

The Brooks Range to Norton Sound Railroad

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Disclaimer

The concepts and ideas in this presentation are not necessarily supported or opposed by the companies, Native corporations or communities mentioned.

Developing the Coal Fields of Northwest Alaska

The Brooks Range to Norton Sound Railroad (BRNS-RR) will extend from the coal fields at the western end of the Brooks Range to Nome on Norton Sound of the Bering Sea. The primary purpose of the railroad will be to carry coal and metal concentrates from Northwest Alaska to a year-around deep water port site at Nome and carry fuel and supplies back to the mines and villages of the area.

Historical Context

1. **From late 1800s until World War II** - mining was Alaska's largest industry with the most jobs.
2. **From World War II until 1989** - effectively no lode (versus placer) mining in Alaska!
3. **From 1989 to Present** – continued steady growth.

Today – 6 large mines in Alaska; much exploration.

The Question: **Why so little mining today?**



Mining History Since WW II

At Start of World War II

- Presidential order closed all gold mines
- Needed miners and equipment for war effort

After World War II

- Some placer mining resumed
- Limited lode **exploration** resumed as metal prices allowed
- **Excess base metal production capacity in world**
- **Gold price fixed - but cost of wages and supplies continued to increase**
- Prudhoe Bay, ANCSA (44m ac), ANILCA (104m ac)
- Land and regulatory uncertainty

From World War II to 1989

- Effectively no lode/hardrock mining, some placer mining, some coal mining
- In 1989 Greens Creek & Red Dog began operating
 - **Proved to the world that a major mine could be permitted in Alaska!**
 - **Proved that all Alaska was not in a Park!**



