

Land Selection and Development under the Alaska Native Claims Settlement Act¹

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ABSTRACT. In accordance with the Alaska Native Claims Settlement Act of 1971, Alaskan Natives have begun through their corporations to make selections from certain U.S. federal lands in return for their relinquishment of claims to aboriginal rights. Since the selections must be made quickly, one corporation has cooperated with a geophysical institute in the application of satellite imagery to the survey of available lands and resources. The results have been beneficial to the Native interest.

RÉSUMÉ. *Le choix des terres et leur développement en accord avec la Loi sur le règlement des réclamations des indigènes de l'Alaska.* En accord avec la loi de 1971 sur le règlement des réclamations des indigènes de l'Alaska, ces derniers, par l'entremise de leurs corporations, ont commencé à choisir certaines terres du gouvernement fédéral des États-Unis, en retour de l'abandon de leurs revendications de droits indigènes. Comme ce choix doit se faire rapidement, l'une de ces corporations a coopéré avec un institut de géophysique à la mise en application des renseignements visuels fournis par les satellites dans les levés de terres et de ressources disponibles. Les résultats ont été bénéfiques aux intérêts des indigènes.

РЕЗЮМЕ. *Выбор и освоение земель в соответствии с Актом об удовлетворении территориальных претензий коренного населения Аляски.* В соответствии с Актом об удовлетворении территориальных претензий коренного населения Аляски, принятом в 1971 году, жители Аляски при посредничестве своих корпораций начали проводить в виде компенсации за права аборигенов отбор земель на определенных федеральных территориях США. Так как выбор земель должен быть сделан быстро, одна из корпораций кооперировалась с геофизическим институтом при запросе на съемку имеющихся земель и ресурсов со спутника. Полученные результаты удовлетворяют интересам коренного населения.

A LAND ENTITLEMENT

The Alaska Native Claims Settlement Act (U.S. Public Law 92-203), which came into force in 1971, is a measure envisaged ever since the purchase of Alaska in 1867. In accepting its provisions, the Natives of the state (approximately 100,000 Indians, Eskimo and Aleut) relinquished completely the claims they had held to most of the territory of the state on the basis of aboriginal use and occupancy, and in return secured legal recognition of their claims to certain government-held lands and the transfer to themselves of large sums of public money. These changes will have a profound effect upon the State of Alaska and its Native peoples.

Under the Act, 99 million acres (400,000 km²) were required to be withdrawn from the federal public domain in Alaska, from which the Natives could make

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selections of 40 million acres (162,000 km²) of surface estate and mineral rights for ultimate transfer to their private ownership and be given a monetary grant of \$962.5 million.

The main provisions of the land distribution scheme are:

1. Over 200 Native village corporations to receive title to the surface estate of approximately 22 million acres (89,000 km²) to be selected from the 25 township withdrawal areas surrounding each village — the actual amount in each case to be determined in accordance with enrolled population.
2. Twelve regional corporations, respectively concerned with areas formed on the basis of the ethnic compatibility of the Natives within them, to receive the mineral rights for the abovementioned 22 million acres, and also the surface and sub-surface title to an additional 16 million acres (65,000 km²), division of which among the corporations is to be made on the basis of area rather than population.
3. The remaining 2 million acres (8,000 km²) to form essentially a contingency reserve, to be utilized for cemetery sites, historical places, communities too small to qualify as villages, etc.

Most of the land is to be retained in private corporate ownership, and not allocated to individual Natives. Ownership carries with it the responsibility, as well as the right, to regulate development and exclude trespass. The Native peoples, organized under the various business-for-profit corporations, both regional and village, must determine now whether their newly-acquired land should be developed according to Anglo-American concepts (which will have to be rapidly learned) or preserved in its present state, i.e. suitable primarily for subsistence activities. It should be noted that at the village level the desire to utilize land for benefits not part of the traditional culture has been slow in evolving. Regional corporations, however, are beginning to act more boldly, primarily because their leaders are more sympathetic to the Anglo-American urban manner of living.

Following upon the Act, Native corporations have been receiving requests and proposals, some very premature, from outside interests — North American and foreign — for the utilization and exploitation of their land and resources. To date the regional corporations have responded to the challenge in various ways, though for the most part they have been selective, and are attempting to establish reasonable long-term objectives which will aid them in evaluating requests for the right to develop or use Native-owned land.

