

Basic Facts

Claim-Patent System

- Hardrock mining: gold, silver, etc.
- NV (45%), AZ, CA, MT, WY (35% combined)
- About 290,000 existing claims (1998)
- 3.3 million acres have been patented

Leasing System

- Fossil fuels, fertilizer and chemical, outer continental shelf, geothermal resources
- About 570 million acres open for oil/gas leasing in all 50 states; 301 million in 12 western states

General Patterns

- Open access and local miner institutions
- Increasing corporatization of mining, as minerals become more scarce (e.g., placer to lode)
- Restrictions on allowable minerals (patent versus leasing)
- Restrictions on types of land
- Restrictions on allowable activities

Early Years

- Sutter's Mill, 1848: American River placer discovery starts gold rush ('49ers)
- Mining major component of Western economy in mid- to late-1800s
- Miner's Code: Some type of property security required to provide incentives for investments
- Development of local regulations is example of closing an open access regime
- Miner's Codes written into state law, and eventually into Federal law

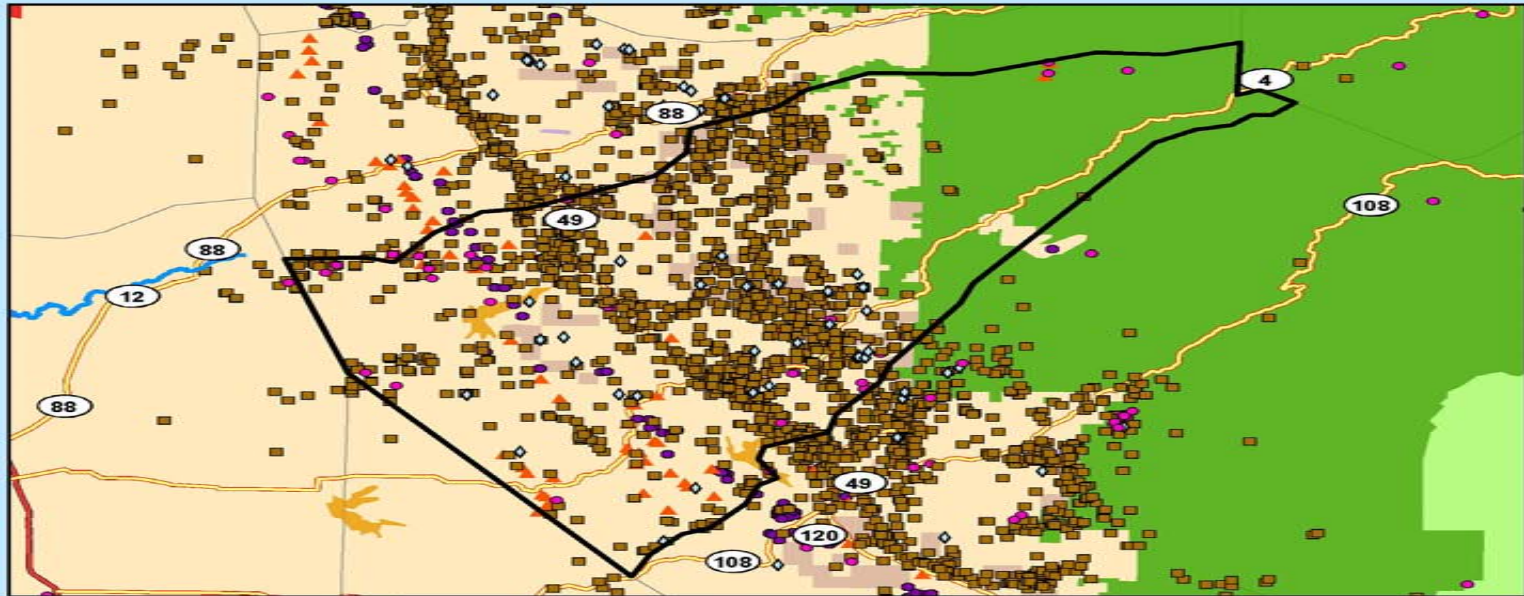
Hardrock Mining

General Mining Law of 1872

- Location: Establishing physical boundaries of claims; \$25 location fee
- Discovery: Proving existence of a “valuable” mineral deposit (Courts have decided meaning)
- *Pedis possessio*: Location activities serve as claim as long as they are not abandoned
- Unpatented mining claims: Real property interests, mining activities allowed; most mining occurs on unpatented claims
- Diligence requirement: Unpatented mining claims require \$100 annual maintenance fee (BLM administrative policy); goes to \$125 in 2004
- Patent: Obtaining title to the land; \$250 application fee; \$2.50/acre for placer; \$5/acre for Lode (Pombo proposal changes to \$1000/acre)
- 1989 GAO study: 20 patents issued since 1970 generated \$4500 of gov’t revenue, but worth over \$20 million
- Current Congressional riders place moratorium on issuance of new patents (Pombo proposal ends this)
- Hardrock mining operations pay ZERO royalties to the gov’t
- Milling site debate: How much land is allowed?
- Reclamation

