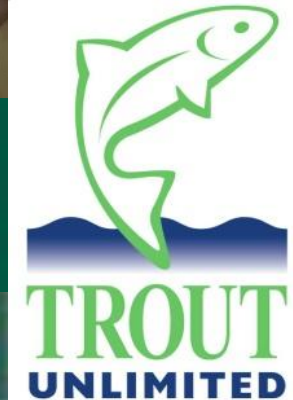


Photo: Michael Melford