A PROBLEM FOR DOYON LIMITED

Doyon Limited is one of the twelve Native regional corporations formed under the Act of 1971 (see Fig. 1). Its boundaries encompass the Athapascan Indian ethnic region and include 37% of the land area of the State of Alaska. The pattern of land entitlement is complicated by the nature of the withdrawals, which are considerable in extent, far-flung and relatively inaccessible, and are known to be rich in minerals or forested with stands of birch, aspen and white

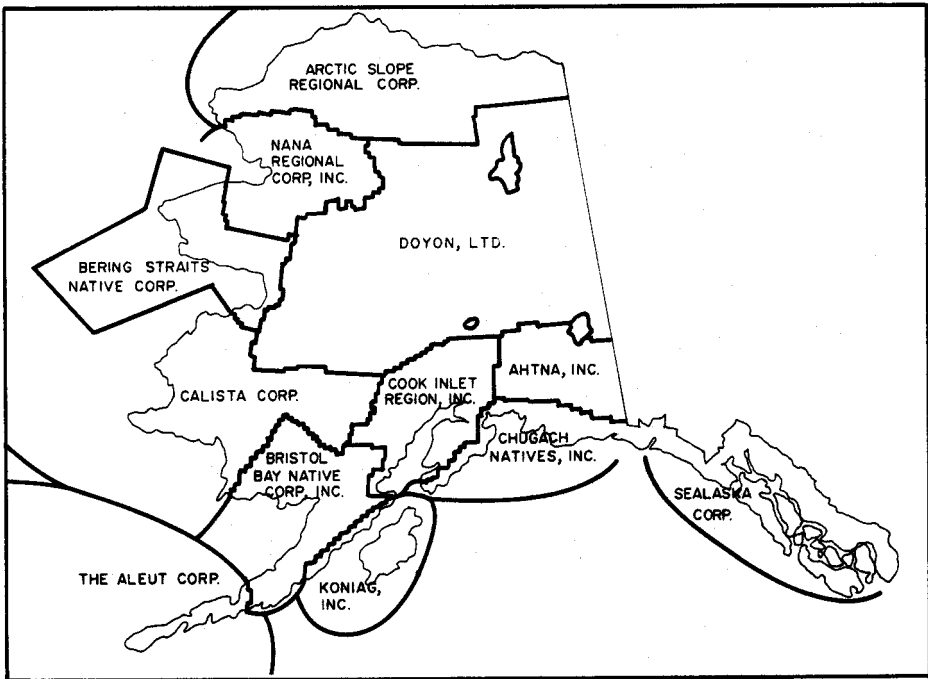


FIG. 1. Boundaries of Alaska Native regional corporations as a result of the Alaska Native Claims Settlement Act of 1971.

spruce of commercial quality. The scale of the projected development of the land, with all the attendant priorities, is formidable even without the obvious need first of all to analyse the resource base and make inventories.

There are 34 village corporations in Doyon's region which will ultimately receive surface title to more than 3.6 million acres (14,500 km²). The regional

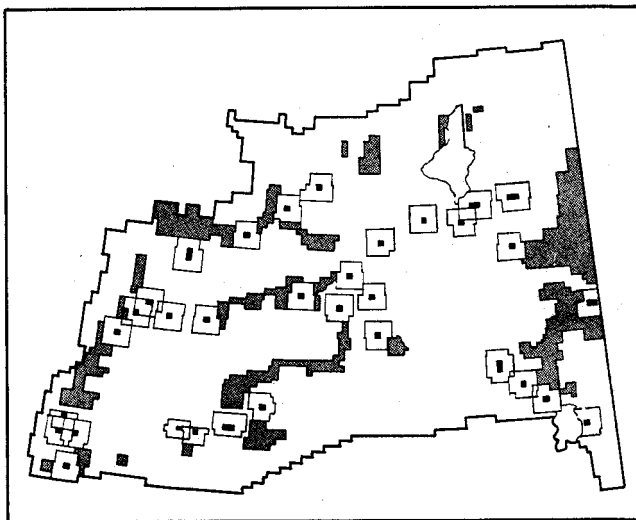


FIG. 2. Village and regional land selection withdrawals for the Athapascan Indian corporations of interior Alaska.

settlement exceeds 12 million acres (49,000 km²) from which approximately one-third must be selected from irregularly-shaped blocks termed "regional deficiency areas". In Fig. 2 are shown the village and regional withdrawals made for the Athapascan Indians within the Doyon regional corporate boundaries.

The making of a comprehensive resource inventory is complicated not only by remoteness, high costs, lack of existing information, and the spatial aspects of the withdrawals themselves, but also by the time factor. All selections for Natives must be completed by December 1975. Then, too, there is another complicating factor: all regional deficiency withdrawals exceed the actual entitlement by a factor of three. That means that within a short period of time Doyon Limited must surrender more than two thirds of those lands to the federal government, and possibly give up land containing valuable resources as well.