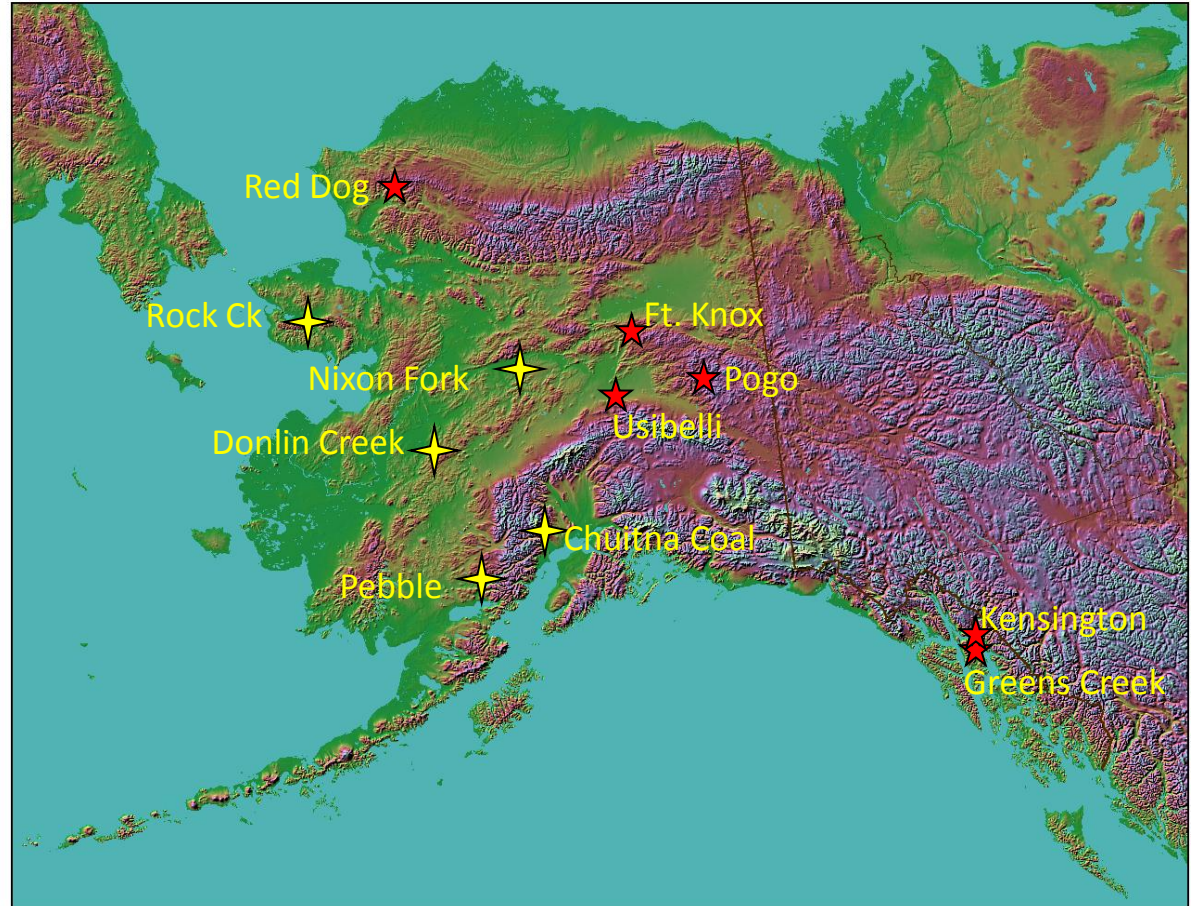
Alaska Major Mines and Projects



Producing mine



**Developing and
major
exploration
projects**



0 100 200 300 400 500 kilometers
0 50 100 150 200 250 300 350 statute miles

Stereographic
Central lat, lon, ang: 63.0, -149.5, 0.0

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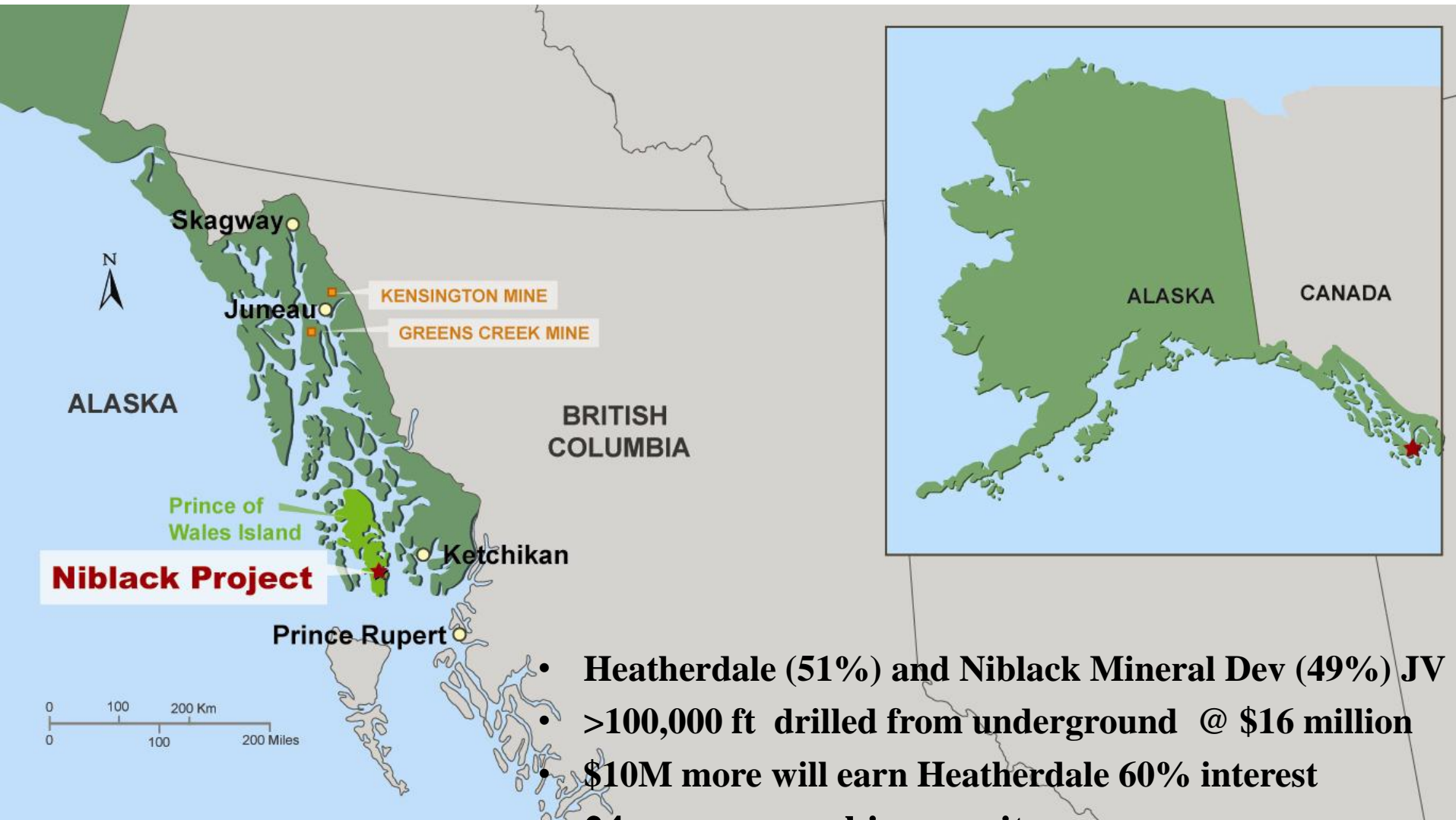
Map by Ray Sterner, John Hopkins Applied Physics Laboratory, licensed to North Star Science and Technology, LLC

Greens Creek Ship Loading Facilities



HEATHERDALE

RESOURCES LTD.



- Heatherdale (51%) and Niblack Mineral Dev (49%) JV
- >100,000 ft drilled from underground @ \$16 million
- \$10M more will earn Heatherdale 60% interest
- 24 persons working on site
- \$50 million invested through 2010