Abandoned Hardrock Mines and Waters Polluted by Metals

Calaveras County, CA



1:725,114

Counties with the Greatest Number of



Abandoned Hardrock Mines

Legend

- | | |
|--|--|
| <ul style="list-style-type: none"> Cities Impaired Water Areas Impaired Water Segments Abandoned Hardrock Mines All Others Chromium Copper Gold Manganese Road Classification Limited Access Highway Highway | <ul style="list-style-type: none"> Federal Lands Tribal Lands Bureau of Land Management Bureau of Reclamation Department of Defense Forest Service Fish and Wildlife Service National Park Service Other Agencies (NASA, DOE, DOT...) Counties |
|--|--|



MINERAL
POLICY
CENTER

A Project of the
Mineral Policy Center
Map by Ali Steimke
May 2002

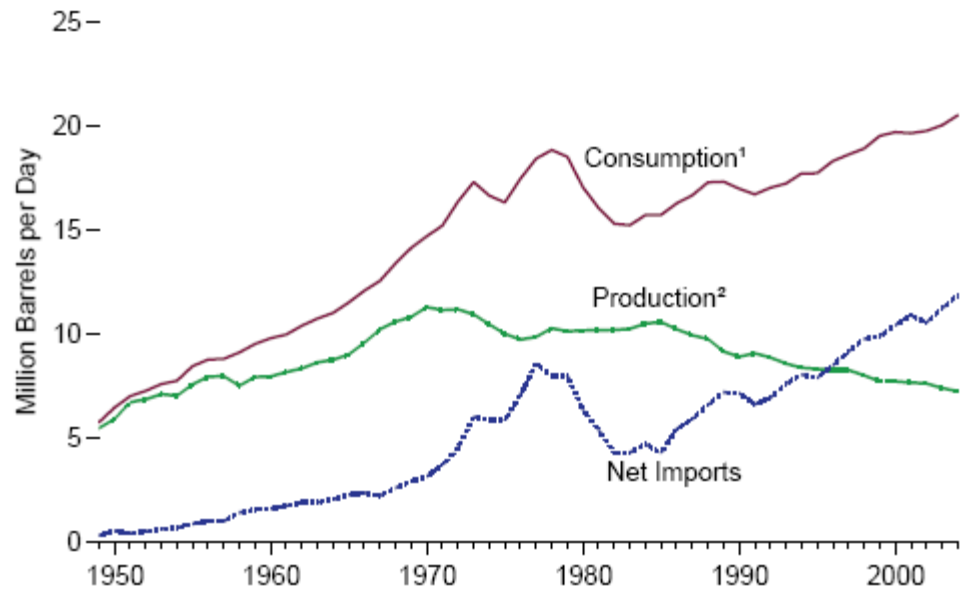
Controversy: New World Gold Mine in Montana

- 3 miles east of Yellowstone, next to Absaroka-Beartooth Wilderness area
- Crown Butte's New World mine would have produced an estimated 1,800 tons of gold/silver/copper ore per day (500,000 tons annually), valued at nearly \$800 million over a 10-15 year period
- Project planned on a mixture of public (Forest Service, which must approve mining operations) and private land (patented under 1872 law)
- Project abandoned in face of public opposition
- Land exchange where Federal government acquires New World public AND private land interests, in exchange for \$65 million dollars of public land elsewhere

