SUBSURFACE RESOURCES

RESOURCE DESCRIPTION

A portion of the Matanuska Coal Field lies within the Matanuska Valley Moose Range. The coal field, as delineated by the Alaska Division of Geologic and Geophysical Surveys, lies in a band approximately 42 miles long and 6 miles wide on the north side of the Matanuska River. This band of coal also extends outside of the Moose Range, south of the Matanuska River and east of the Moose Range boundary. The coal field is specifically described as Townships 19 through 21 North, Ranges 2 through 8 East, Seward Meridian.

The State Division of Geological and Geophysical Surveys has determined that approximately 75,000 acres of the Matanuska Coal Field within the Moose Range has moderate-to-high potential for coal development. That is slightly more than half of the total of 132,500 acres in the Moose Range. The land was consequently designated "competitive" for leasing purposes. Currently, there are ten existing state coal leases, encompassing approximately 8,383 acres, in the Matanuska Valley Moose Range. Commercial development of the field is expected (see Map 5a and 5b, pages 33 and 35).

In the Moose Range, it is estimated that at least 100 million tons of coal are present, of which 32.5 to 60 million tons are potentially able to be mined. The coal deposits are located in the 3,000 foot thick Chickaloon Formation, a Paleocene sequence composed of claystones, siltstones, sandstones, and conglomerates. There are up to 30 coal beds within the upper half of the formation ranging from several inches to more than 10 feet thick.

The Chickaloon Formation is overlain by the Wishbone and Tsadaka Formations, up to 1,800 and 450 feet thick, respectively. The Chickaloon Formation is exposed on the limbs of a syncline whose axis runs along the center of Wishbone Hill.

Limestone and haydite sources are also known to be present in the Range. (Haydite is used to make strong, yet lightweight, concrete.) Map 5a on page 33 shows the location of these resources. Both are expected to be of a marketable type and amount. Placer deposits do exist, though in limited amounts. There are limited oil and gas resources in the Range.

RESOURCE EVALUATION

The coal in the Moose Range is among the highest quality found in Alaska. This coal compares favorably with that found in the Lower 48. The Matanuska coal field is among the smallest in Alaska, and by itself could not sustain long-term, large-scale production for export. However, because of the high coal quality, history of production, and access to transportation facilities, the Matanuska Valley may help lead the way into the Pacific Rim export market.

There are a variety of scenarios that could occur regarding the Matanuska coal in the Moose Range. Evaluation is difficult because it is impossible to predict the exact future of coal development due to coal's direct dependence on the marketplace. To focus on one individual development would be misleading. Because of the quality and quantity of coal resources, it is necessary to visualize the Matanuska Valley Moose Range encompassing a variety of coal development at different levels in the future.

Under favorable conditions, a coal lease within the Moose Range can be brought into production in six to ten years. Coal from recently acquired leases may be on the market as soon as 1992. By then the market for Alaskan coal may be much stronger.

Local power is one potential use of Matanuska coal. Several firms have been actively exploring and mapping coal deposits on existing leases and have been preparing development outlines. Other firms, foreign and domestic, have advised the Division of Mining that they are interested in Alaskan coal in general and the Matanuska Valley in particular.

Private development of the Wishbone Hill coal is estimated to have a 3-year construction period employing an average of 300, with a peak of 500 personnel. The mining operation would hire approximately 100 and, if a power plant is constructed, the total employment would be even greater.

Renewed coal mining within the Moose Range will produce a revenue boost to the local and regional economy. If coal development occurs on existing and new leases, revenues from lease rentals, bonuses, production royalties, corporate income taxes, and mining license taxes will accrue to the state. The federal government will also receive a 35-cent-per-ton fee on any surface coal production for reclamation purposes. The state may use 50% of this fee for reclaiming abandoned mines, for experimental mining practices and construction of related infrastructure. The state and local governments may also levy a tax on the property value of a coal operation.

The state may hold additional coal lease sales in the Matanuska Coal Field during the next several years. By offering coal, the state is giving the private sector the opportunity to evaluate the coal resource with regard to the market. With a long-term lease, mining firms will be able to confidently invest in the planning, permitting, exploration and development necessary to support appropriate economic decisions.

Geologic factors in the Moose Range which might limit the coal's marketability are: 1) a discontinuity of coal beds because of lenticularity (pinch and swell), numerous faults (some with large displacement), and intrusions of igneous rock in the coal-bearing strata; 2) existing impurities (ash); and 3) the steep angle of dip of some coal beds.

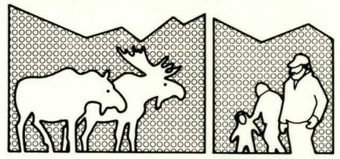
Historically, coal production ceased in the Matanuska Valley not because the resource was exhausted or difficult to mine, but because the market evaporated; diesel engines replaced steam locomotives, and the power plants at Fort Richardson and Elmendorf Air Force Base converted from coal to natural gas. The local market for residential heating has not been large enough to sustain significant coal production in the Matanuska region since 1968.

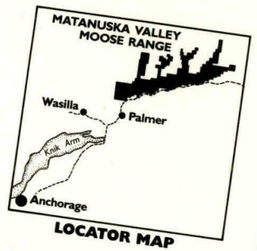
Analysis of the Moose Range also shows limestone and haydite as two other known subsurface resources that may have potential for development. The locations of these resources are shown on Map 5a, page 33. Analysis shows the potential for placer development to be low. Overall, not enough is known about the mineral potential within the Range.

The DNR, Division of Geological and Geophysical Surveys determined the oil and gas potential to be non-existant in areas north of the Castle Mountain fault and low potential to the south. It is unlikely marketable oil and gas resources will be located within the Moose Range.