Niblack Project



Kensington Mine





RDC Board at Lower Slate Lake

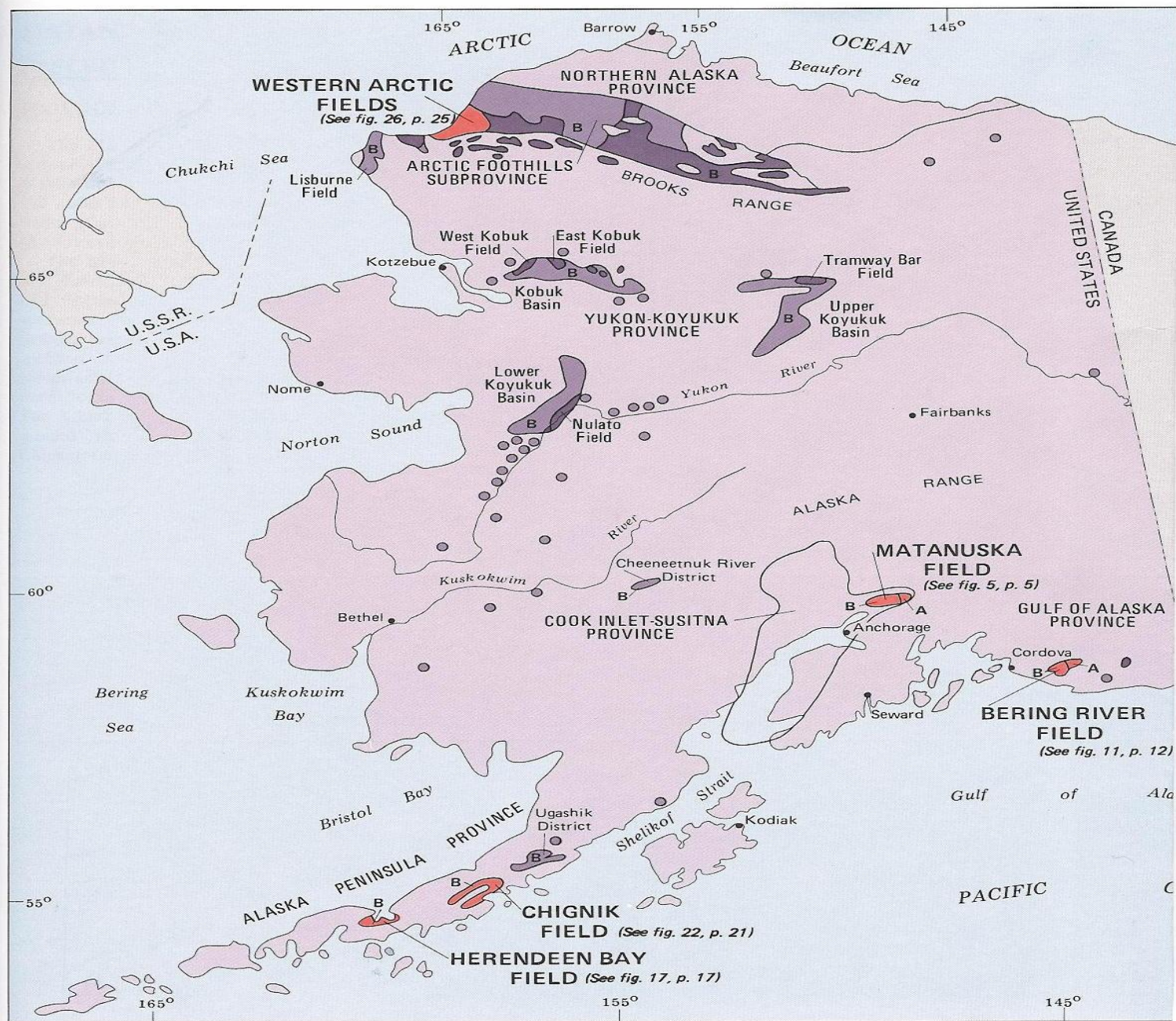
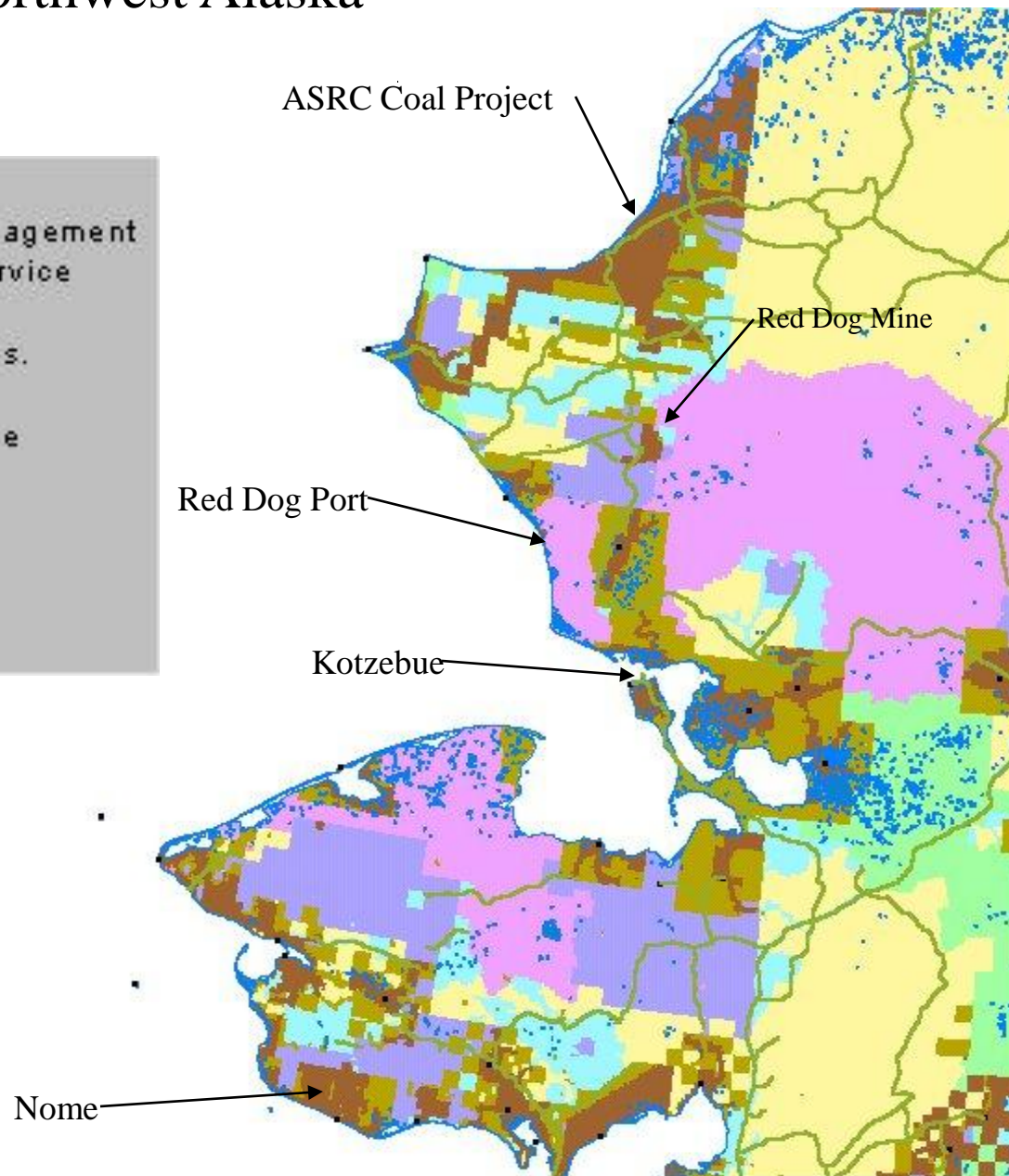
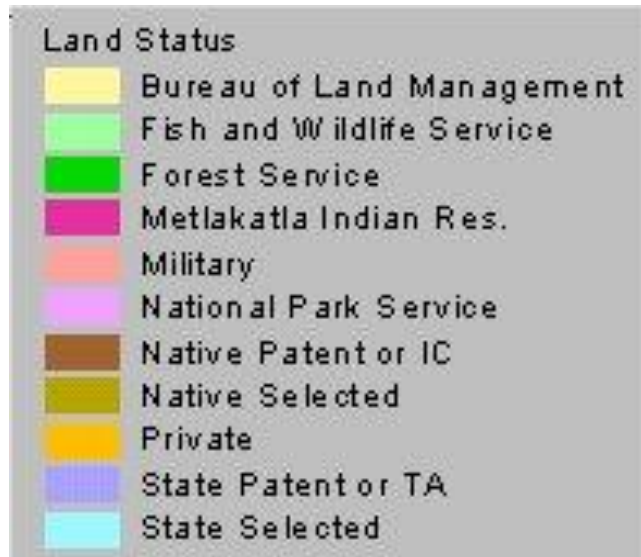


Figure 2. Map showing the general distribution of Alaska's high-rank coal deposits (modified from Merritt and Hawley, 1986).

Northwest Alaska



The BRNS-RR is One of Several Major Components of the Overall System

- **Acceptance by Native residents of the area**
- Private fee simple coal owned by ASRC
- One to five large coal mines
- Mine-mouth coal-fired power plant
- Government “authority” bonding capability for the railroad
- Approximately 350 miles of railroad
- Privately owned gravel of Alaska Gold Co.
- Large area of private land at Nome
- Storage area at Nome to accommodate up to possibly 12 separate bulk commodities with stacker/reclaimers for coal, gravel, concentrates, etc.
- Storage at Nome for bulk fuel, explosives, containers, etc.
- Conveyor and trestle from storage area 5,000(?) ft to 65 ft water depth for Cape-class vessels

Other System Components Include

- Red Dog Mine, mine expansion and Zn Hydro-Leach with Electro-Winning to produce Zn ingots at minesite
- Red Dog port and expansion of the port
- Rail spur to Red Dog Mine
- Rail sidings for villages and passing
- Rail spur to Ambler copper district
- Rock and gravel quarries on Village and Regional Corporation Lands
- National Parks, Preserves, Monuments, Wilderness
- Jones Act