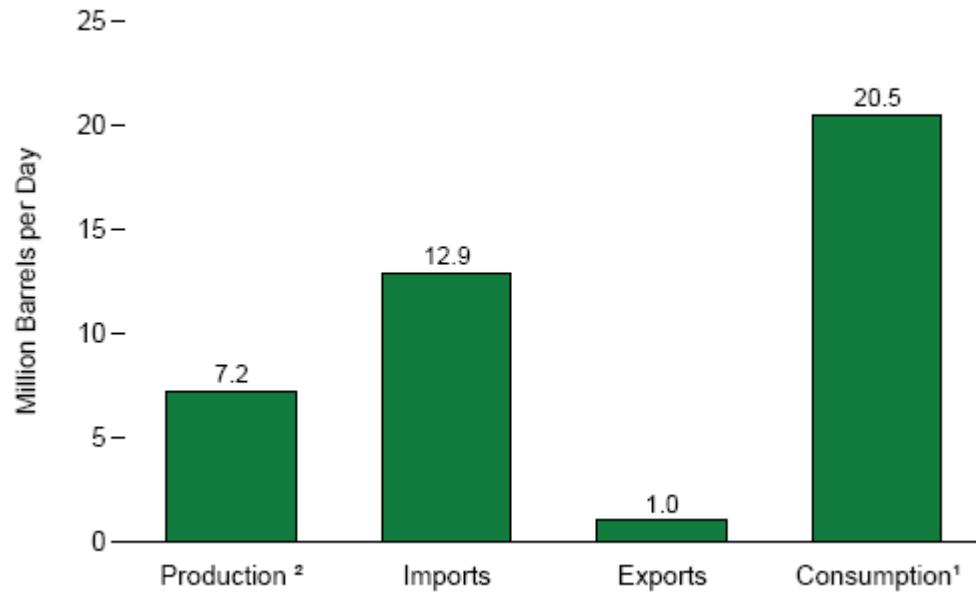
Energy Supplies on Federal Lands

- 2005: US consumed 7.7 billion barrels in 2005; 60% imported; 5% of domestic supply from onshore Fed lands; approximately 20 million barrels per day
- 21.2 billion barrels of oil are estimated to be undeveloped on Federal land; 17.1 Bbbl in Alaska=2.7 years of supply
- 2005: US consumed 22 tcf of natural gas; 18% imported; onshore public lands provided 16% of domestic production
- 186.9 trillion cubic feet of undeveloped natural gas estimated to be on Federal land=8.5 years of undeveloped supply
- All of this refers to technically recoverable resources, which is always higher than economically recoverable

Overview, 1949-2004



Overview, 2004

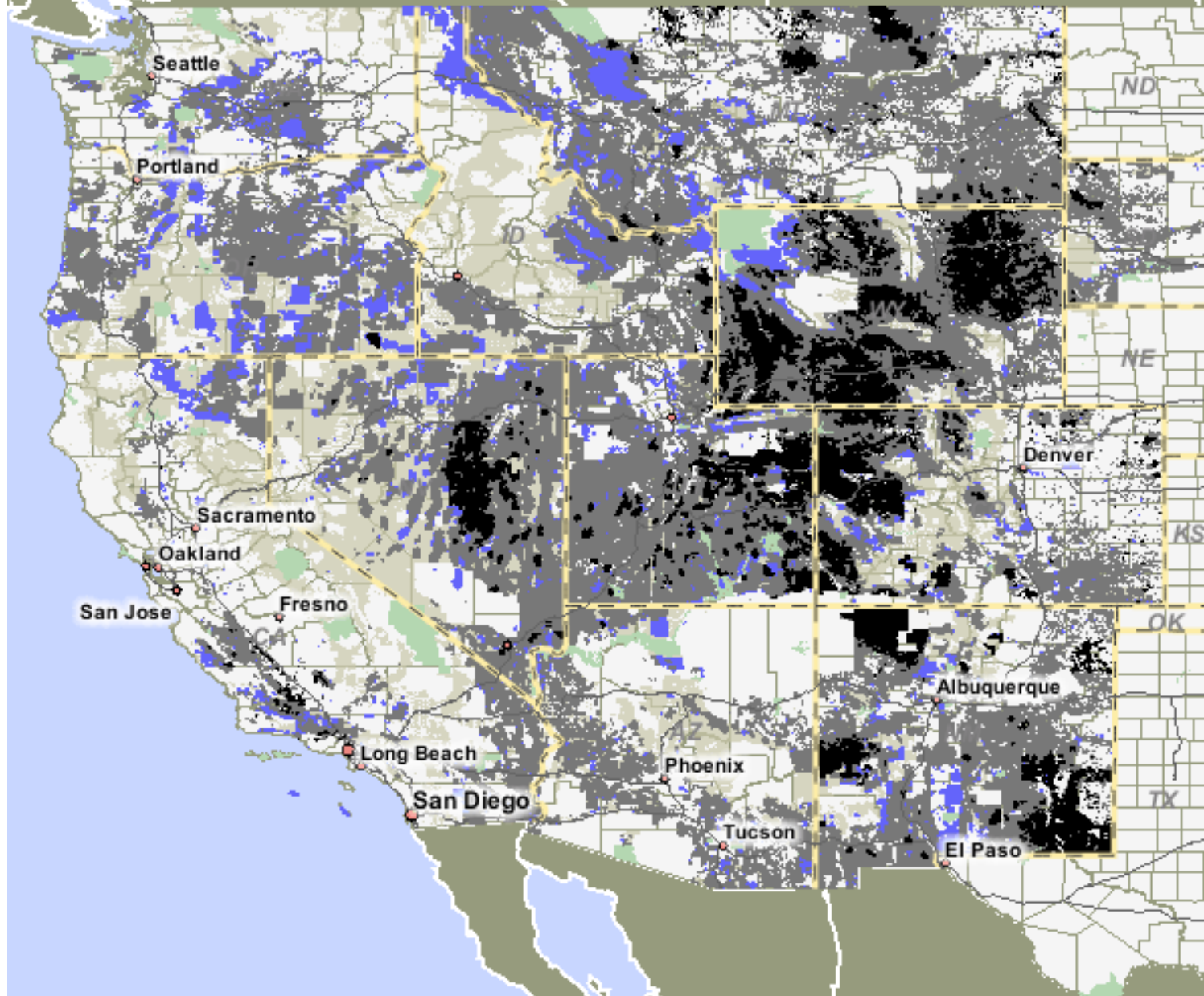


Leasing System

Mineral Leasing Act of 1920

- Embodies basics of most leasing systems
- Government permit required for prospecting, development, production
- Government decides what minerals and lands are available
- Mineral leases contain stipulations for environmental protection
- Leases can be terminated
- Leases offers up for competitive bid, with a minimum royalty payment (12.5%), bonus bids (where much of competition happens), and acreage rental rates
- States receive 50% of leasing revenues, creating incentive for resource extraction
- Leasing system managed by BLM, but must obtain consent from Forest Service

