

ALASKA LEGISLATURE COMMITTEE FILES 1981-1982 86/2

1867 SRS AGRICULTURE BRIEFING 3/12/82-AK LANDS 2/2/81

One authority has termed the decline in national farm numbers as representing the greatest migration in human history. Perhaps it may be taken as illustrating the economic pressure under which Alaskan agriculture has attempted to grow. World population figures indicate that future conditions are unlikely to long remain a repetition of the past.

C. POST WORLD WAR II ERA

World War II had some special effects on agriculture in Alaska as well as some definite effects on U.S. agriculture in general. For agriculture in general, there were increases in mechanical power, a new series of varietal introductions aimed at increasing productivity, and the introduction of a number of wartime-derived chemicals useful for control of insects, weeds and diseases, and for control of plant growth.

Alaska had no more than a subsistence agriculture immediately prior to the war, but the need for a food base not subject to disruption by attacks on shipments from the lower 48 set the stage for the switch to a commercial agriculture. The military became aware of the strategic importance of Alaska because of the importance of aerial warfare which made the polar route the obvious direction of attack in any future conflict involving Europe or much of Asia. The military had also been made painfully aware of the vulnerability of supply lines to Alaska for such strategic materials as food. As a consequence, the Department of Defense requested Congress to investigate the possibility of establishing a sufficient food base in Alaska to support a continuing military presence. Congress responded by directing the U.S. Department of Agriculture to look into this matter. A task force was sent to Alaska in the summer of 1946 to assess the possibilities (27).

As a result of the assessment, which indicated there were at least a million acres of suitable land for agricultural development, new money and new programs were directed towards Alaska's agricultural industry. In addition, the Korean war concurrently focused attention on the military status and position of Alaska, creating new markets for farmers. The combined infusion of new technology and information with

expanding markets transformed Alaska's agriculture from basically subsistence, diversified activity to a truly modern industry.

The impact of this infusion of new information was almost immediate. The usual time lag for the introduction of new technology was thought at that time to be approximately ten years. In this case, subsistence agriculture was converted to a commercial agriculture in something like six years. As an indication of the speed of technology transfer under this system, farmers went from almost total harvest of grain through the binder-thrasher system to total harvest by combine in a period of three years. Diversified farming gave way to specialization, and specialization led to farmers and practices as efficient as anywhere in the U.S. Had this not been true, the explosive development of modern farming in the other states in the post-war years would have overwhelmed the producers in Alaska who would not have been able to compete and who would have totally disappeared.

TODAY'S AGRICULTURE

After 1960, there was a levelling off in the agricultural industry. Many people mistook the consolidation of dairy herds as a dying of the of the dairy industry simply because numbers of dairies were decreasing. What was happening was a decrease in numbers of dairies accompanying an increase in the size of herd per dairy. The trend was exactly the same as occurred at the time in Wisconsin and Minnesota. Although agriculture held its own, there was a period of virtual stagnation because there was no growth commensurate with population increase. Marketing did not keep up with the increased sophistication of transportation and marketing from the lower 48.

During this same period, however, the Soil Conservation Service was at work putting together information on potential agricultural soils around the state, and by the early 1970's it had become apparent that there were at least 15 million acres of potentially tillable soils in Alaska, a figure that astounded even the most optimistic advocates of agricultural development. Figures developed since then have increased this amount considerably, but the initial announcement which led to the publication of Alaska's Agricultural Potential sparked what amounts to a revolution in Alaska's agriculture.

With the Native Claims Settlement Act, and particularly Section 17 (d)2 of the bill becoming an issue, the Federal-State Land Use Planning Commission, authorized a study by two international economists to determine if there actually was a place for Alaska in the scheme of world agriculture. This report (10) concluded that there could be a place for Alaskan agriculture provided the assumptions made on productive capacity were correct, and it recommended that a large-scale study be made to verify some of those assumptions.

A more or less informal group of agricultural agency people and farmers was convened by the Governor's Assistant for Special Projects to determine how such a demonstration project should be carried out, and the Delta Junction area was designated for the initial project. Several things made this area the logical choice:

1. The state had selected and obtained title to a large block of land in the region.
2. The Tanana Valley Rural Development Council had been active in

reviewing development possibilities, and a citizens group had studied the area and had confirmed that the people of the area wanted agriculture to be a part of development in the region.