Recognizing the need to gather resource data in the shortest possible space of time, Doyon Limited began a systematic compilation of secondary information early in 1972. Primary data, such as could supplement existing knowledge, were found, however, to be difficult to obtain — very expensively so — in remote parts of such a large and diversified land area. The cost of obtaining new information, even in the case of the townships, was obviously going to exhaust even the largest of budgets. On the other hand, there was a definite need to obtain reliable estimates of the various resources at reasonable cost.

SURVEYS BY REMOTE SENSING

Background

In the knowledge that The Geophysical Institute of the University of Alaska had been a major participant in the Earth Resources Technology Satellite (ERTS) programme of the U.S. National Aeronautics and Space Administration (NASA), and had also been concerned in the development of techniques for the utilization of remotely-sensed data at small scales, Doyon Limited approached the Institute concerning the possible employment of satellite imagery for the surveying of available resources as an aid to land selection in the interest of the Natives.

It was eventually agreed that all existing data concerning Alaskan resources, including the results of ERTS imagery, should be utilized as a basis for land selection, and that, besides their use in the production of specialized maps, ERTS images should be provided as underlays for maps showing the townships concerned in the selection at a scale of 1:250,000. Range and township data so projected would also provide a temporary planning tool designed to partially offset the lack of ground survey data. Two major subjects of interest to the Natives were investigated: the presence of minerals, and vegetation.

The survey of minerals

Since the petroleum and coal potentials of the region were relatively well-known, the analysis was directed towards the delineation of areas thought to contain hard-rock minerals. Existing information concerning the presence of minerals was correlated with ERTS data. The latter alone would not have served

to identify or locate mineral deposits, but in conjunction with other geophysical data it was sufficient to indicate the areas towards which further attention ought to be directed.

Considering the size of the area under investigation, the cost of doing rapid reconnaissance solely to suggest favourable areas would have been prohibitive, especially in view of the time constraints, including the shortness of the Alaskan field season. For the purposes of selecting the best areas for mineral exploitation, the securing of additional supportive data was highly important. Basic procedure in this portion of the study included:

1. the assembly of all geophysical data relating to the likelihood of ore deposits;
2. the assembly of data such as could indicate the probable distribution of mineralized regions as well as the nature of the prevailing geological controls in each region;
3. the preparation of maps of districts known to contain minerals, and of mining claims, and their association with the imagery; and
4. a subsequent attempt at interpretation, including efforts to identify distinctive features of the geological environment associated with each of the provinces containing minerals.

Attempts were then made to determine which combination of features could reasonably justify extending the boundaries of known mining districts into new areas. The study resulted in the assembly of data in association with a new series of maps to a scale of 1:250,000, which together indicated in order of priority which of the townships should be selected. Ore deposits were not pinpointed, but a portion of Doyon's need was served through a process of elimination as well as, in contrast, developing narrowing areas of interest.

The analysis of vegetation

Maps of vegetation were prepared which indicated areas of caribou and moose pasture, potential agricultural land, and forests suitable for commercial timber exploitation. Photographic prints from standard NASA imagery were reproduced in simulated colour-infrared by a process found to be effective by Anderson and Belon (1973). Images obtained in both summer and winter were provided in black and white for purposes of comparison. The material was then studied in order to discriminate between colour units, variations in hue, intensity and brightness. Certain areas occurred as units large enough to be classified, while others appeared as mosaics too small to be individually delineated. The latter were treated as additional map units. In total, 26 mappable types were recognized: five homogeneous colours and 21 blends. Units of area were identified and placed on transparent overlays and transferred between imagery and U.S. Geological Survey maps of appropriate scale and area. Differential distortions between the two were corrected by the use of a zoom transfer scope.

Colour units were correlated with types of vegetation by comparison, consideration of physiographic position, and reference to existing aerial photography. The five homogeneous colours were identified and associated with type of

vegetation. Grey indicated forest vegetation dominated by needle leaf trees; orange — forest vegetation dominated by broadleaf trees such as birch and aspen; violet — scrub dominated by broadleaf species; light violet — herbaceous tundra vegetation; and dull violet — muskeg and bog.

These basic colours appeared large enough to map in only a minority of cases. Blends and mosaics, representing combinations of vegetation, were much more common. Grey-orange, for example, was interpreted as representing a mixture of broadleaf and needleleaf trees. An additional 21 map units were established as a result of visual interpretation of the mosaic pattern — admittedly a subjective process.