Alaska's High-Rank Coals

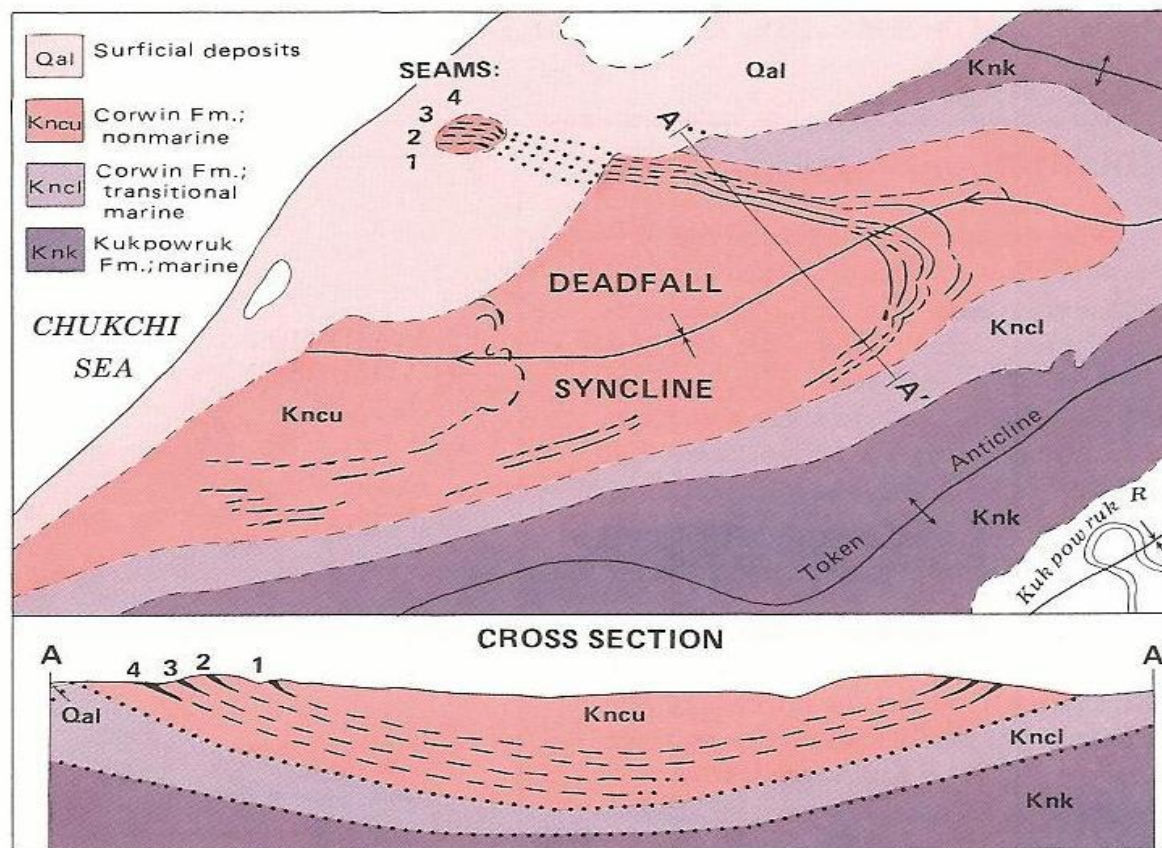


Figure 29. Geologic map and cross section of the Deadfall syncline, Western Arctic region (modified from Callahan and Eakins, 1987).

Table 1. *Estimate of identified and hypothetical resources of Alaska's high-rank coals (in millions of tons).*

| | <u>Identified</u> | <u>Hypothetical</u> |
|-------------------|-------------------|---------------------|
| Deadfall syncline | 500 | 5,000 |
| Cape Beaufort | 390 | 1,700 |
| Kukpowruk River | 275 | 1,200 |
| Chignik | 230 | 1,500 |
| Bering River | 160 | 3,500 |
| Herendeen Bay | 130 | 1,500 |
| Wishbone Hill | 120 | 350 |
| Chickaloon | 25 | 100 |
| Anthracite Ridge | 4.5 | 50 |
| TOTALS | <u>1,834.5</u> | <u>14,900</u> |

Three Immediate Independent Parts Before BSNS-RR

- Natural gas/ shale gas for electrical power generation at Red Dog
- Red Dog Port dredging and expansion
- Gravel mining and export shipping from Nome
 - SFO will require >100,000,000 tons of gravel over 10 years
 - Inquiries from Asian countries
 - Jones Act exemption to allow shipment of “*non-petroleum bulk natural resources from Alaska*” on non-Jones Act vessels

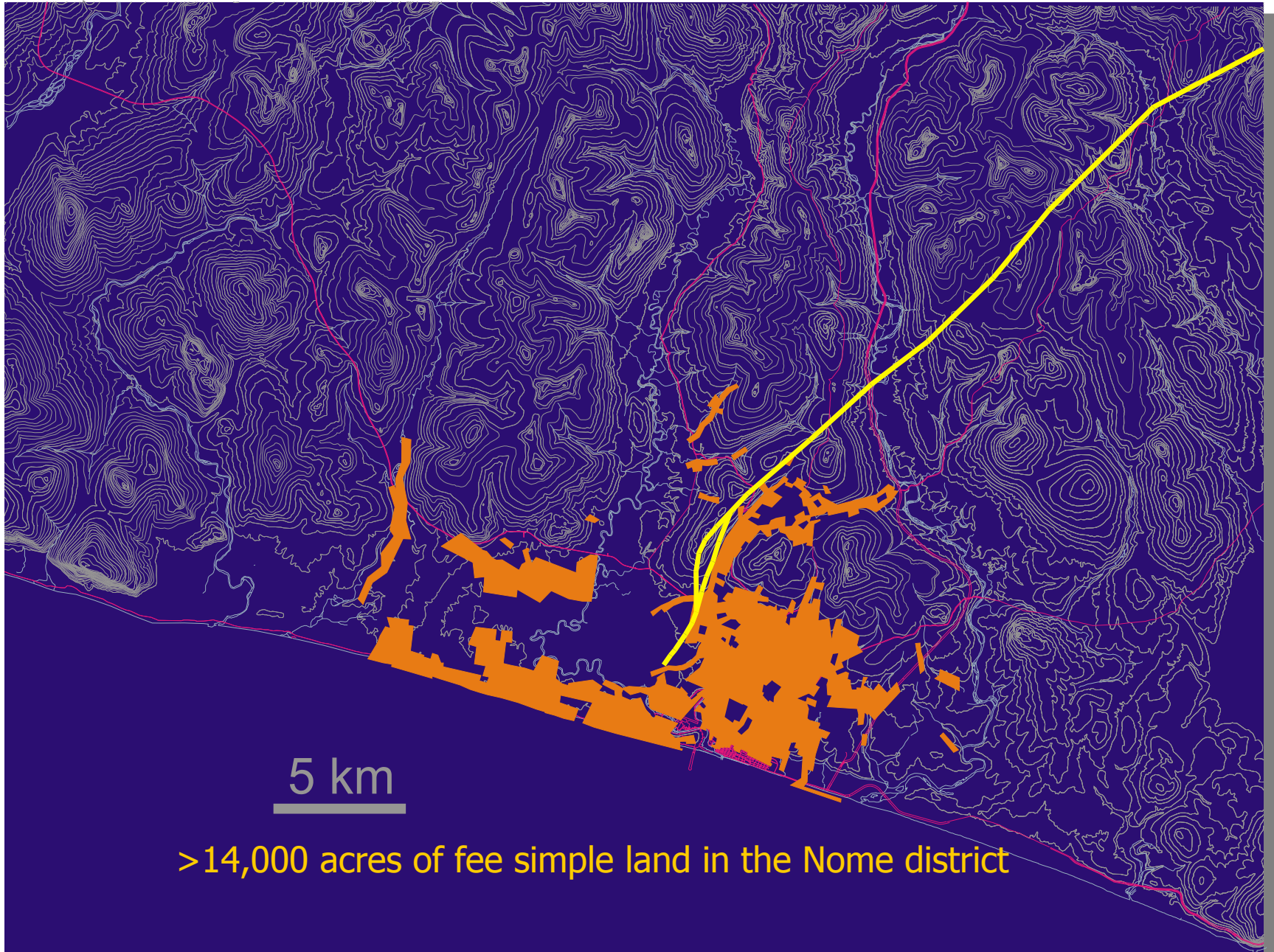
Nome, Alaska

Oblique View Looking North



Slide Courtesy of Alaska Gold Co.