MAP 5a: SUBSURFACE RESOURCES & LEGAL DESIGNATIONS

MATANUSKA VALLEY
MOOSE RANGE
MANAGEMENT PLAN





LOCATOR MAP

MOOSE CREEK DRAINAGE

GRANITE CREEK DRAINAGE

KINGS RIVER DRAINAGE

CHICKALOON RIVER DRAINAGE

BOULDER CREEK DRAINAGE

R. 2 E. R. 3 E. R. 4 E. R. 5 E. R. 6 E.

T. 22 N.
T. 21 N.
T. 20 N.
T. 19 N.
T. 18 N.

R. 1 E. R. 2 E. R. 3 E. R. 4 E. R. 5 E. R. 6 E. R. 7 E.

MOOSE RANGE BOUNDARY

Little Susitna River

Moose Creek

Granite Creek

Young Creek

GRANITE PEAK

CASTLE MOUNTAIN

Kings River

Chickaloon River

Boulder Creek

Eska Creek

Matanuska River

No Oil & Gas Potential

Low Oil & Gas Potential

TMSUD

JONESVILLE ROAD

MURRAY RD.

BUFFALO MINE ROAD

SOAPSTONE RD.

FISHHOOK-WILLOW ROAD

GLENN HIGHWAY

PERMANENTE ROAD

CHICKALOON RIVER ROAD

Chickaloon

Sutton

Palmer

MP 6.7 SUNVALLEY DRIVE

MP 52.8 SOAPSTONE ROAD

MP 53.1 BUFFALO MINE ROAD

MP 54.5 MOOSE CREEK STATE RECREATION SITE

MP 56.7 MOOSE RANGE BOUNDARY SIGN

MP 61 SUTTON AND JONESVILLE ROAD

MP 66.7 KINGS RIVER AND CHICKALOON —KNIK— NELCHINA TRAIL ACCESS

MP 71.8 PERMANENTE ROAD

MP 73 IDA LAKE/FISH LAKE ACCESS ROAD

MP76.0 KING MOUNTAIN STATE REC. SITE

MP 76.2 KING MOUNTAIN LODGE

MP 77.5 CHICKALOON RIVER ROAD

MP 80.8 MOOSE RANGE BOUNDARY SIGN

MP85.3 LONG LAKE STATE RECREATION SITE

MP 89.2 PURINTON CREEK TRAIL

0 1 2 3 miles

LEGEND

SUBSURFACE RESOURCES

- State Coal Patent Lands (Surface is Private or Borough)
- Haydite Shale Deposits
- Limestone Deposits
- Potential Sites for Coal Power Plant
- Oil & Gas Potential
- Coal Deposits
  - High Value
  - Moderate Value
  - Low Value

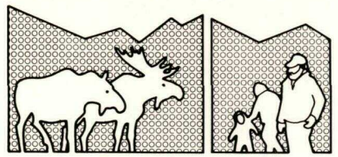
LEGAL DESIGNATIONS

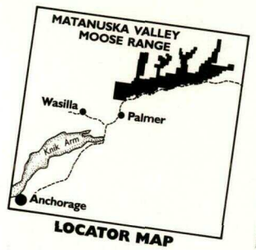
- Moose Creek Reserve Special Use District
- Talkeetna Mountains Special Use District (TMSUD)
- Competitive Coal Lands
- Coal Leases
- Mining Claims
- Mineral Leasehold Order #2

map compiled by DOM (8-85)

MAP 5b: 1984 COAL LEASE TRACTS

MATANUSKA VALLEY
MOOSE RANGE
MANAGEMENT PLAN





MOOSE CREEK DRAINAGE

GRANITE CREEK DRAINAGE

KINGS RIVER DRAINAGE

CHICKALOON RIVER DRAINAGE

BOULDER CREEK DRAINAGE

R. 2 E. | R. 3 E.
R. 3 E. | R. 4 E.
R. 4 E. | R. 5 E.
R. 5 E. | R. 6 E.
R. 6 E. | R. 7 E.
R. 1 E. | R. 2 E.

T. 22 N.
T. 21 N.
T. 20 N.
T. 19 N.
T. 19 N.
T. 18 N.

MOOSE RANGE BOUNDARY

Little Susitna River
Moose Creek
Granite Creek
Young Creek
Eska Creek
Kings River
Chickaloon River
Boulder Creek
Matanuska River

GRANITE PEAK △
CASTLE MOUNTAIN △

1 2 3 4 5 6 7 8 9

JONESVILLE ROAD
MURPHY RD.
BUFFALO MINE ROAD
SOAPSTONE RD.
FISHHOOK-WILLOW ROAD
GLENN HIGHWAY
PERMANENTE ROAD
CHICKALOON RIVER ROAD
GLENN HIGHWAY

Sutton
Chickaloon
Palmer

MP 6.7 SUNVALLEY DRIVE
MP 52.8 SOAPSTONE ROAD
MP 53.1 BUFFALO MINE ROAD
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MP 73 IDA LAKE/FISH LAKE ACCESS ROAD
MP76.0 KING MOUNTAIN STATE REC. SITE
MP 76.2 KING MOUNTAIN LODGE
MP 77.5 CHICKALOON RIVER ROAD
MP 80.8 MOOSE RANGE BOUNDARY SIGN
MP85.3 LONG LAKE STATE RECREATION SITE
MP 89.2 PURINTON CREEK TRAIL

N

0 1 2 3
miles

LAND STATUS

- **Private** (native & non-native) **& Borough Owned Land**
- **Selected Land** (State and/or Native)
- **State Land** (patent or tentative approval)

LEGEND

1984 COAL LEASE TRACTS

- **1984 Coal Lease Tracts**
- **1984 Tracts That Sold (4, 5, & 7)**
- **Existing Leases (in 1984)**