

Fisheries Management Law & Economics Econ Recap & Adaptive Mgmt

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Fisheries Technology

Outline

- Housekeeping
- Recap Economics
- Current Management Issues
 - Pebble Mine
- Future Fisheries Management
 - Adaptive/co-management
 - SUWA Hydro

Final Next Week!

- Study guide – Available Next Week!
- Exam – Available Wednesday 12/7
 - Review your old exams!
 - One week to complete
 - Due Wed 12/14 @ 5:00pm
- Exam Format – CUMULATIVE! 200 pts
 - Multiple choice, fill in blank, short essay
- Contact Instructional Services (eLearning Support) to schedule proctor

student.info@uas.alaska.edu

907-747-7700

Course Evaluations

- Please Fill Out!!

Fisheries Management Law & Economics

Announcements

New Announcements appear directly below the repositionable bar. Reorder by dragging announcements to new positions. Move priority announcements above the repositionable bar to pin them to the top of the list and prevent new announcements from superseding them. The order shown here is the order presented to students. Students do not see the bar and cannot reorder announcements.

Create Announcement

New announcements appear below this line

Emerging Fisheries Management Techniques Assignment

Posted on: Sunday, November 15, 2015 7:12:23 PM AKST

Hi Guys,

I have posted an example assignment for this week in the discussion section under [Emerging Fisheries Management Techniques](#). If you have any questions as always feel free to contact me.

Joel

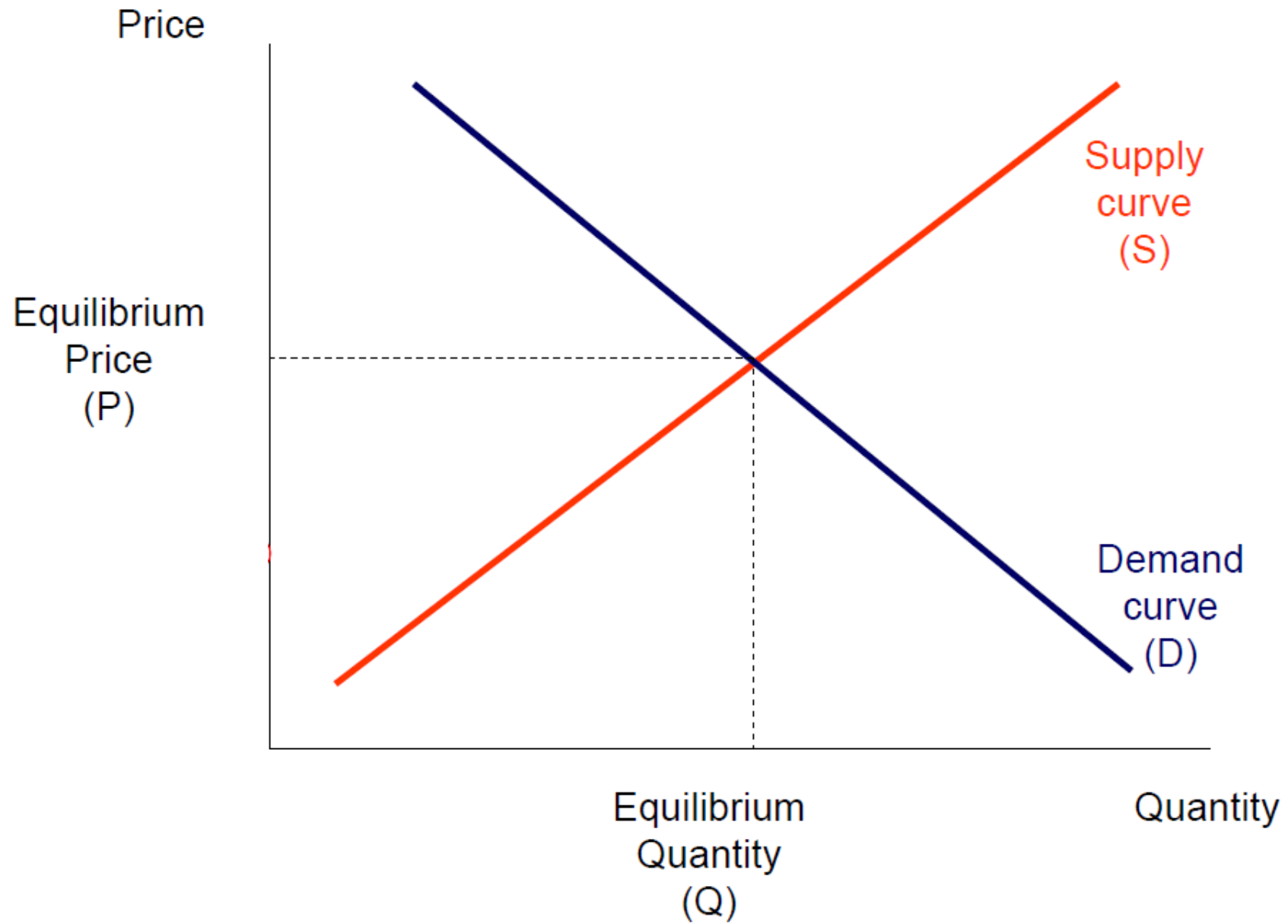
Posted by: Joel Markis
Posted to: Fall-2015 FT272-T01 / FT272-TD1

Navigation Menu:

- Fall-2015 FT272-T01 / FT272-TD1
- START HERE!
- UAS Syllabus
- Announcements
- Course Content
- Assignments
- Exams
- Discussions
- WebMeeting
- Web Meeting
- WebMeeting Archives
- Student Course Rating**
- Classlist
- Contact Info

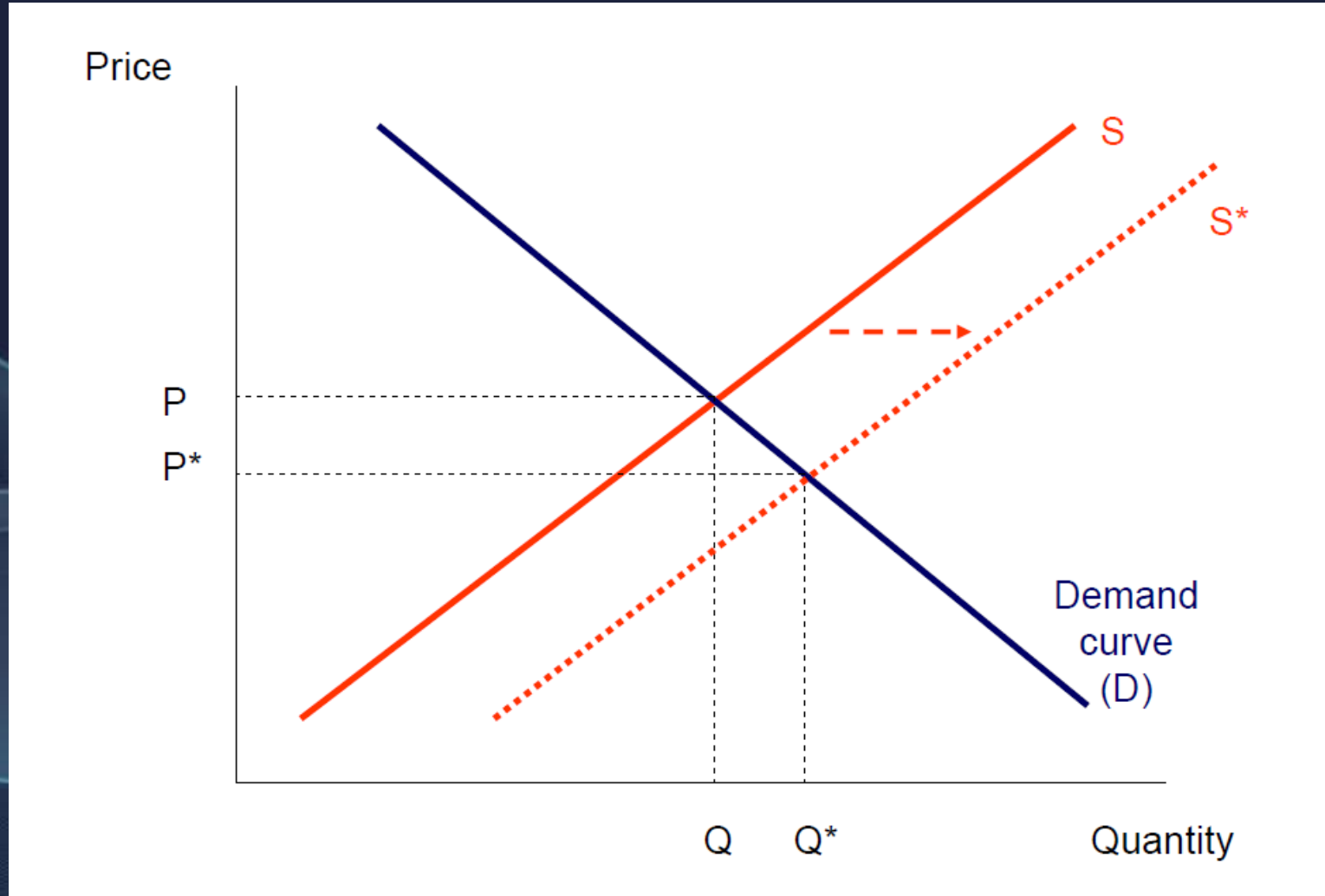
Economics Recap

- Economics
 - Macro vs Micro
- Demand
 - Price of related products
 - Change in Income
 - Population
 - Preference
- Supply
 - Price of production
 - Price of related goods (substitutes)
 - # of Suppliers (number of fisherman)