NovaGold Land Owned at Nome







Red Dog Mine

- Aqqaluk permits received May 2010
- First concentrates shipped Sept 2010

Red Dog Statistics

- 550 employees and full time contractors
- 56% NANA shareholder hire
- \$50M annual mine wages & benefits
- \$7M paid to NWAB
- +\$50M taxes paid to State







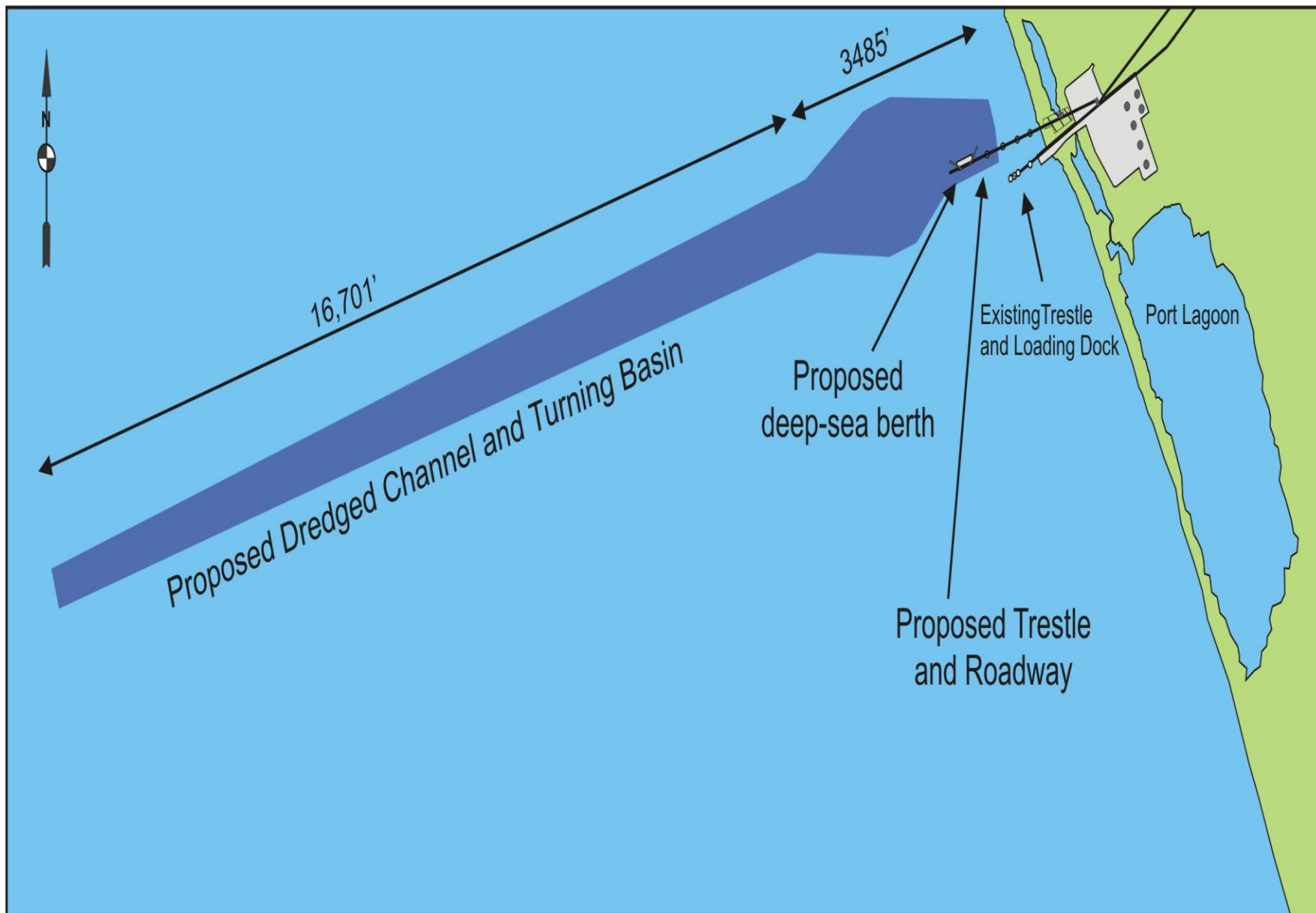
Interdependent Parts

Red Dog Mine & Port Expansion and ASRC Coal Mine

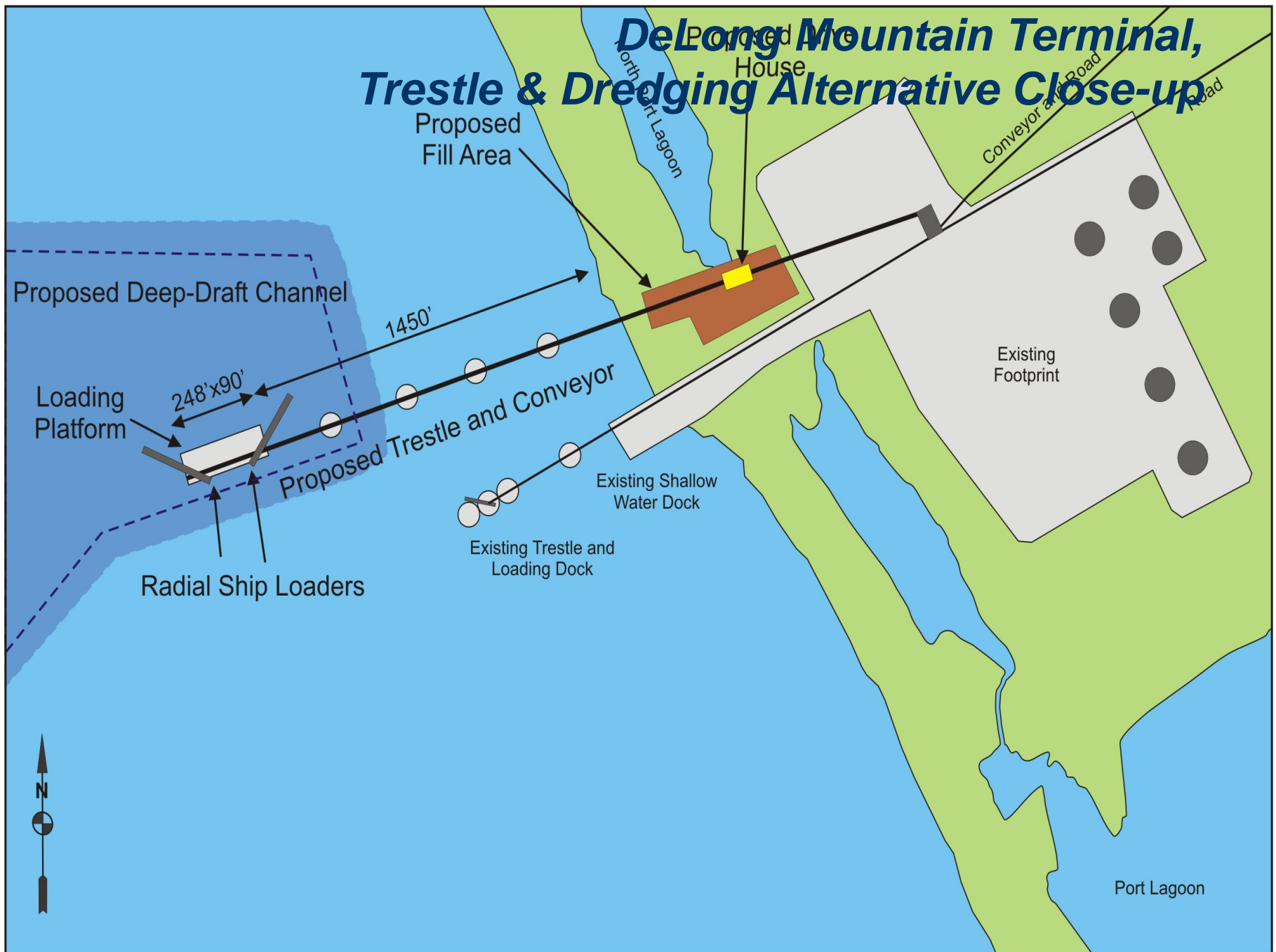
- Red Dog Mine expansion and Zn Hydro-Leach with Electro-Winning (low grade ores & reprocess tailings?)
- Red Dog Port dredging and expansion
- Western Arctic Coal Project – ASRC coal mine
- Mine-mouth coal-fired power plant
- Powerline from plant to Red Dog Mine
- Road from coal mine to Delong Mountain Transportation System (DMTS, the Red Dog Road)
- Large test shipments of coal from ASRC coal mine
- Powerline to Kotzebue and to Ambler Copper District