Lease Activity Since 1982



Leased Land
that has not
produced

Leased Land
that has
produced

Land Offered
but not leased

Land Available
for Lease

**Table 8. Oil and Natural Gas Production in U.S.
Onshore Federal Lands, 1991-2000**

Year	Oil in million barrels	Gas tcf	Royalties \$ (millions)	Bonus Bids (\$ millions)
1991	133.1	1.2	518	41.5
1992	133.5	1.3	524	18.8
1993	126.7	1.7	583	22.8
1994	119.2	1.8	525	41.4
1995	121.6	1.7	443	47.3
1996	121.5	1.9	542	32.0
1997	117.3	1.94	691	58.5
1998	111.6	1.92	553	77.2
1999	103.9	1.96	565	169.6
2000	108.2	2.1	968	52.3

Source: MMS, Mineral Reserves, 2000, p.80.

Environmental Protections

Withdrawals

- Many federal lands withdrawn from prospecting; e.g. National Parks and Wilderness
- Mining activities may still occur on prior patented claims (grandfathering)

Agency Regulations

- BLM (3809 regulations) and Forest Service have regulations governing mining operations
- Miners must submit notice-of-intent and operations plan; both reviewable by land managers
- Some differences between USFS and BLM regs; e.g., BLM exempts mines of less than 5 acres, which constitute 80% of mines
- BLM often grants oil/gas operations exceptions from environmental requirements
- Bonding: Leasees must put up bond money to cover reclamation

Environmental Protection Laws

- NEPA analysis required
- Clean Water Act, Clean Air Act

Surface Mining Control and Reclamation Act of 1977

Overview

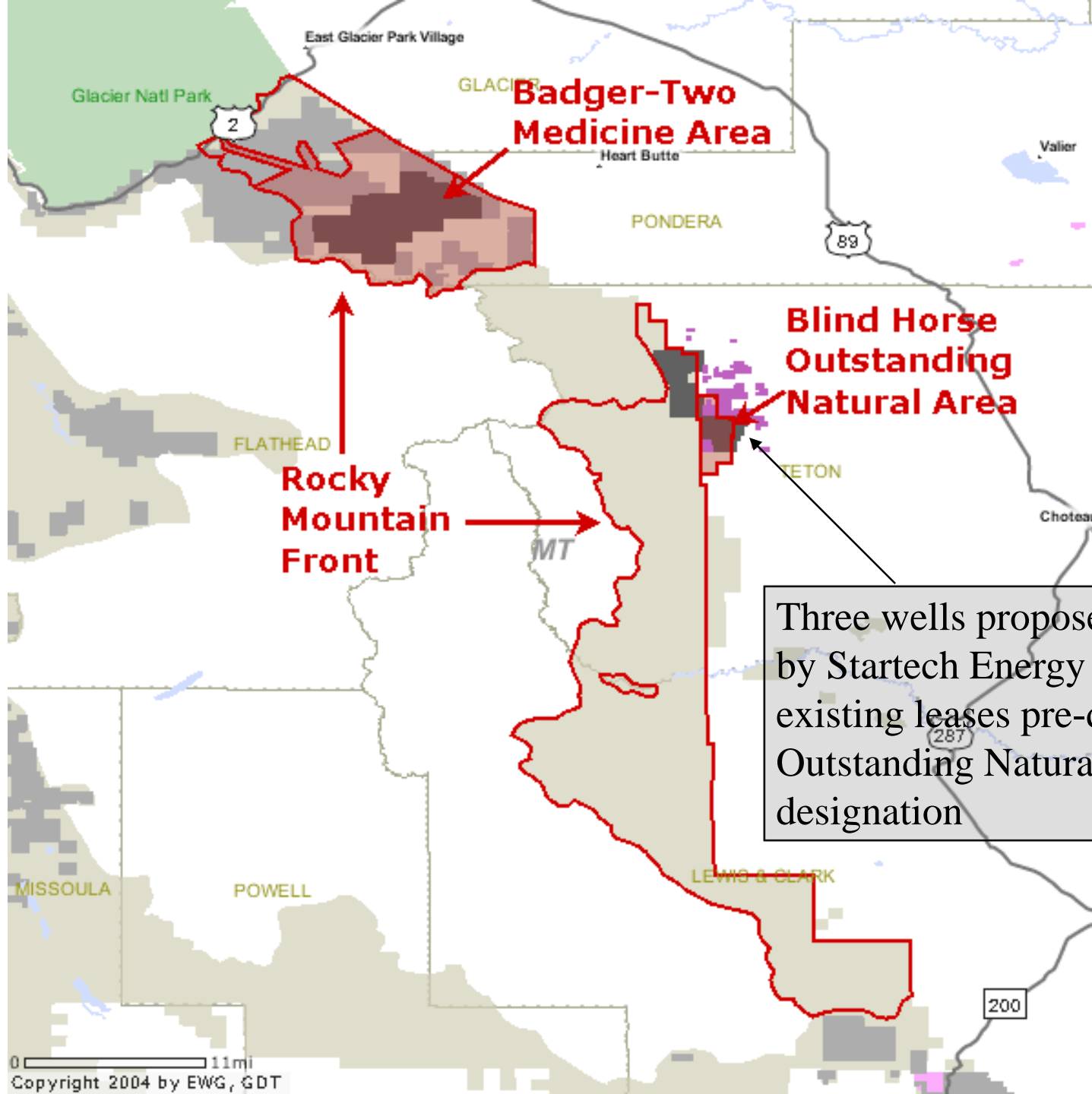
- Applies almost exclusively to strip-mining coal operations removing more than 250 tons/year from private or public lands
- Performance standards; uses of “best technology currently available”
- Reclamation to approximate original contour
- Implemented by Office of Surface Mining in DOI
- States can acquire “primacy”; all major Western coal mining states have primacy
- Appalachian Mountaintop Mining