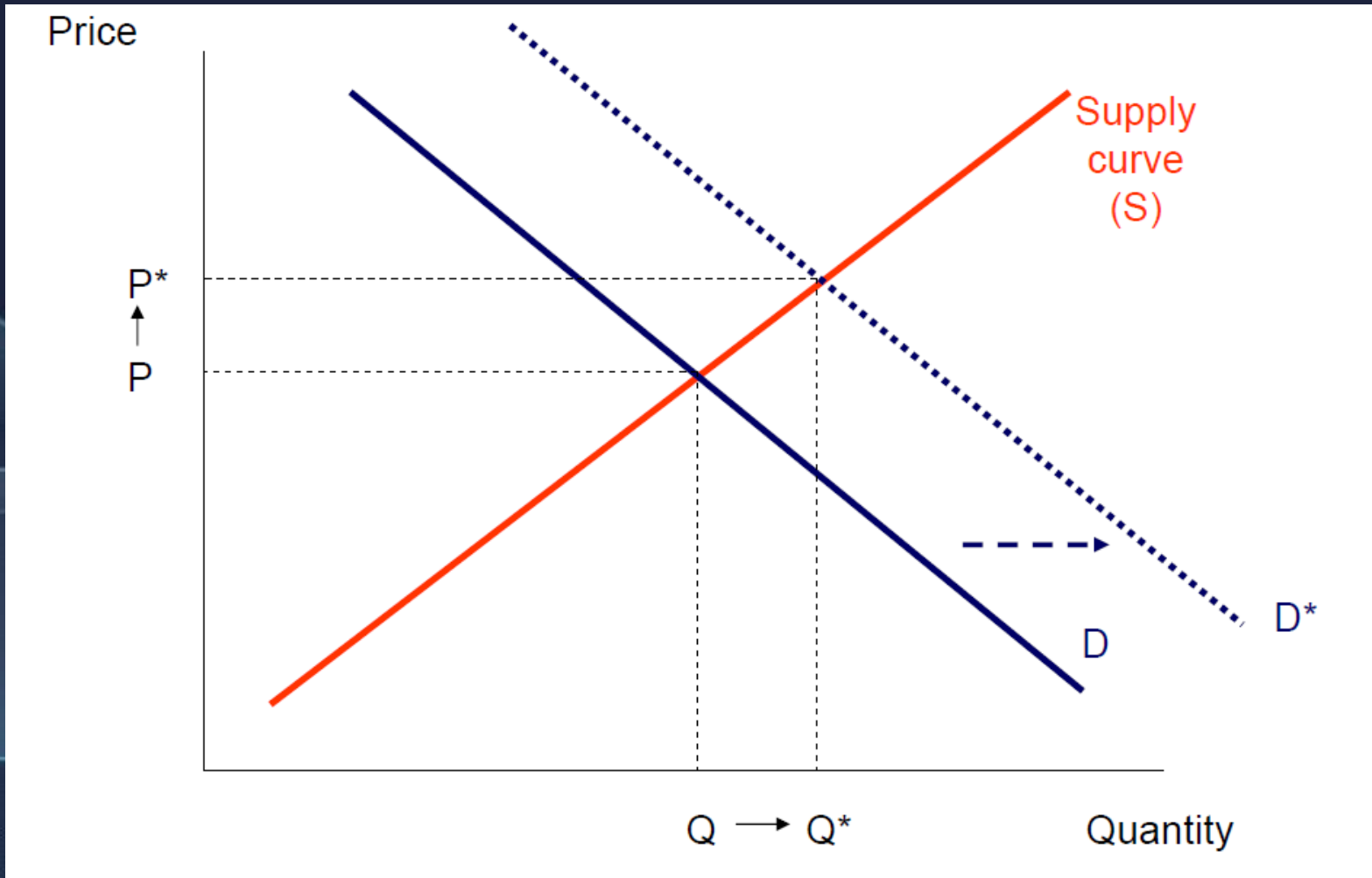
Supply & Demand

- Increase supply – Price Drops



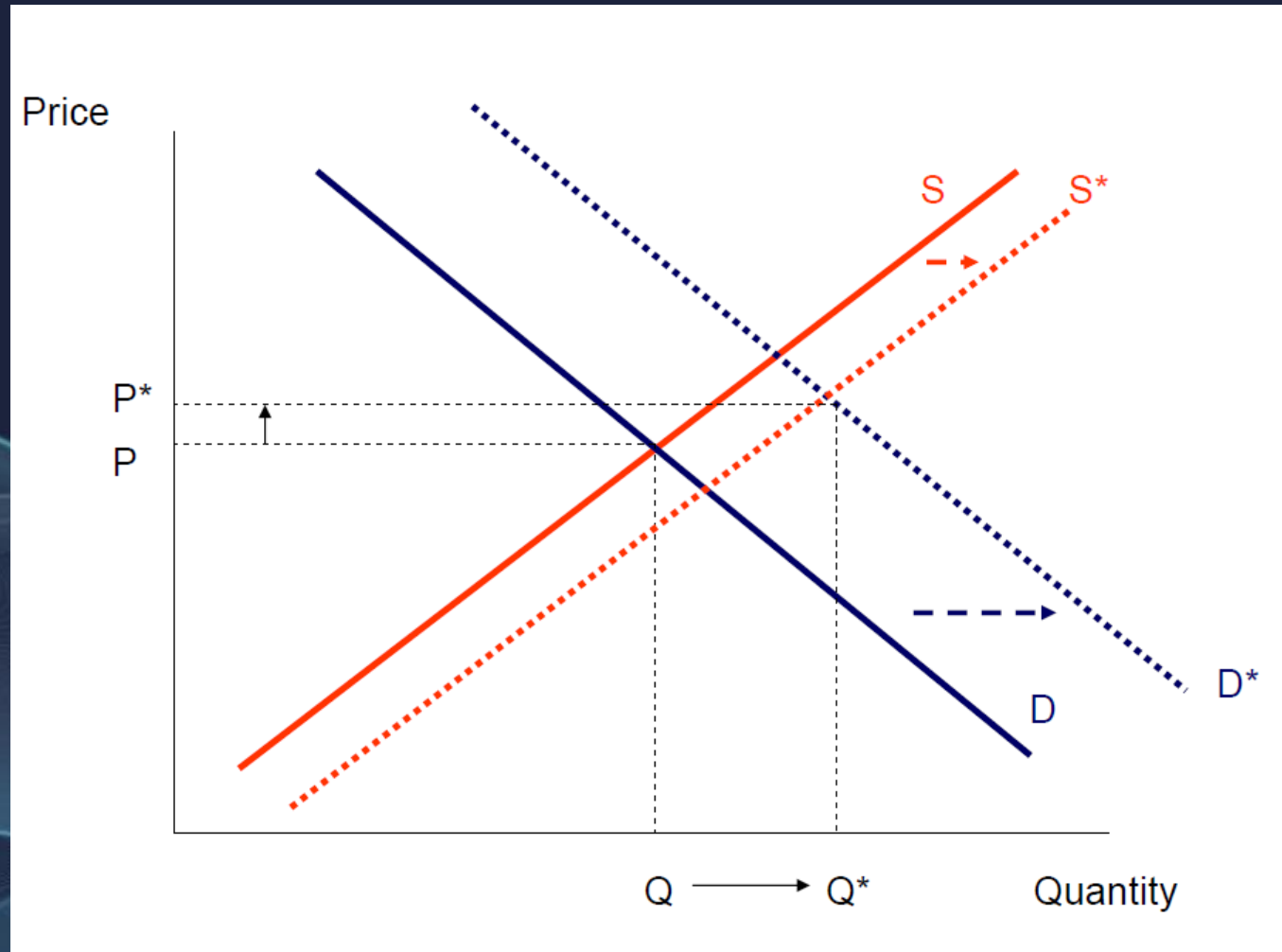
Supply & Demand

- Increase Demand– Price Increases



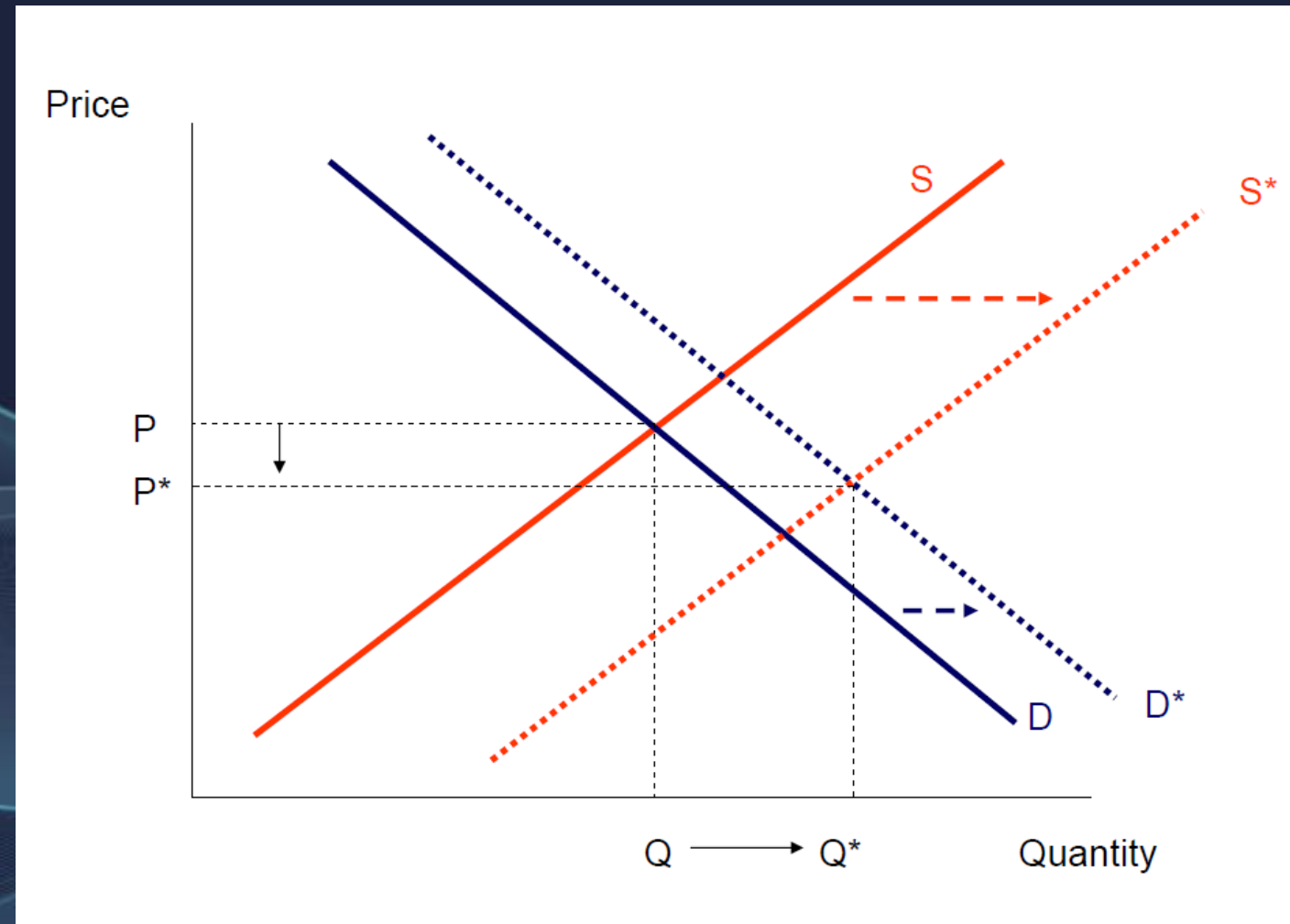
Supply & Demand

- Increase Demand more than Supply
- Price Increases



Supply & Demand

- Increase Supply more than Demand
- Price Drops



Supply & Demand for Fish

- Large fish return and easy to catch fish
- Fukushima Nuclear disaster
- ↑ price of fuel
- α 3 fatty acids in the news
- Competition from other fish species
- Increased hatchery production

- Global Fisheries Economy
 - \$136 Billion
 - Economics and Alaskan Fisheries
 - Crab Rationalization
 - Impacts?
 - Herring Co-Op / possible rationalization
 - Impacts?
 - Salmon in AK
 - Impacts?

Future of Alaska's fisheries

Benefits

- Global demand likely to grow
 - Population Growth
 - Growing Incomes
 - Health Benefits of fish
- Wild salmon are limited in supply
- Limits to farmed salmon growth
 - Disease problems
 - Limits to fish meal food sources

Challenges

- Resource uncertainty
- Farmed salmon flood markets
- Other species compete with Alaskan (wild and farmed)
- Economic uncertainty

Other questions related to fishery economics

- Marketing – what will this do to supply / Demand?
 - Direct marketing, ASMI
- What role does economics play in Management
 - More and more management is moving toward market based approaches
 - Harvest less get more value
 - Same is true for processing
- How do hatcheries alter the economics of fisheries