Ground control was obtained from the use of low-altitude aerial photography. Existing photographic records, while incomplete, sporadic, and often out-of-date, were made available from the files of various agencies, including the U.S. Bureau of Land Management, the U.S. Forest Service and the U.S. Army. In addition, the University of Alaska provided high-quality colour, colour-infrared, thermal infrared and additional multiband ERTS imagery of other selected areas. To supplement interpretation by the Geological Institute of the remotely-sensed data, a U-2 reconnaissance flight photographed the Yukon River at 70,000 feet (21,000 m) to provide intermediate-scale (approximately 1:110,880) colour-infrared coverage between satellite imagery and existing low-level photography. A light aircraft was utilized to provide on-the-spot coverage of special-interest areas, as well as to “ground-truth” selected plots.

RESULTS

An analysis was completed of approximately seven million acres (28,000 km²) of regional land withdrawals. Information gained during ground-truth reconnaissance flights indicated that the analysis of vegetation approached 85-90% reliability in the more critical areas. The largest error noted was a too-conservative estimate of the extent of timber lands of “commercial” quality. Numerous stands of birch, aspen and spruce were identified for selection as a direct result of the study.

The review of hard-rock mineral potential brought to light problems, at least from a purely scientific point of view. In one case, for example, the analysis rendered more accurate by the utilization of a colour-additive viewer, indicated the presence of an igneous intrusion. This fact, taken together with existing information, suggested that the structure warranted on-site investigation. Observations taken during a subsequent over-flight indicated the anomaly to be of sedimentary origin, and so previous interest was immediately negated. Although staff of the Geological Institute was left with the problem of differentiating between various ERTS signatures for the delineation of minerals, the survey of minerals did serve to identify a number of townships of such value that enough interest has been created within the minerals industry for further reconnaissance and geochemical work to be scheduled for the summer field season of 1975.

The results of other work undertaken tend to confirm that use of ERTS can enable an inventory and maps of vegetational complexes over large areas to be

obtained more effectively than by conventional means — i.e., by means of aerial photography. While not detailed, the maps obtained by ERTS are more complete in regard both to classification and distribution than any other existing maps of the same area.

As a direct result of the study, tens of thousands of acres of high-quality timber land were selected. Equally important, many more thousands of acres were eliminated from further consideration. The apparent long-term savings to Doyon Limited is obvious. Indirectly, the mineralization analysis has been used to successfully solicit the interest of the mining industry. Active negotiations for the further exploration and development of the withdrawals is currently taking place with at least three major minerals development firms.

A representative sample of the type of work that was accomplished is indicated in Fig. 3.

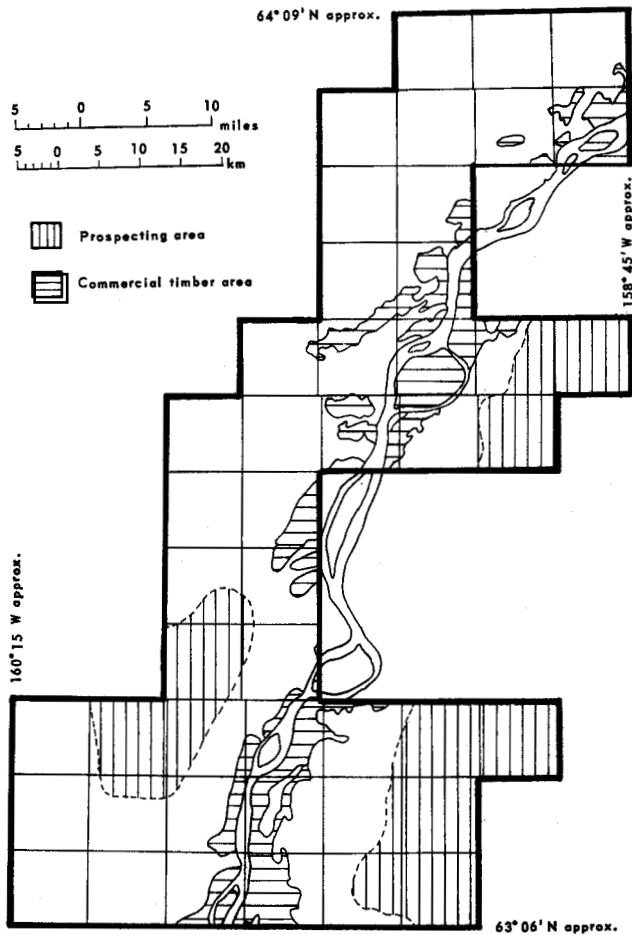


FIG. 3. Prospecting and commercial timber areas of the Kaltag-Grayling withdrawal as delineated through the use of ERTS-1 remotely-sensed data.

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