3. There had been at least twenty years experience in farming in the area as well as experience with large scale land clearing.
4. Barley was designated as the first crop to try in a development scheme because it is short-season, requires a minimum of processing prior to becoming a marketable product, is storable and transportable, and had been produced successfully in the Delta Junction area.

An economic analysis by the University of Alaska Experiment Station (25) indicated that barley could be produced in that area at world market price on farms of 3,000 acres using a 1/3 fallow system of production. The average size of the farms when they were finally laid out was 2,600 acres with a range of 2,000 to 3,500 acres. The differences in size were due to presence of natural features that determined boundaries, and the fact that soil capabilities in some parts were better than others. A sincere attempt was made to create family-size farms that would be economic units.

Although many crops could have been chosen for this test-demonstration, barley was chosen as number one for the reasons stated above. A second crop that has been considered is rapeseed, a very successful crop grown in Canada under similar conditions. Rapeseed has been found to be a good crop for use in rotation with cereal grains as a means of decreasing certain disease problems on grain in northern

Europe, and is a good export product but has little value in the state presently. Wheat and hay are also alternatives, but wheat is marginal because it requires a longer period of maturity. Hay could be produced very well, but the price of hay goes up very rapidly if it has to be moved very far, because of its bulk. Hay will be utilized to some extent in the Delta area as the beef and dairy industry there expand, but is not expected to be a major crop in the area in the near future.

The Delta I lottery was held in August of 1978, with approximately ninety individuals participating. Only 22 could be winners since that was the number of parcels in the Delta I project area. The legislature passed legislation allowing land to be disposed of by lottery, and only agricultural rights were disposed of. The State retained development rights on the agricultural parcels, although the successful applicants are allowed to use a limited portion of the land to construct buildings and facilities necessary for the pursuit of farming. Final title to the agricultural rights also depended on a farm development plan and its implementation.

Difficulties arose in attempts to qualify farmers for the lottery. The purpose of qualifying them was to try to get those people on the land in this first demonstration project who would be most likely to succeed in producing, since only production could demonstrate if such a project could be economical. Attempts to derive an effective selection system were not totally successful, and several who were disqualified were later qualified. A satisfactory system has still not been determined, but it is not as important in future developments as in the initial ones.

The project got underway in the winter of 1978-79 when the State engaged in test-clearing 2,000 acres. In an effort to find the most economical method, many different types of clearing were tried: single chaining, double chaining, shearing, close berming, distant berming. There was a great deal of reluctance to use chaining because the 22 applicants had little experience with this technique. After a few had tried it, the majority used it because it was the most economical.

The way the clearing contracts were written, most of the winners became clearing contractors instead of farmers, and those who did their clearing the first year (before fuel and other cost increases) enjoyed a profit. This was the direct result of the favorable terms of the loan, which provided:

1. \$165.00 per acre.
2. Life of loan 40 years at 6% interest.
3. First payment due in 1984.
4. Interest not to accrue until May of 1984.

This program was designed to enable the farmer to develop a cash flow from the land before he had to start paying off the loan. With this system in place, the farmer would take the full loan amount even if his clearing costs were less than the \$165.00 per acre. The excess funds would then be available, free of interest for several years, to finance the total farming operation.

In 1980, 700 tons of barley were produced on the Delta Project lands, and another 80 tons were produced from other farm land in the vicinity. This was the first time in the history of the State that any substantial amount of in-state feed grains were placed on the market.

The disappearance of the barley when it appeared in local markets exceeded expectations. Matanuska Maid and Alaska Mill & Feed were the two major purchasers, taking over 2/3 of the barley. The rest was taken by both smaller retailers and farmers. The activity created by this available feed grain is amazing. In the last two years, two new dairy farms have begun in Delta Junction. One of the tract holders has started a major hog operation. The first hogs are starting to go to the market now.