Current Management Issues



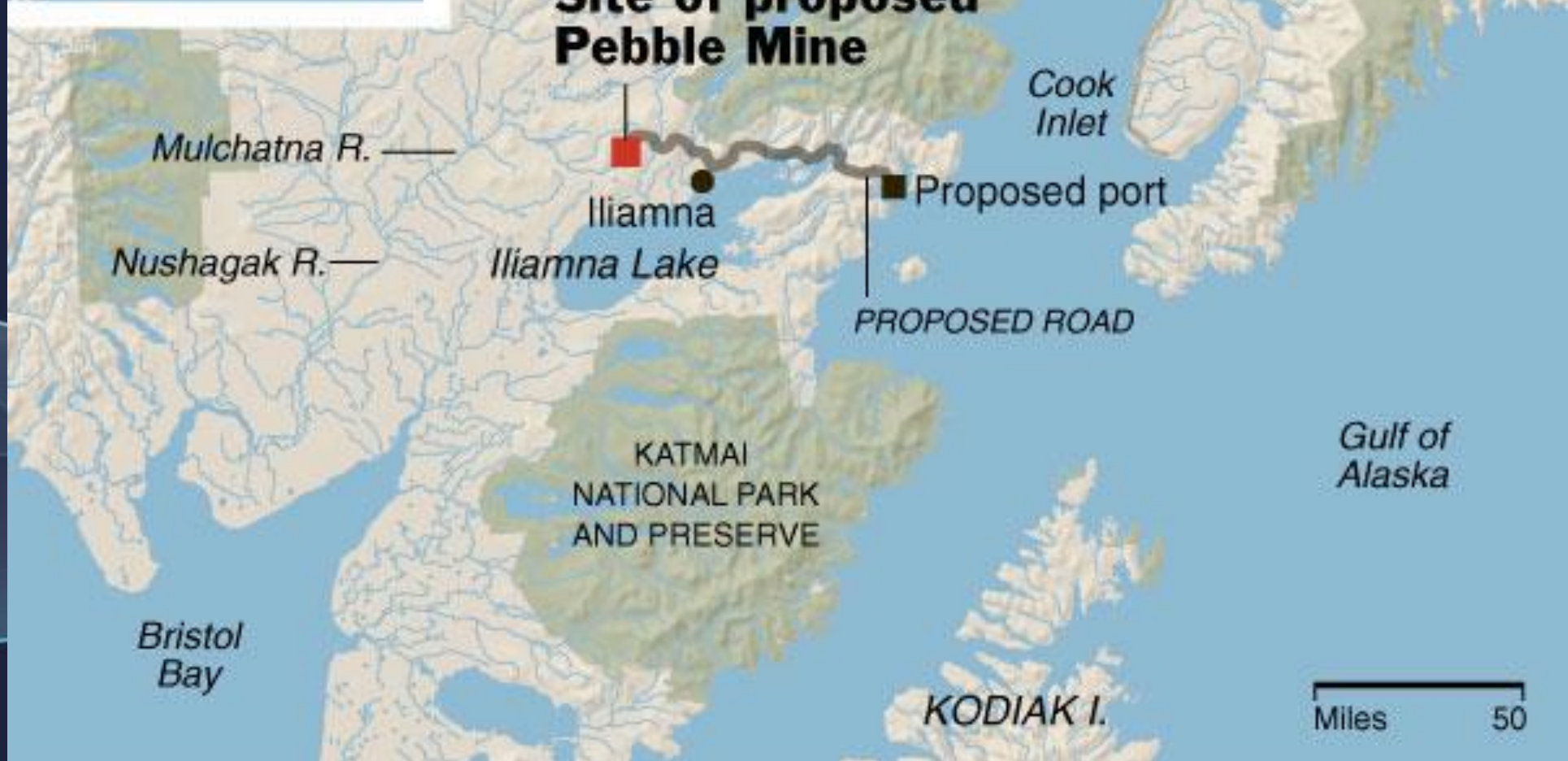
Proposed Pebble Mine



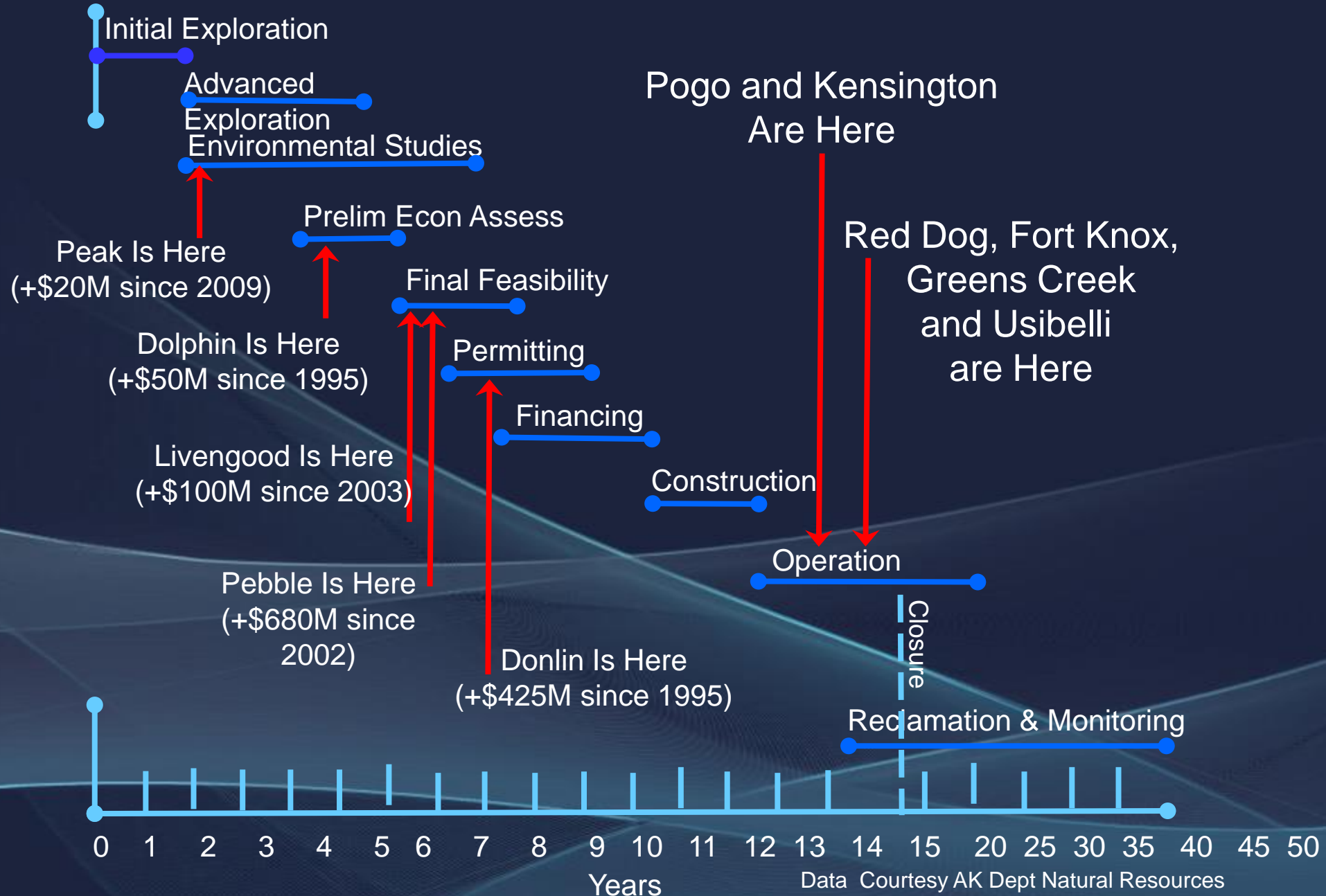
Pebble Mine

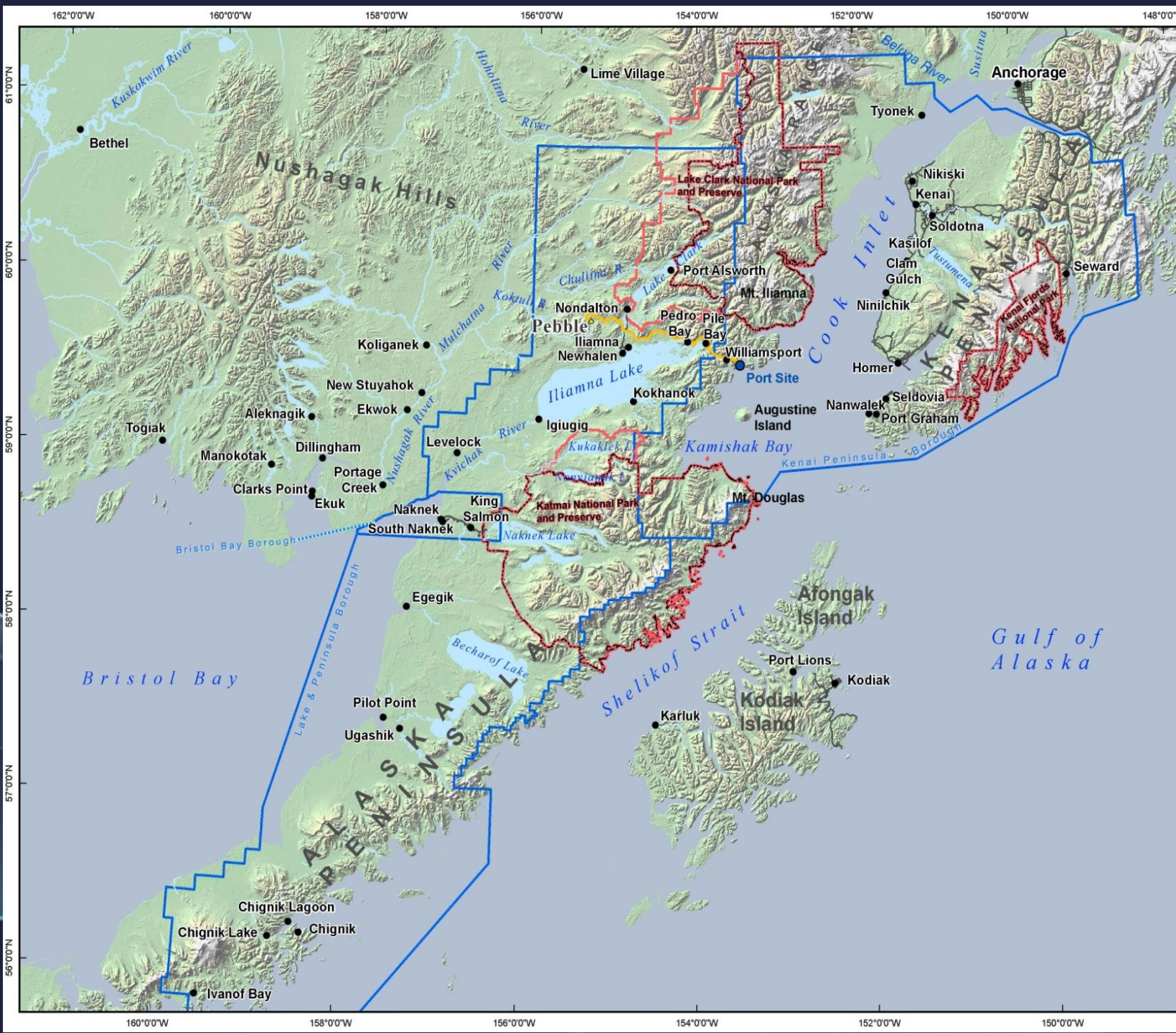
- Large porphyry copper, gold, and molybdenum mineral deposit
- Located on state land in Bristol Bay near Lake Iliamna and Lake Clark
- Proposal to mine the ore deposit, using large-scale operations and infrastructure