Delong Mountain Terminal, edging Alternative Close-up



One Coal Mine Will Not Justify the Railroad

- ASRC privately owned fee simple coal!!
- ASRC coal mine with potential of 10,000,000 tons/year for 30 year mine life
- Lease four or more other areas, each with potential for 10,000,000 tons/year for 30 year mine life
 - Go to all the major coal companies
 - Lease with minimal fee but with exploration requirements
- To justify cost of railroad
- Then 10 U.S. Senators and many Congressmen – An Act of Congress to cross Conservation System Units

Brooks Range to Norton Sound Railroad

Connect the Parts

- ASRC Privately Owned Fee Simple Coal
- Port facility at Nome
- **Added Challenge:** Build the railroad without crossing any Federal Conservation System Unit



Alaska's High-Rank Coals

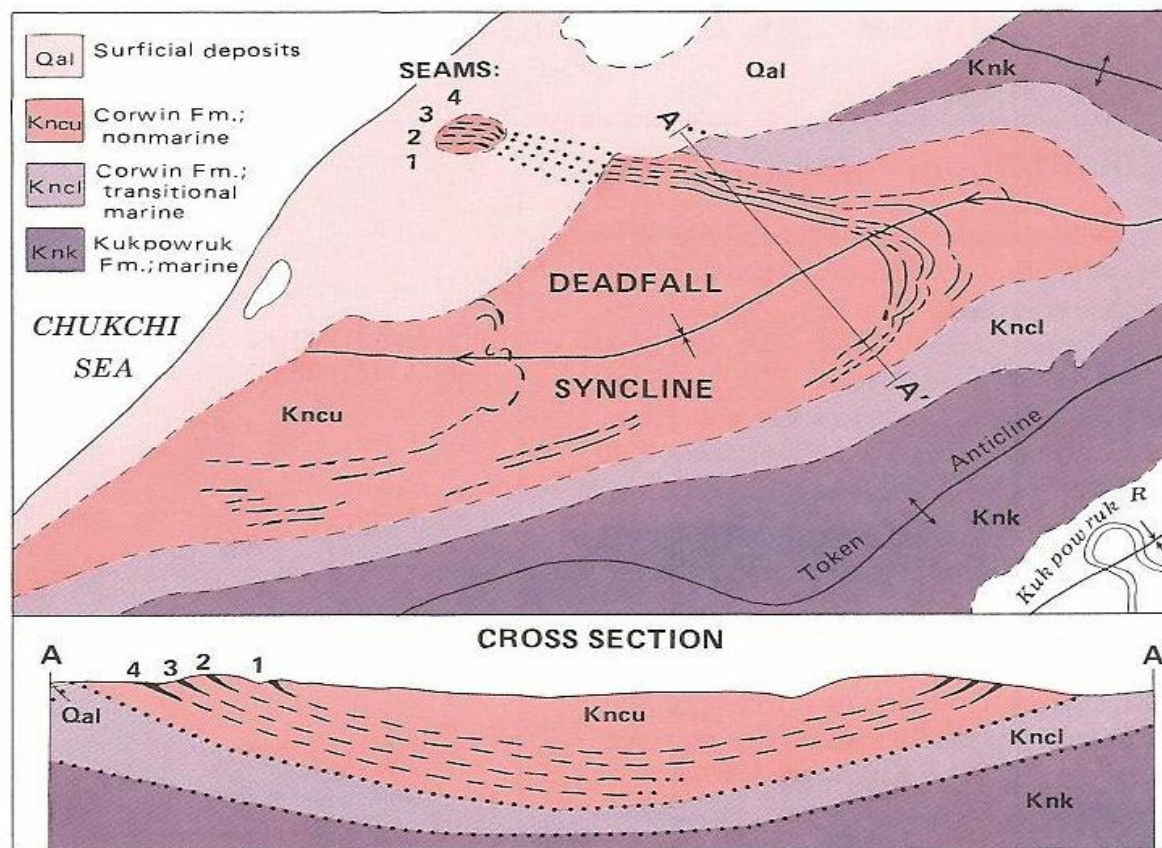


Figure 29. Geologic map and cross section of the Deadfall syncline, Western Arctic region (modified from Callahan and Eakins, 1987).



The broad synclinal structures of the Western Arctic Coal Field lie close to tidewater and resemble a layer cake tipped on its side.