Kayford Mountain, WV: Mountaintop Coalmine



Controversy: Rocky Mountain Front, Montana

- Acres leased: 111,922 of 425,000 total acres in the front
- Oil in Two Rocky Mountain Front areas could supply U.S. for: less than 20 minutes (Wilderness society figures based on economically recoverable)
- Gas in Two Rocky Mountain Front areas could supply U.S. for: less than 3 days
- Issue is proposed drilling on pre-existing leases; Lewis and Clark National forest currently closed to new exploration and leasing
- 99% of 49,000 comments on draft EIS opposed drilling; lots from hunters/anglers
- 10/2004: DOI says no allow oil and gas development on the Rocky Mountain Front in Montana until completion of landscape-wide study of the area beginning in 2007
- Fish and Wildlife Service supposed to start a large-scale conservation easement program for private lands
- Senator Max Baucus (D-MT) is trying to pass legislation that would allow trading of leases in Rocky Mountain Front



**Badger-Two
Medicine Area**

**Blind Horse
Outstanding
Natural Area**

**Rocky
Mountain
Front**

Three wells proposed here
by Startech Energy on
existing leases pre-dating
Outstanding Natural Area
designation

Controversy: Powder River Basin, Wyoming

- Acres leased: 3,497,851, about 10% of leased lands in Western US
- Oil in Powder River Basin (WY and MT) could supply U.S. for: 50 days (Energy Inventory 2003, EIA Petroleum Products 2002)
- Gas in Powder River Basin (WY and MT) could supply U.S. for: 129 days (Energy Inventory 2003, USDOE Natural Gas 2004)
- Current BLM resource management plan has approved 51,000 coalbed-methane wells over 10 years (2003 ROD)
- Split-estate lands: Energy companies only required to post at least \$1000 bond to gain entry into the land; landowner consent not required
- Recent court decision invalidate EIS(2007) and enjoins production...to be continued