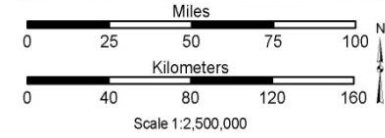


ALASKA MINING TIMELINE





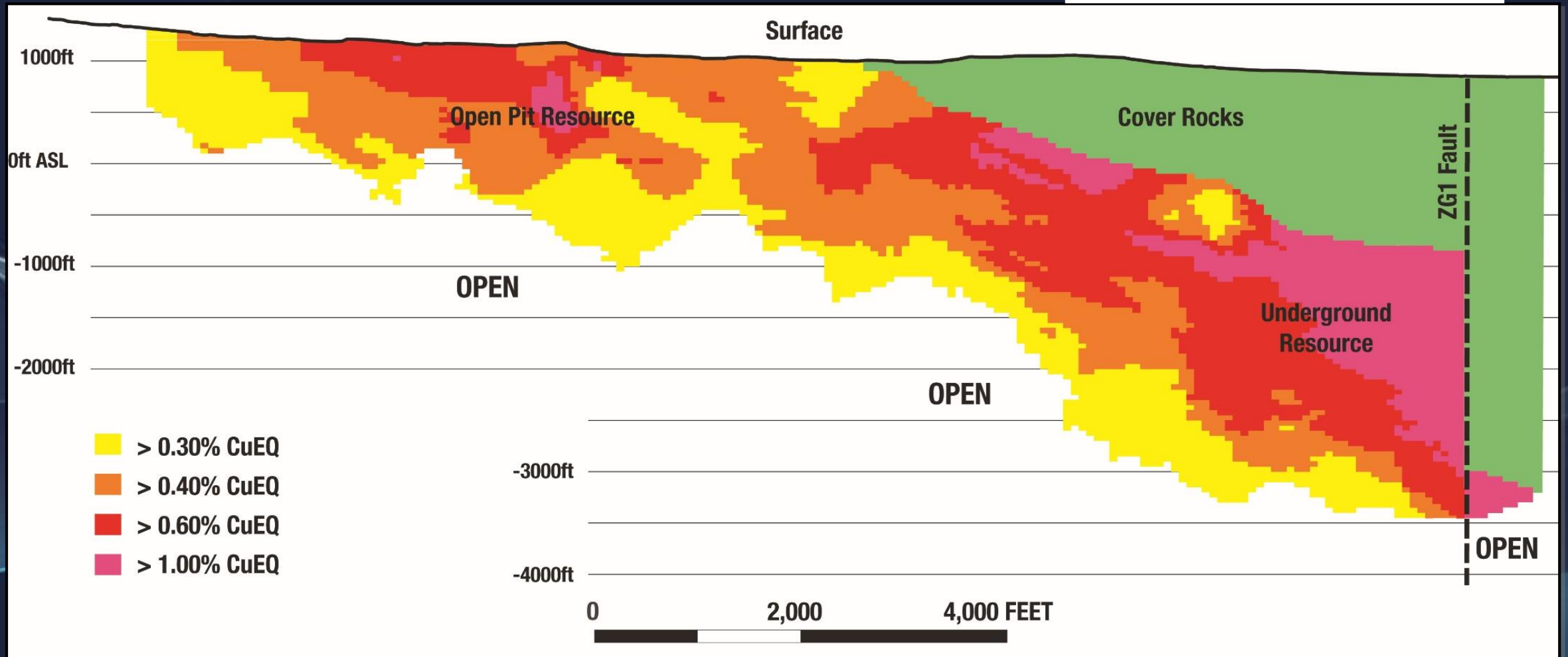
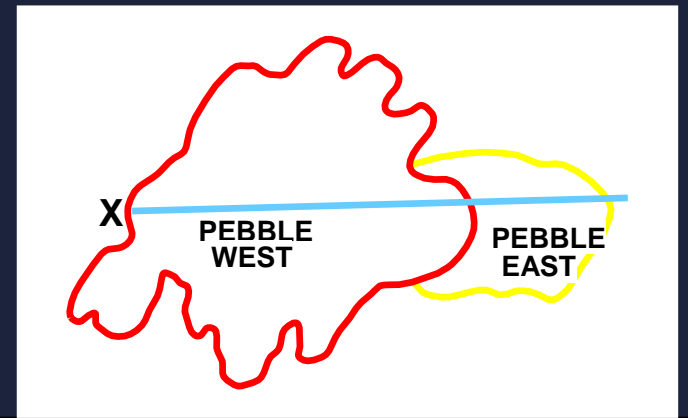
- Legend**
- Communities
 - Possible Port Site
 - ADOT&PF Road Study Corridor
 - Existing Roads
 - Deposit Site
 - National Park
 - National Preserve
 - Borough Boundary