Another major hog producer in the Matanuska Valley is using Delta barley. Some of the Matanuska dairy farmers are buying barley direct from Alaska Farmers Co-op and others are getting it through Matanuska Maid and Alaska Mill & Feed. Many of the small farmers and homesteaders are using local barley, getting it through retailers. When the market infrastructure stabilizes for red meat, it is conceivable that the livestock population will increase tremendously in both the Delta-Fairbanks and Matanuska-Susitna areas.

The difficult part of the whole project is to develop the production and markets at the same time and rate. This is the reason that an export terminal is important, to take the slack when the barley growers produce more than the local markets can handle. The profit margin is so slim that the growers cannot take less than world market price. If there is no outlet for the surplus grain, the price would drop for the local market and it could mean disaster for the infant barley industry.

The legislature created the Alaska Agricultural Action Council to oversee the Delta I project and to manage similar future projects in

other locations in the State.

The second major test project of the present era is the Point MacKenzie Project. This project was Legislatively conceived to give the Anchorage milk shed the critical mass of dairy stock needed to service the local market and at the same time take advantage of the industry infrastructure that is in place but underutilized. In a period of twenty years, the number of dairy farms in the Anchorage milk shed decreased from 60 to 8. Although much of this was due to consolidation of herd during the 60's, the pressure from urban expansion without a commensurate availability of new lands to which farming could move during the 70's actually reduced cow numbers in the dairy herd, so that at present local dairies produce less than a fifth of the fluid milk consumed in Alaska today. Imports of dairy products into the State are estimated to result in a net outflow of wealth from the state in excess of \$1,000,000 per month.

The Point MacKenzie Project is conceived to take advantage of the excess processing capacity in Anchorage, the feed processing and distributing businesses, the barley production which is increasing in the Delta Junction area, the Dairy Herd Improvement Association record-keeping system that is in operation, the present artificial insemination program available through the Dairy Breeders' Association, the veterinarian service that is available, and the transportation and distribution system that is already operating to bring the milk from farms to processor to consumer. The project will have a minimum of 19 dairy farms. The other 12 farms will complement the dairy farms, as most of them intend to supply feed for the dairy farms, raise replacement heifers or feed out dairy beef. With this in mind, the

Point MacKenzie Project can have a cow population of around 3,000 head. This, with the existing milk cows in the Matanuska Valley, would supply over 50% of the fresh milk for the Anchorage and Railbelt areas. In a few years, when the cow population stabilizes, the 19 dairy farmers at Point MacKenzie can expect a cash inflow of between \$15,000 and \$20,000 per day from milk receipts. This will be a great boost to the area economy, and will support some badly needed infrastructure in the industry itself. It will also provide a market for Delta grain.

The Point MacKenzie clearing loans will be basically the same as Delta I clearing loans. The two biggest differences will be the rate for clearing. It will increase from \$165.00 to \$270.00 per acre, and the interest rate will also increase from 6% to 8%.

The land clearing methods at Point Mackenzie will be mostly single chaining and distant berming. This is the most economical and will work well except where the timber is logged and only stumps remain. This creates a problem because the chain jumps over the stumps and does not dislodge the roots from the soil. This forces the operator to grub each stump individually and the cost of clearing escalates tremendously.

PRESENT STATUS OF PROJECTS

Delta I: As of September 1, 1981, there were 55,557 acres partly or totally cleared with 50,068 of them burned in comparison with 35,000 in 1980. Of the burned acres, 40,334 have had at least initial breaking, and final cleanup has been completed on 7,071 acres which means that berm piles now cover less than 10% of the land.

In 1981, there were 13,380 acres planted to barley and another

5,120 with other crops including oats for hay, grass seed, rapeseed, and spring wheat. The planted acreage doubled in the Delta Project in 1981 from 9,000 acres in 1980 to 18,500 acres in 1981. If the farmers can see a market for their products, the acreage should double again in 1982 to between 35,000 and 40,000 acres. The land for this much planting will be ready and available in the spring, and much of the processing and storage capacity for this size planting will be in place.

The Farmers Co-op at Delta has fertilizer storage for 6,000 tons of fertilizer, enough for 40,000 acres of barley. They have grain storage in place for 10,000 tons (400,000 bushels) which could accommodate the yield from 6,000 to 10,000 acres. And they have a grain drying capacity of about 1,600 bushels per hour. Farmers are also busy constructing on-farm storage.