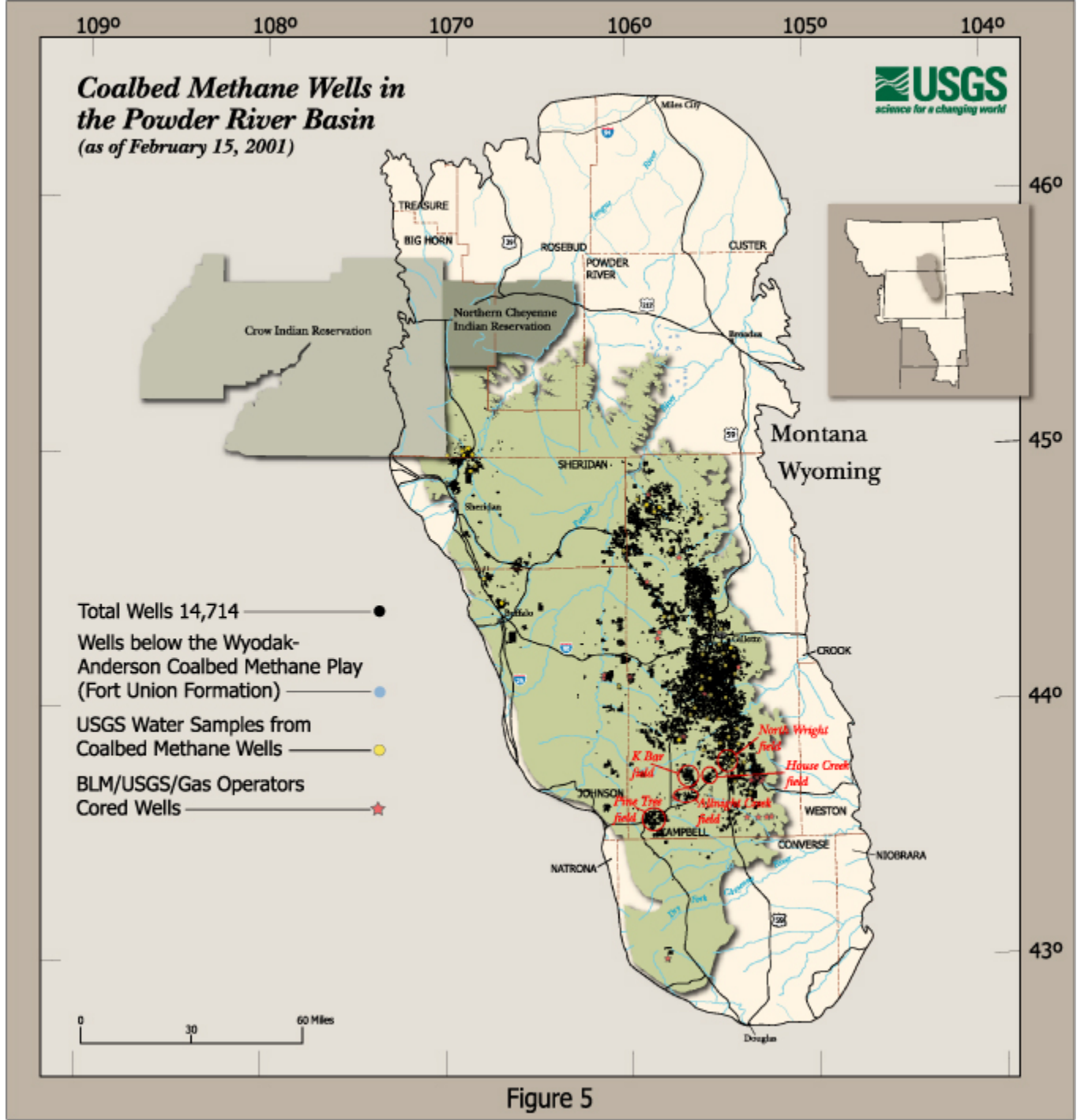







Figure 5

Controversy: Artic National Wildlife Refuge



- Managed by the FWS; 19 million acres in NE corner of AK (the size of SC)
- Development pressure centered on coastal plain (1.5 million acres), which is richest in biodiversity and also adjacent to Prudhoe oilfield
- Possibly 11 billion barrels (maybe more) of oil in coastal plain; at peak production estimates about 4% of US oil demand per day (EPCA estimate says 7.7 Bbbl)
- Complex mixture of lands: Wilderness area, “1002” study area, Native American lands
- Original Congressional designation as Wildlife Refuge forbids oil and gas drilling (Section 2003); FWS as manager
- Artic Slope Regional Corporation (oil producer) signed agreement with natives for their lands (approx. 100,000 acres)
- FWS authorized to determine *compatible* uses of land; H.R. 6 states that oil and gas leasing is compatible (this is what media is referring to when talking about “opening” ANWR)
- Development “footprint” supposedly limited to 2000 acres on coastal plain, but fragmentation, BLM/FWS jurisdiction, native lands, and future expansion are open questions

Arctic National Wildlife Refuge

- Refuge Boundary 
- Wild River 
- Community 
- Dalton Highway 
- USA-Canada Border 



Arctic National Wildlife Refuge

-  1002 Area/Coastal Plain
-  Wilderness Area
-  Kaktovik Inupiat Corporation
-  Wild River

0 50 100
Miles



Porcupine Caribou Herd Calving

from: Slooog (1963), Clough et al. (1987), Arthur (2002) and Griffith et al. (2002)