Alaska State Plane Zone 5 (units feet)
 1983 North American Datum

File: RDI_ND_PEBANC_11X17L_1of1_D09.mxd	Date: May 10, 2007
Version: 9	Author: RDI-DWR, MRA

The Deposit



Deposit

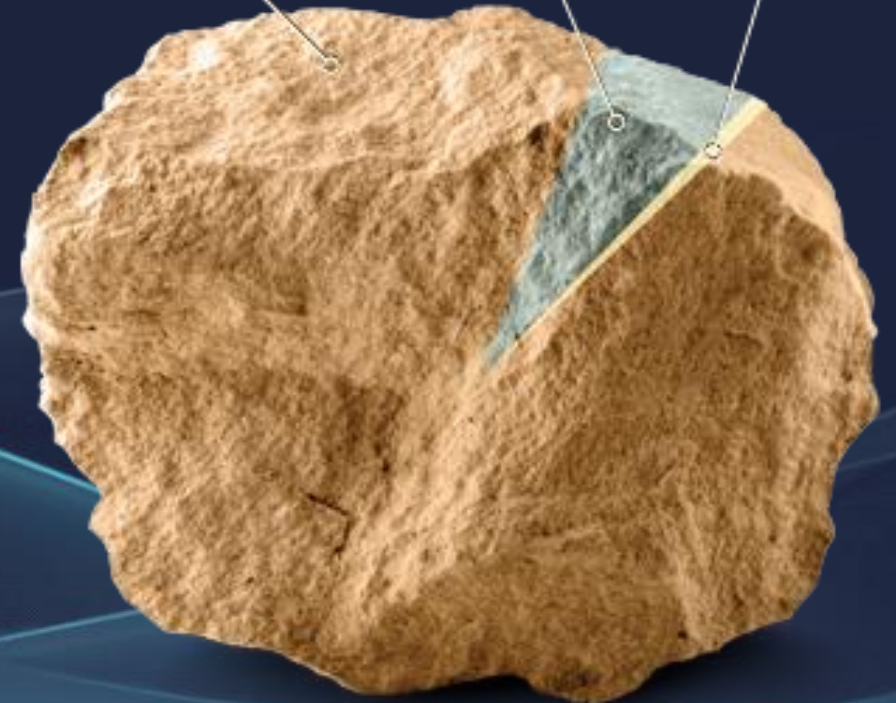
- Ore from this type of deposit typically contains less than 1% copper by volume, sprinkled throughout the rock like fine grains of sand

Estimated Mineral Endowment

80.6
billion lbs.
COPPER

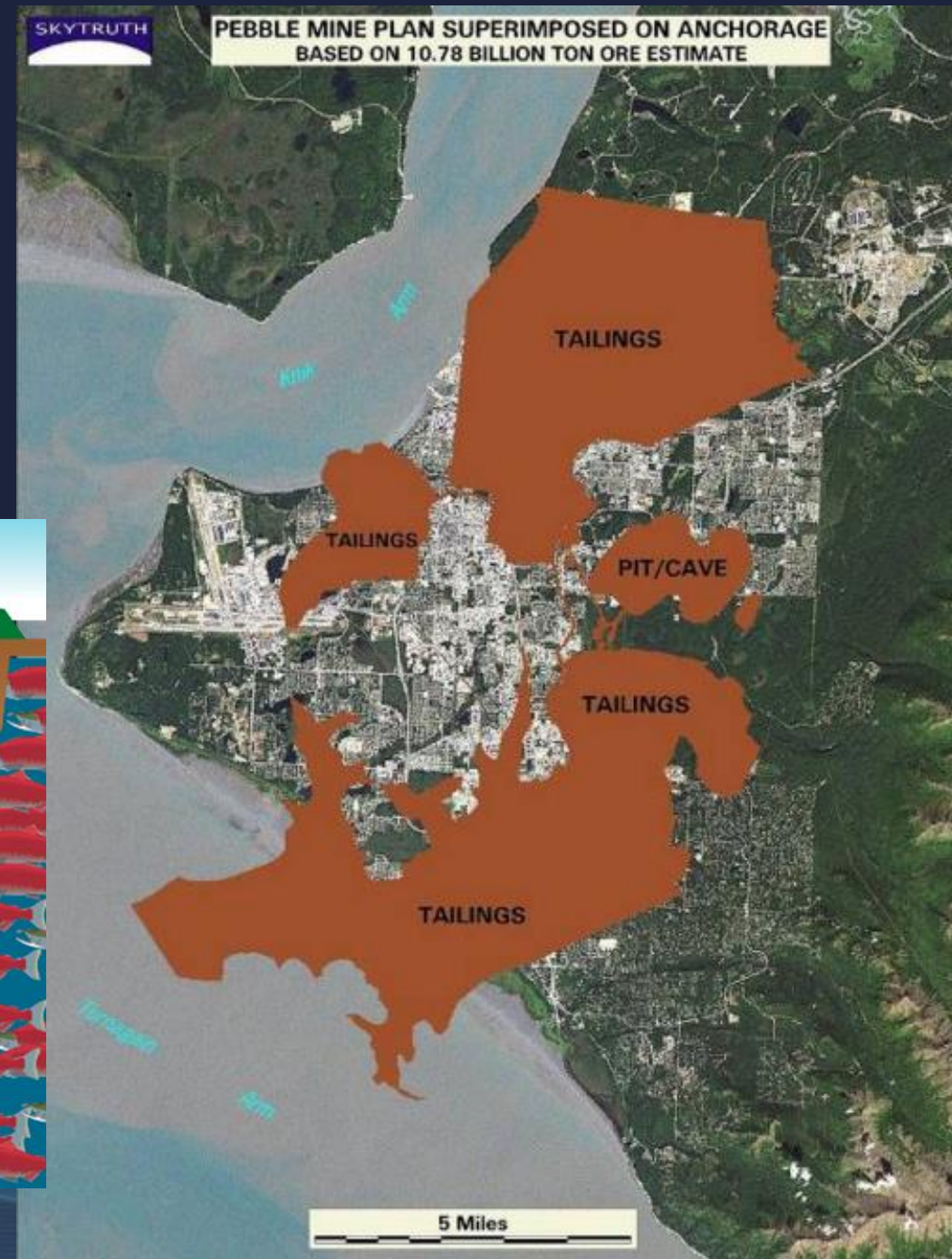
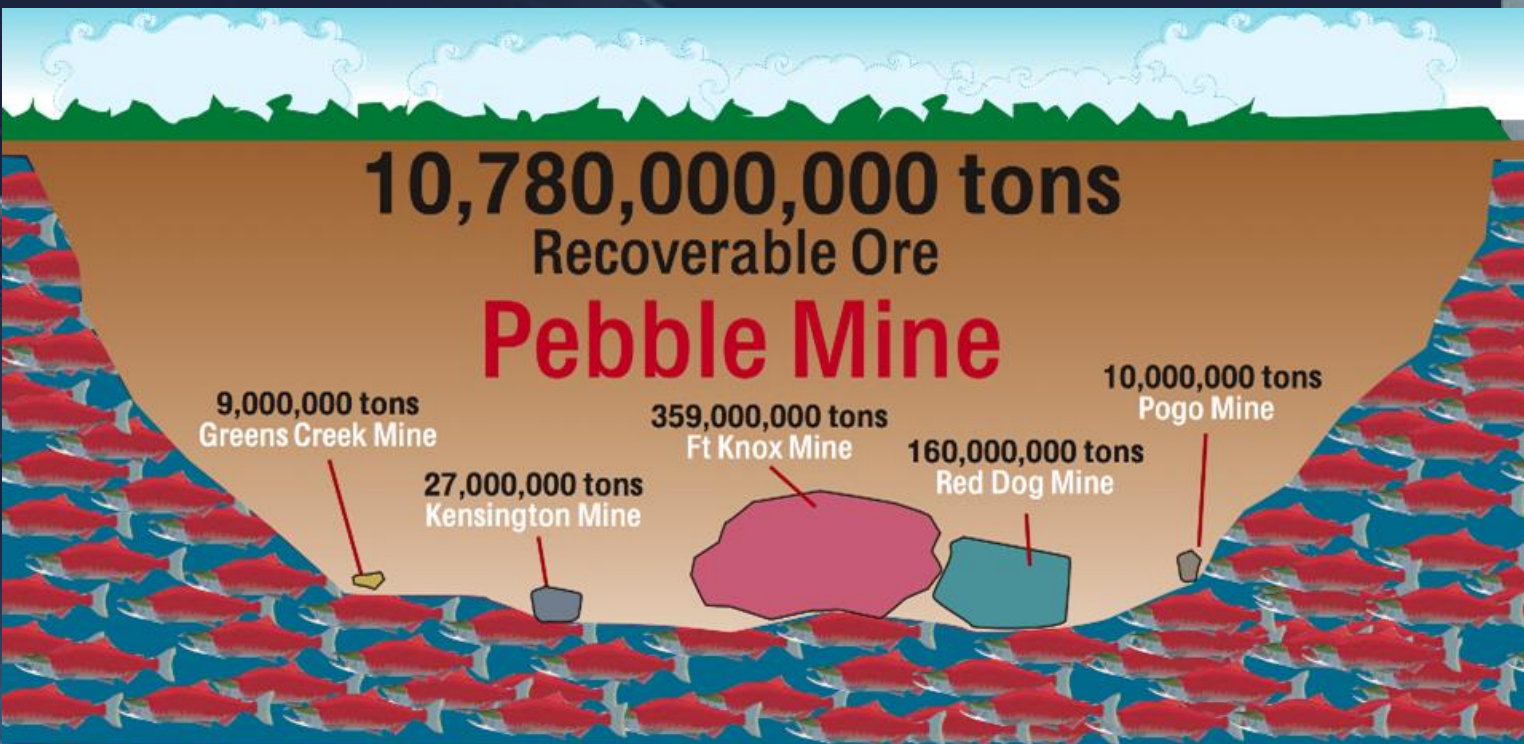
5.6
billion lbs.
MOLYBDENUM