James Magdanz

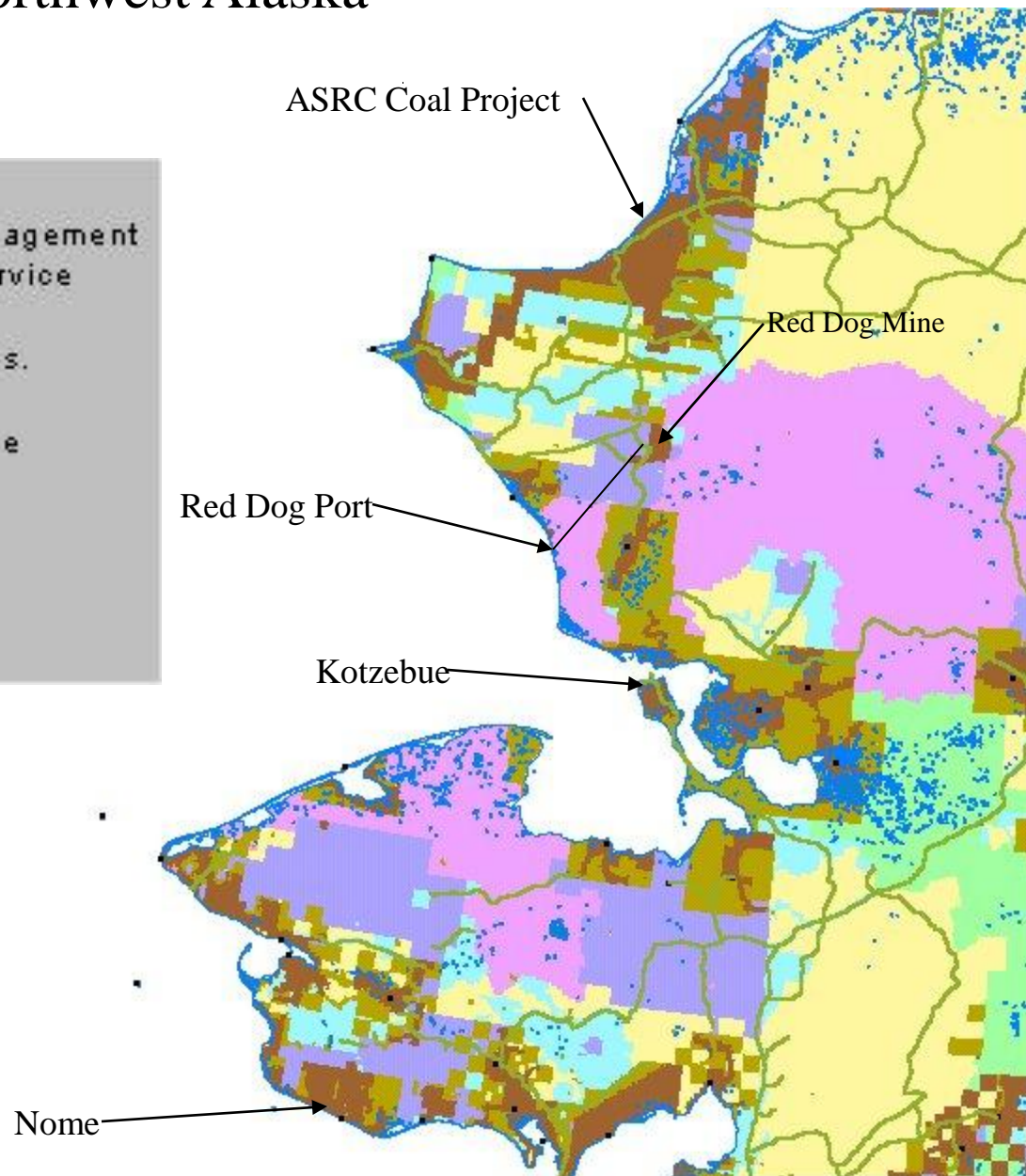
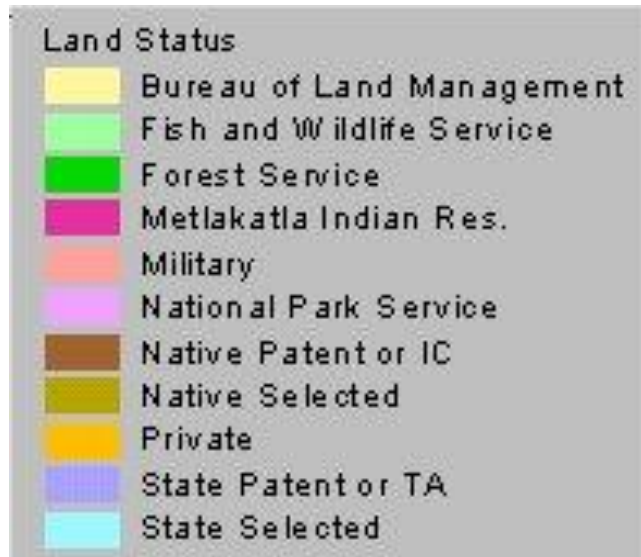
Extraction site at Deadfall Syncline overlooks Omalik Lagoon and the Chukchi Sea. A federal matching grant will help fund research on the impacts of permafrost on mining in Alaska's Arctic.

Brooks Range to Norton Sound Railroad

Connect the Parts

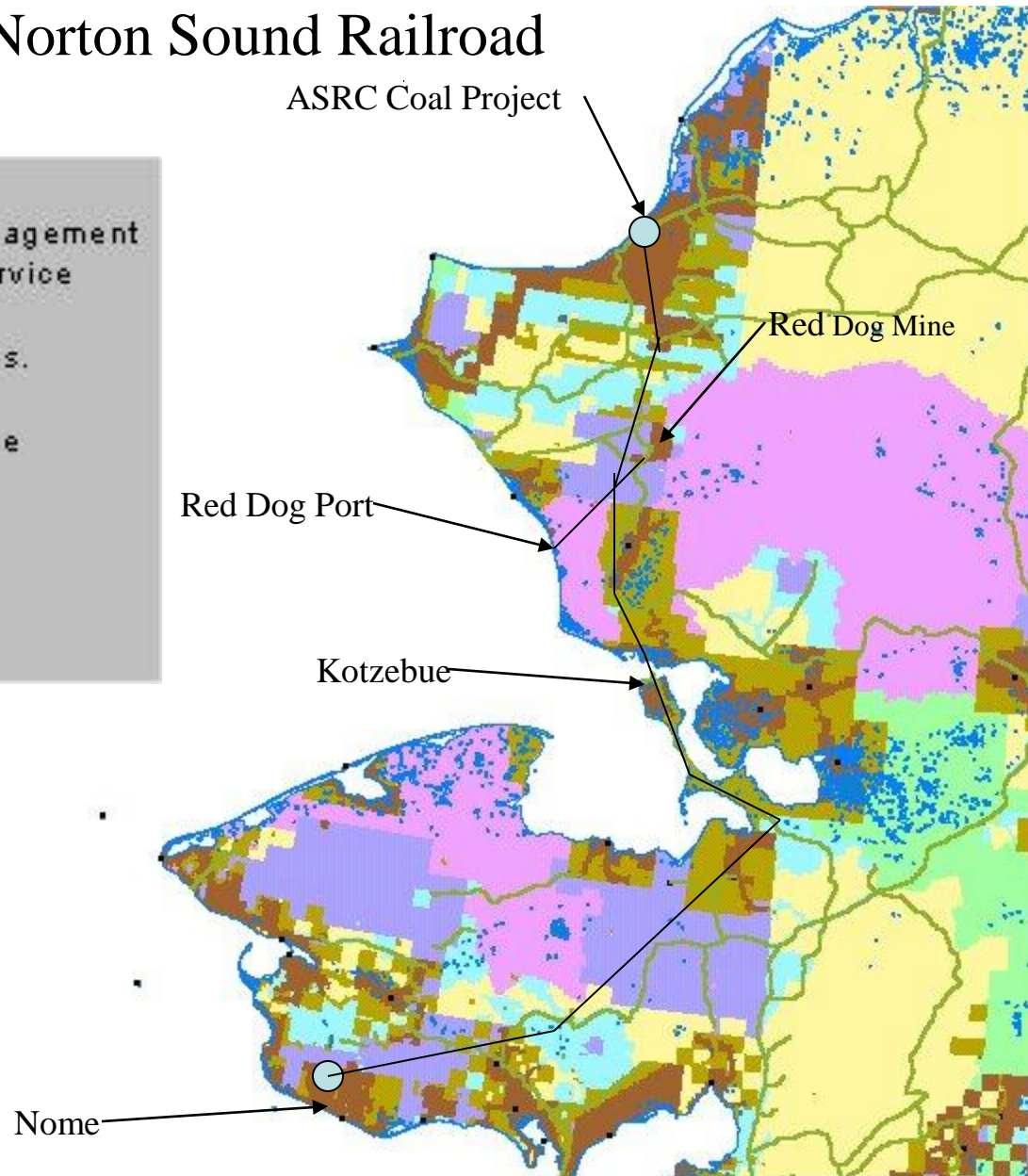
- **Build the railroad - without crossing a Federal Conservation System Unit**
- **Can it be done?**