0 50
Miles

Extent of Calving



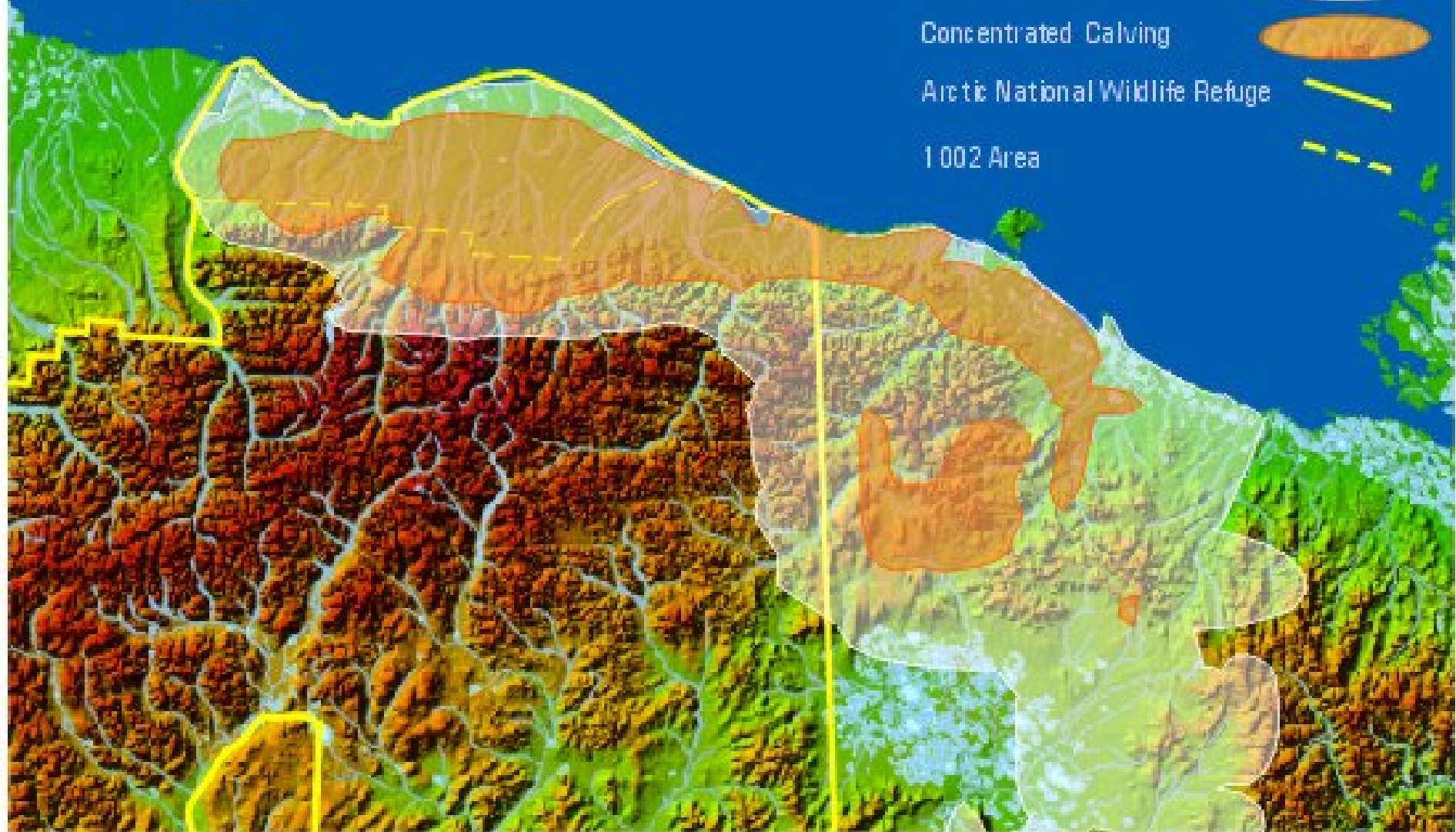
Concentrated Calving

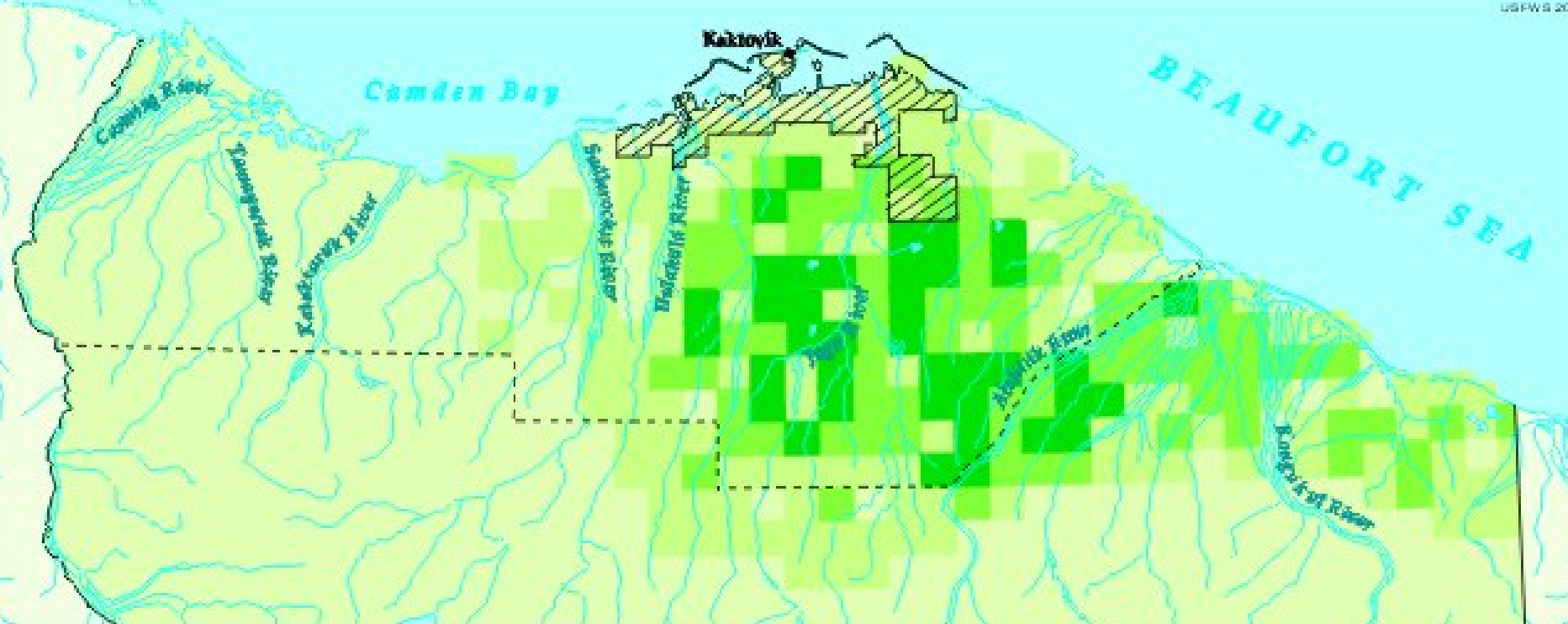


Arctic National Wildlife Refuge









1002 Area





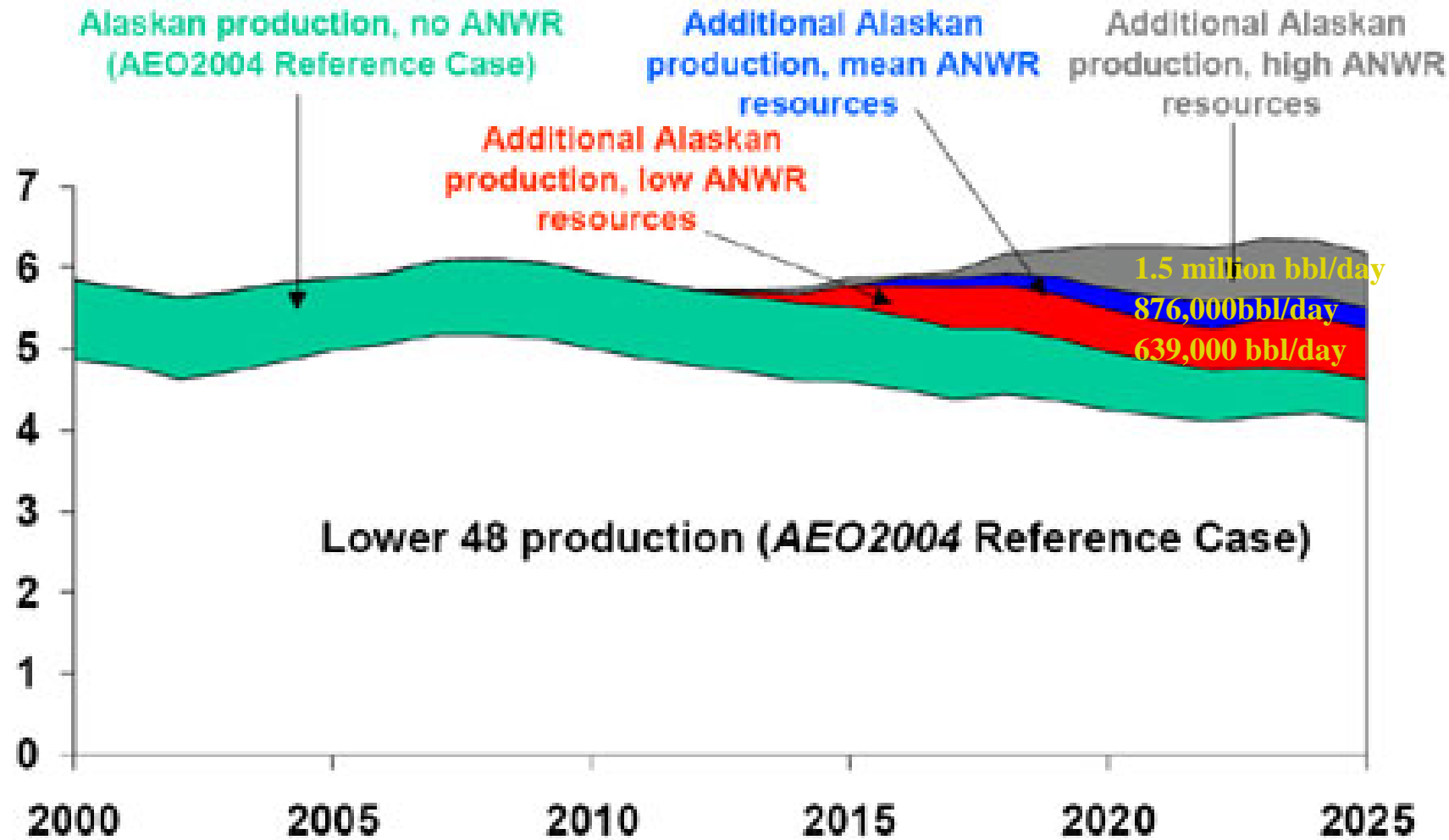
**Arctic National Wildlife Refuge
Frequency of Use by Staging Snow Geese
1982- 1993**

-  High Use Area (5 or more years)
-  Medium Use Area (3 to 4 years)
-  Low Use Area (1 to 2 years)
-  Arctic National Wildlife Refuge Lands
-  Kaktovik Inupiat Corp. Selected or Conveyed Lands
-  1002 Boundary



UNITED STATES
CANADA

Figure 2. Domestic Crude Oil Production for Three ANWR Resource Cases and the AEO2004 Reference Case, 2000-2025 (million barrels per day)



Source: National Energy Modeling System runs anwr_bs.d022304b, anwr_lo.d022304b, anwr_hi.d022304b, and aeo2004.d101703e