107.4
million oz.
GOLD



The Mine

- 10.7 Billion tons of recoverable ore



Open Pit Mine

- Removal of Ore
- Processing of Ore
- Placement into tailings dams





Permitting

Agencies involved in permitting large hard rock mine in Alaska:

- AK Department of Natural Resources
- AK Department of Environmental Conservation
- AK Department of Fish and Game
- AK Department of Transportation & Public Facilities
- AK Department of Commerce, Community and Economic Development
- AK Department of Law
- AK Department of Public Safety
- Borough Land Use
- US Environmental Protection Agency
- US Army Corps of Engineers
- US Fish and Wildlife Service
- US National Marine Fisheries Service
- US Coast Guard
- Federal Aviation Administration
- Mine Safety Health Administration
- Bureau of Alcohol, Tobacco, Firearms
- Federal Communication Commission



Anti Pebble



- Current sustainable fishing vs. unknown future jobs
- Fish & Wildlife too important to risk for mines economic benefit
- Accidental discharge of process chemicals and byproducts, heavy metals, and acid mine drainage to the environment are realistic concerns in mine design and operation.
- A recent study of 25 modern large hard rock metal mines compared water quality outcomes
 - 76 percent (19 mines) of the 25 mines violated water quality standards

Anti Pebble



- The mineral rights and the project are controlled by Canadian, British, Australian and Japanese corporations.
- The mine may not provide significant tax revenue to the state.
 - Due to Alaska's tax structure,
 - Oil and gas drilling returns over 20%
 - Fishing returns 1% to 5%
 - Mining returns approximately 1.5%.

Pro Pebble



- Significant tax revenue to the state, possibly exceeding fisheries
- 2,000 jobs for construction, dropping to 1,000 permanent jobs during the 20+ year expected life span of the mine
- The mine would provide a domestic resource of raw materials lowering the United States reliance on foreign sources
- Much of the poor environmental track record of mining occurred before current technologies and regulations
- Northern Dynasty has a "no net loss" policy for fisheries

Current Status

- The project is on hold after the loss of funding partners in 2013
 - Anglo American walked away \$541 million
 - Global mining giant Rio Tinto gifted its 19.1% in Pebble
- EPA imposed section 404 of clean water act – July 2014
 - “The mine would cause irreversible and unacceptable damage to the Bristol Bay salmon ecosystem”
 - Effectively Prohibiting the project
- Pebble Partnership - continue litigation against EPA

Mount Polly Tailings

- 2014 Tailings Dam failed
- <http://globalnews.ca/video/1491048/aerials-of-destruction-caused-by-mount-polley-mine-tailings-pond-breach-2>



19

Sep 2014

AFS Comments on USEPA Pebble Mine

 sarah  AFS in Action  0 Comment

[Click to download the AFS comments on USEPA Pebble Mine PDF.](#)



American Fisheries Society

Organized 1870 to Promote the Conservation, Development and Wise Utilization of the Fisheries

5410 Grosvenor Lane, Suite 110 * Bethesda, Maryland 20814-2199

301-897-8616 * FAX 301-897-8096 * E-Mail: main@fisheries.org, www.fisheries.org

Donna Parrish
President 2014-2015

Douglas J. Austen
Executive Director

Date: 19 September 2014
To: USEPA Region 10
Subject: Pebble Mine Comments; Docket # EPA-R10-OW-2014-0505
From: Douglas Austen, Ph.D.

AFS Comment

The modern Mount Polley Mine tailings dam is the same type of tailings dam proposed for Pebble Mine, and it was designed and built by the same engineering firm that designed the Pebble Mine dams, *Knight Piesold*

However, the Pebble mine and dams are proposed to be over 100 times larger than Mount Polley and in a geologically and hydrologically less stable area

Small amounts of copper are bad for fish < 5ppb

Pebble & Management

- Weigh in on permitting
- Conduct studies to examine impacts
- Develop ideas to mitigate impacts

Break!

Another type of Management

- Adaptive or Co-management
 - Also called: participatory, collaborative, joint, mixed, multi-party or round-table management
- a situation in which two or more social actors negotiate, define and guarantee amongst themselves a fair sharing of the management functions, entitlements and responsibilities for a given territory, area or set of natural re-sources

Historical Resource Management

- In past (Long past)
 - Closed systems
 - Managed through complex interplays
 - Community property wide spread
 - Important in cohesion and sustainability of traditional mgmt. systems
 - Local knowledge and skills were important
- local communities tended to create themselves around a body of natural resources that they could manage together

Historical Resource Management

- *In traditional societies the units of natural resource management and the units of social life tended to coincide*
- Emergence of colonial powers and nation states
 - Violent assumption of authority over common lands and natural resources
 - Dukes & Lords hunting lands in Europe
- Demise of traditional resource management
 - Scientists conduct science
 - Took away from local resource knowledge
 - Disempowerment & loss of responsibility for resources

Historical Resource Management

- Local communities began to not trust state or federal representatives
 - People tried to protect themselves and gain access to natural resources
 - Laws & Lawsuits
 - Power struggles
 - Violence
 - Some tried to negotiate (help of businesses governments)
 - Some realize co-operation is necessary for NRM effectiveness and efficiency, and agree to pursue that cooperation in the interest of everyone

Adaptive / Co-management

Goals:

- Social justice & Equality
- Sustainable use of Natural Resources
- Community based and run initiatives

Adaptive/Co management - Pros

- We need equity, social justice and democracy in natural resource management. The people paying the price of conservation and “development” need a voice in decision-making
- Effective management needs the knowledge, skills, resources and comparative advantages of a variety of stakeholders
- What is the alternative?
 - Endless conflicts between stakeholders and destructive natural resource practices?

Adaptive/Co management - Cons

- The Process is long and expensive. We need to invest in other priorities.
- We cannot compromise conservation goals
- CM is politically biased

Adaptive Principles

- Recognizing different values, interests and concerns involved in managing a territory, area or set of natural resources, both outside the local communities and within them
- Being open to various types of NRM entitlements beyond the ones legally recognized (such as private property or government mandate)
- Seeking transparency and equity in natural resource management
- Allowing the civil-society to assume ever more important roles and responsibilities

Adaptive Principles

- linking entitlements and responsibilities to natural resource management
- appreciating that the process is more important than the short-term products
- learning-by-doing through on-going revisions and improvements in NR management