Northwest Alaska



Northwest Alaska

Brooks Range to Norton Sound Railroad

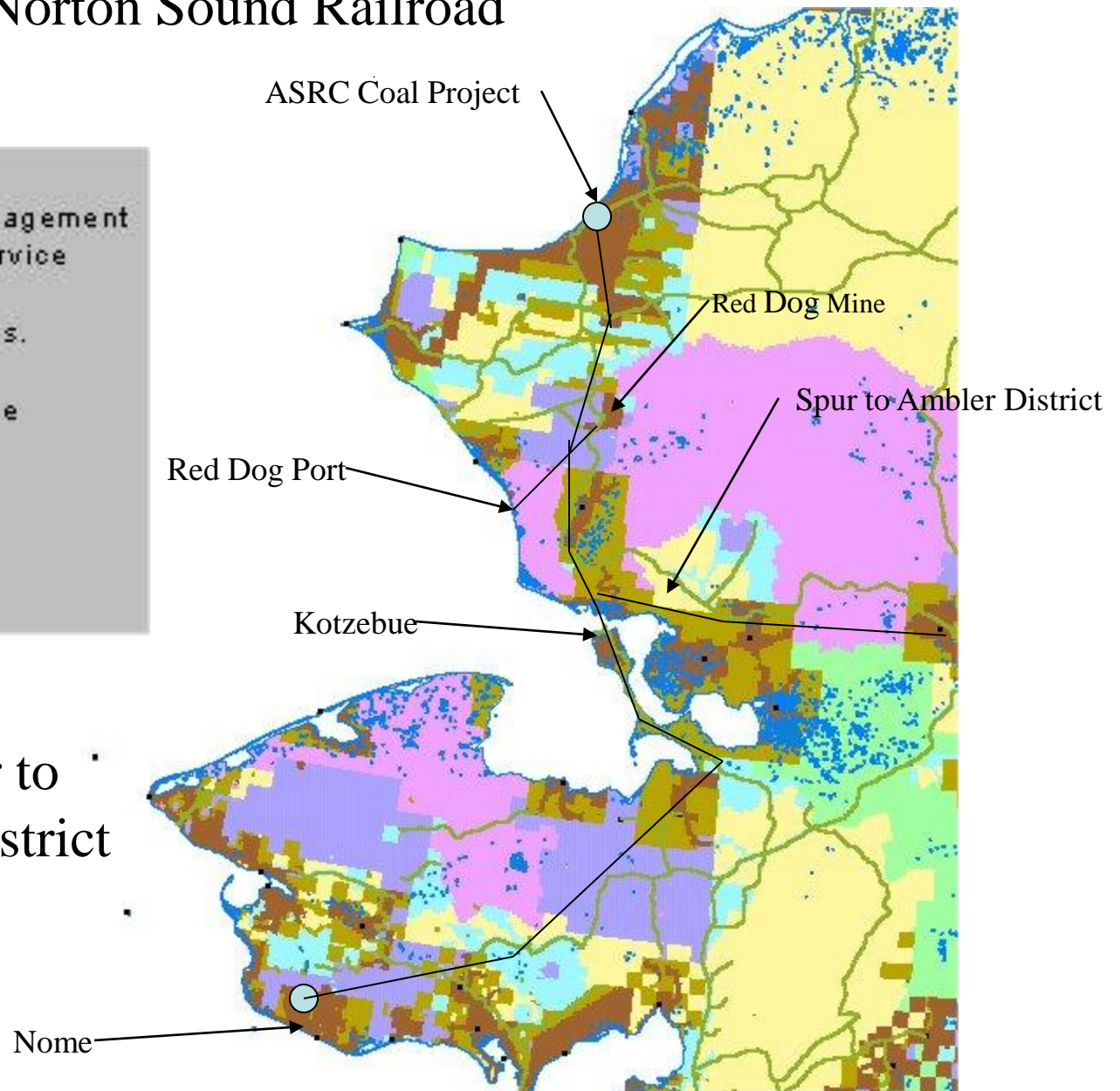


Northwest Alaska

Brooks Range to Norton Sound Railroad



Add Railroad Spur to
Ambler Copper District



Tax, Rent and Royalty History for Locatable Minerals

(Locatable = Cu, Ni, Zn, Pb, Au, Ag, Pt, U, REEs)

1. The Mining License Tax was first enacted by the Territorial Legislature in 1913.
2. 1981 - the State AG questioned state policy under Section 6(i) of the State Constitution.
3. 1981/82 - Legislature worked on modifications.
4. 1983 to 1987 - litigation over the 6(i) issue.
5. 1987 - Alaska Supreme Court ruled rents **or** royalties are required.
6. 1989 - Legislature enacted **both** rents **and** royalties.

Taxes presently paid by Alaska mining industry

1. A Mining License Tax (MLT) at **7% net profits tax** applies to all mining regardless of land ownership. MLT is **over and above the corporate tax paid by other industries**.
2. On State land, there is an additional **3% net profits royalty**.
3. Claim rentals are paid on state (escalate over time) and federal lands.
4. For coal on State land there is a **5% gross royalty**.
5. For industrial minerals (sand, gravel, stone) on State land there is a **3%? gross royalty**.
6. Alaska Corporate Income Tax is **9% net profits** for all industries.
7. Payments to local governments - for property taxes, sales taxes, direct payments, payments in lieu of tax, etc.

Net v. Gross Taxation – the Greens Creek Example

- Greens Creek began operating in Feb 1989.
- Greens Creek was immediately the largest tax payer in the Juneau Borough and had the 300 highest paying jobs in SE Alaska.
- In 1995 the mine was idled due to metal prices and high production costs.
- The mine was idle for 1.5 years.
- IF there had been a gross tax (severance tax or NSR) with a charge on every pound, ounce, etc.
 - 1) the mine would have been idled sooner, and
 - 2) it would have been idle longer.

However, the owners Kennecott/Rio Tinto and Hecla, strongly considered closing the mine and reclaiming it. If there had been a gross tax that would be even more likely.

1996 to present = 15 years of local taxes and 300+ jobs would have been lost. Likely +50 years more mine life.