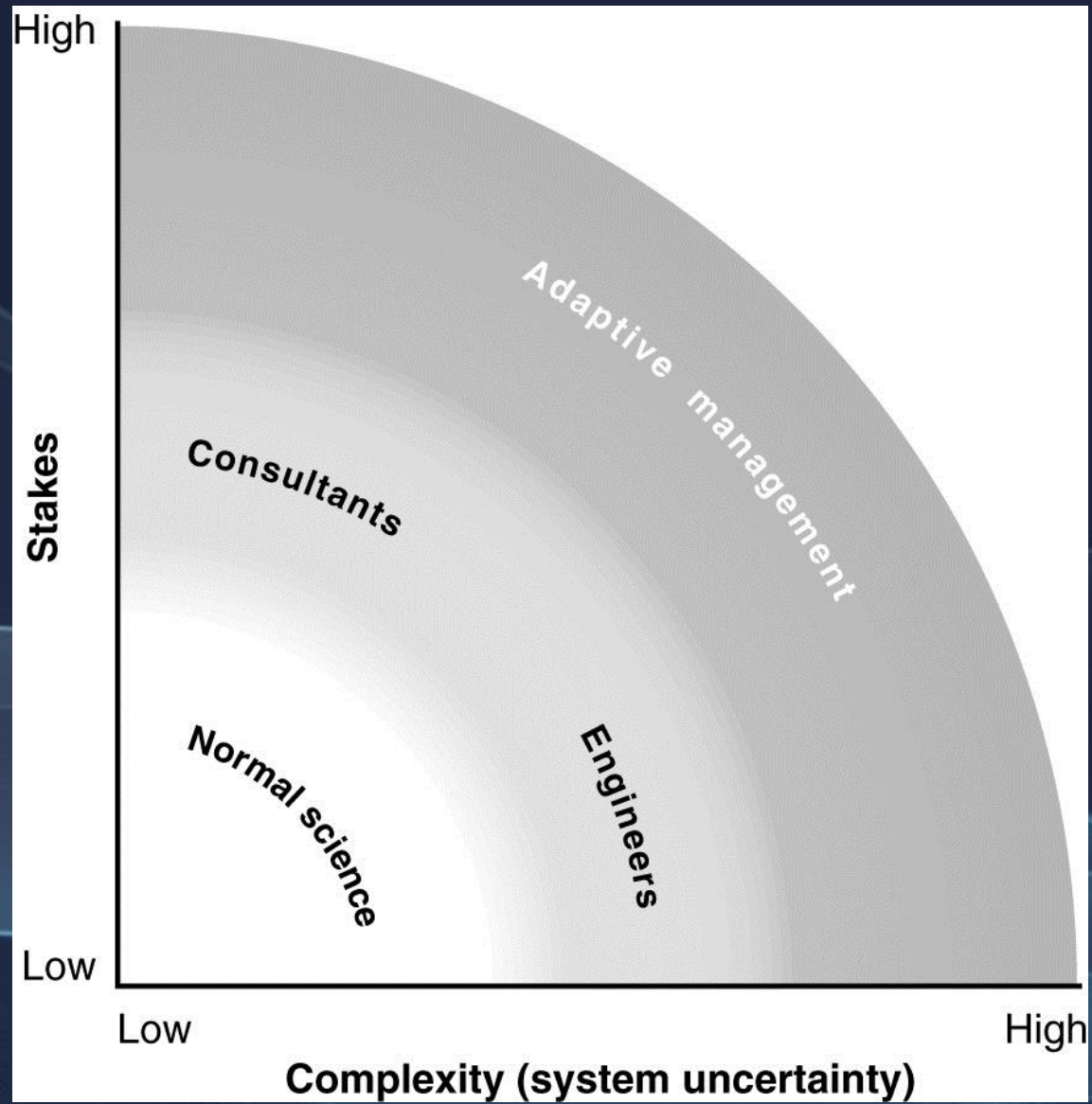
Adaptive / Co Management

- **Adaptive management** – three main steps
- 1. assembly – all interested parties build consensus among stakeholders
- 2. Monitoring program is established to make management best it can – what is working what is not
 - Often involves indicator species (those that are abundant, sensitive to some env stress of interest, easy to observe, early warning of env degrad)
 - May also involve chem and physical data collection
- 3. adaptation – what have we learned and how do we adapt management for better outcome?

Adaptive Management

- A structured, iterative process of robust decision making in the face of uncertainty,
- Aims to reduce uncertainty over time via monitoring.
 - In this way, decision making simultaneously meets one or more resource management objectives and, either passively or actively, accrues information needed to improve future management

Adaptive Management



1. Conceptualize

- Define initial team
- Define scope, vision, targets
- Identify critical threats
- Complete situation analysis

2. Plan Actions and Monitoring

- Develop goals, strategies, assumptions, and objectives
- Develop monitoring plan
- Develop operational plan

3. Implement Actions and Monitoring

- Develop work plan and timeline
- Develop and refine budget
- Implement plans

4. Analyze, Use, Adapt

- Prepare data for analysis
- Analyze results
- Adapt strategic plan

5. Capture and Share Learning

- Document learning
- Share learning
- Create learning environment

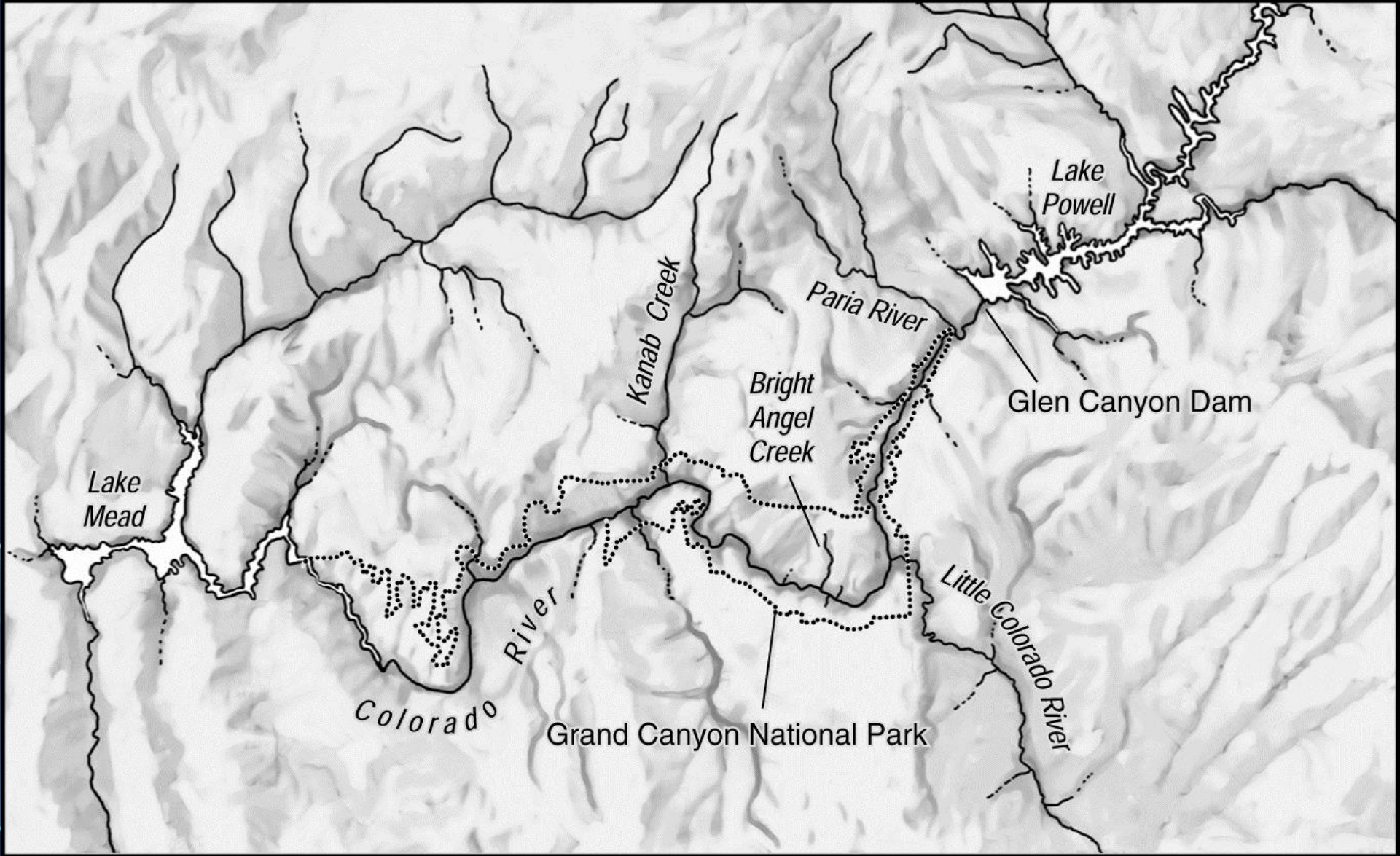
**Conservation
Measures
Partnership
Open Standards**

Glen Canyon

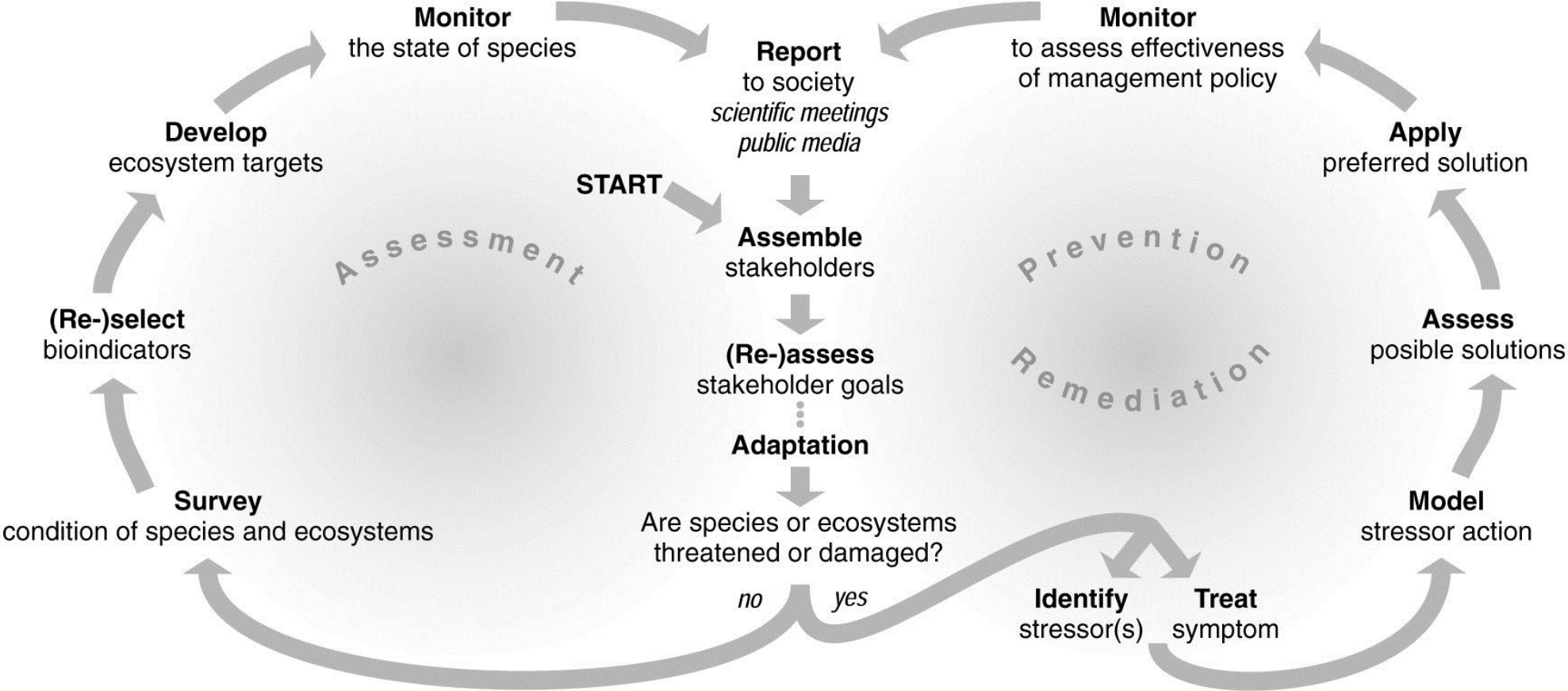


Lake Powell – Glen Canyon dam

- Lake Powell – Glen Canyon dam built in 1960s
 - water flow control initially for flood control water for ag and urban use
 - complexity of uses and biological systems
 - Adaptive Management
- USERS
 - hydroelectric generation
 - water for ag and urban uses
 - for recreation
 - trout fishery and native fish population maintenance
 - restoring beaches, sandbars for camping
 - maintaining plant communities to keep out invasive



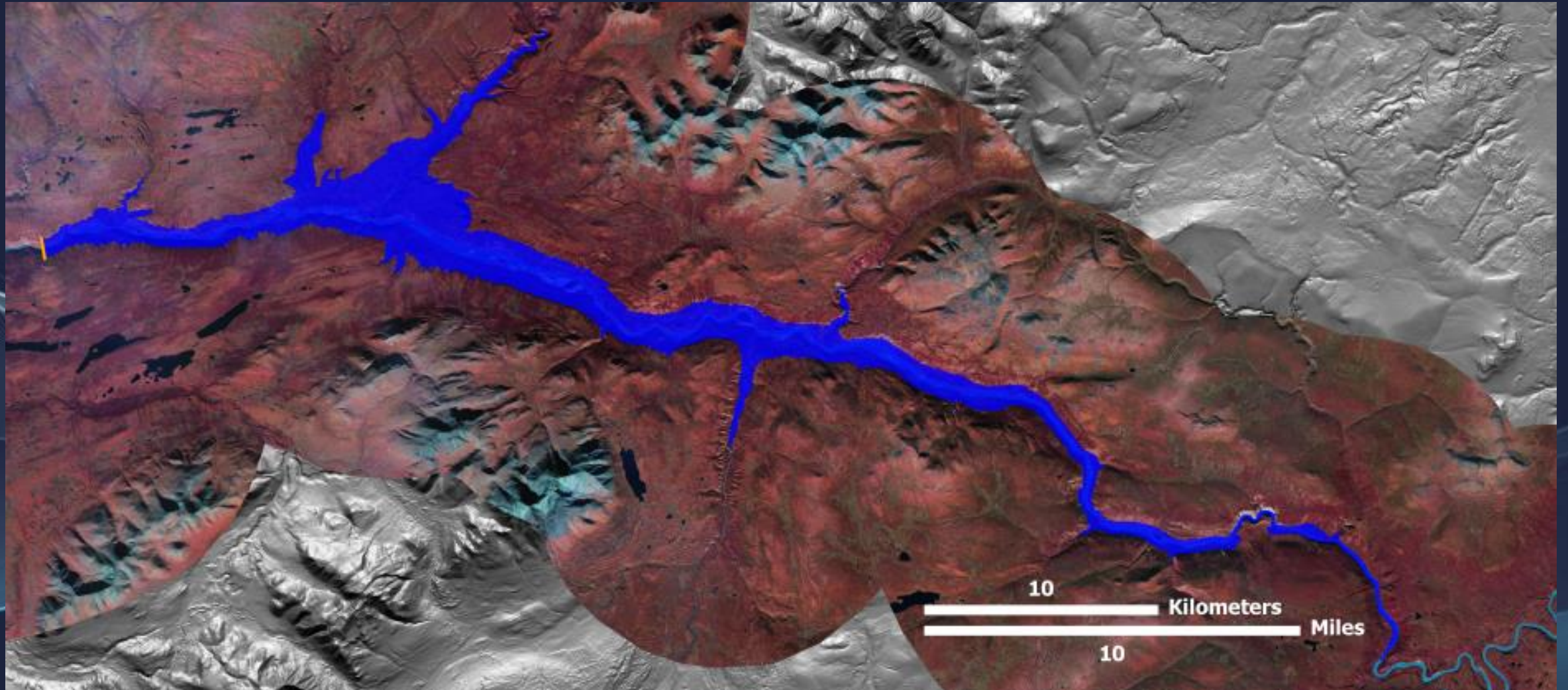
Ecological Adaptive Management Model



Susitna River Dam



SUWA Hydro



Susitna River Dam



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Join more than 15,000 people from Alaska and beyond in protecting the Susitna River Watershed.

JOIN US!

First Name

The second tallest dam in America has been proposed in the heart of a treasured Alaskan wilderness. It's a bad idea. Among the many negative impacts of damming the Susitna River would be:

- Wild salmon runs devastated – all 5 species of wild Alaska salmon

Susitna River Dam

- Fisherman
- Conservation Groups
- Energy Producers
- Energy Consumers



Just 1 Project

- There are hundreds of examples of this in Alaska

Who is involved in adaptive management?

- Govt?
- State?
- Industry?
- Citizens?
- Tribal?

Cook Inlet Keeper

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Protecting Alaska's Cook Inlet watershed
and the life it sustains since 1995.

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Take Action: Wild Salmon Need Water

Submit a comment NOW to tell DNR we want better "Fish First" regulations in Alaska.


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- DONATE [arrow]
- SHOP [arrow]

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- ▶ [Bringing the outdoors inside](#)
Thursday, April 14, 2016
 - ▶ [Cargill commits \\$243,000 to DU for New York wetland conservation](#)
Monday, April 11, 2016
 - ▶ [San Francisco Bay Project Benefits Waterbirds and People](#)
Thursday, April 07, 2016
 - ▶ [Newest DU Film Explores the Arkansas Timber](#)
Wednesday, April 06, 2016

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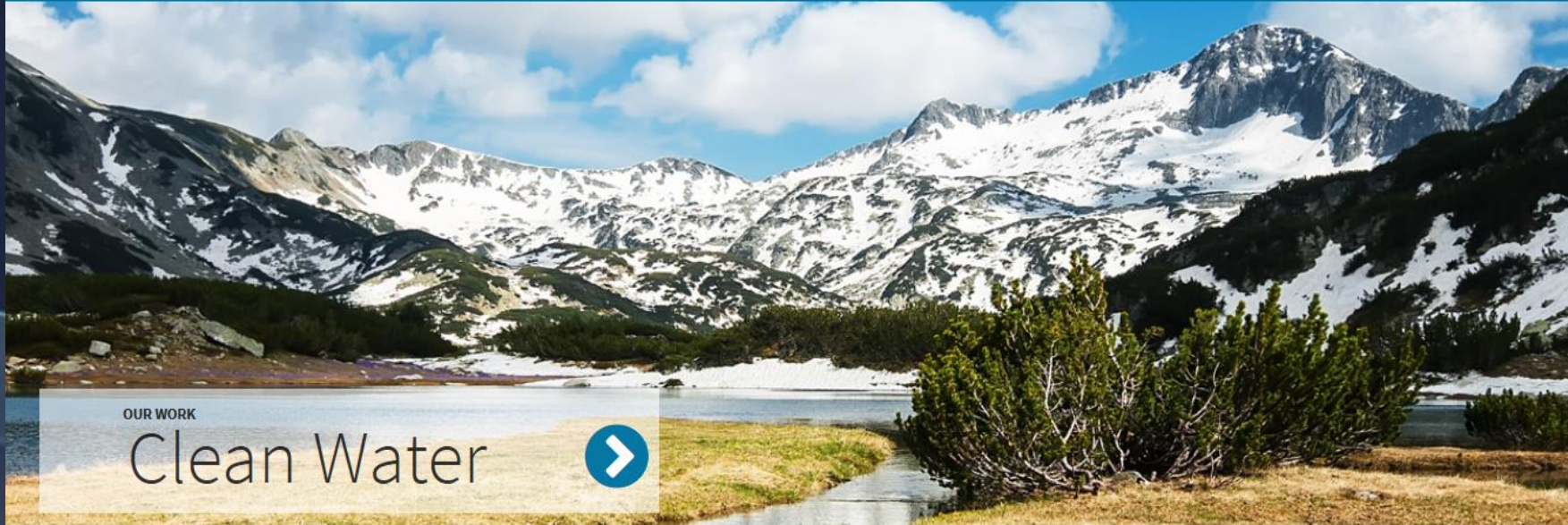
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Goodnight

The background features a dark blue gradient with several overlapping, flowing, light blue lines that create a sense of movement and depth. The lines are smooth and curved, resembling waves or abstract patterns. The overall aesthetic is clean and modern.