Seed to plant this acreage is in short supply due to early frosts which have damaged germination. The Plant Materials Center has Foundation seed for the seed industry but there is not enough this year to serve the planting needs. It is anticipated that a great deal of seed will have to be imported from Canada to supply the seed not supplied by local growers. Some of the Canadian varieties do well in the Delta area, which is the reason for importing seed from a foreign source rather than from the other states. Barley seed is anticipated to be expensive this spring because of demand, and this may discourage some growers from planting as much as they might have with cheaper seed available.

POINT MACKENZIE: This project has effectively been brought to a halt until the courts decide if it can proceed. In the lottery for the

land, there were 154 qualified participants for 31 parcels. (The competition for land, even for "agricultural rights only" land, continually increases.) Seven disgruntled applicants who had been judged unqualified for a variety of reasons brought suit against the sale. Judge Johnstone of the Superior Court in Anchorage issued a preliminary injunction on March 20, 1981 which became a permanent injunction on May 4, 1981. The basis for this permanent injunction was that the the State exceeded its own regulations in requiring a farm development plan prior to conducting a lottery. The State has appealed the decision to the Supreme court, but no decision has been rendered by that body. Agricultural title did pass to those who won parcels belonging to the borough which had been included in the sale, and some clearing work has been done.

If the Supreme Court overturns the Superior Court decision, clearing on the Point MacKenzie Project may proceed in the spring of 1982 after only one year's delay in the project. If they uphold the Superior Court decision, clearing will be delayed at least another year.

A second suit was filed by a group of people who were purportedly loggers and by the Sierra Club because they claimed the timber would be destroyed. There is no question that the timber would be destroyed, since that is the purpose of land clearing. The question is whether or not the timber value to be saved by harvesting conventionally exceeds the extra cost of clearing induced by claiming the timber prior to chaining the trees down. The question was settled out of court by requiring the farmers to put their timber up for sale. Title to the timber would transfer with the sale so each farmer could determine on

his own if he were willing to accept the extra cost of clearing on the basis of the amount bid for the timber. The problem from the standpoint of the farmers is that standing timber can be tipped over by dragging a anchor chain between two large tractors. As the trees are turned over, the roots are pulled out of the ground, and can easily be removed. When the trees are cut beforehand, chaining is no longer effective, and it is necessary to go to the more expensive system of bulldozing the roots out. This is also potentially more harmful to the soil because more top soil is pushed into the windrows.

NENANA: This project is still in the planning stage because of the lack of access across the Nenana River to the 300,000 acres or so of agricultural land in this area. Planning has been coordinated throughout by the City of Nenana which conceived the development to be an integral part of their future economic base. The plan anticipates a more diversified type of agriculture which will include not only animals and feed production for chem, but also vegetables for the fresh and for the processed market. Nenana is strategically located to serve as a focal point for much of the agriculture in the Interior with the river transportation routes intersecting with railroad and the Parks highway at that point.

The initial Nenana project will contain two townships, which is 46,080 acres. Access to the area will be by road, and the 1981 legislature funded the design and engineering of bridges and roads for this project area. The Nenana project land sale and clearing will follow after Delta II.

DELTA II: This is an expansion of Delta I and consists of two parts. Delta East is north and east of Delta I, and Delta West is across the Delta river at Delta Junction. These two areas comprise between 50,000 and 60,000 acres. Although most of the soils in this area are Class II and III, other land use interests have registered some objections to the project, and decisions and agreements on alternate land uses have not allowed a positive designation of exact acreages. Sale of agricultural rights was scheduled for early spring of 1982, but delays resulting from disagreements over alternative land uses and over procedures for handling the sale may delay the project past time when clearing can begin for another year.

OTHER: In addition to special state agricultural projects, "agricultural rights" only have been sold to an additional 302 parcels since 1978. The total acreage of these parcels is 52,816 for an average size of 175 acres. These parcels either have no development plan or have a 10-year plan pending access. Because of this, and because no specific money was earmarked for clearing loans, the activity on this land is not progressing as fast as it might otherwise. Tanana Loop is the farthest along with about 50% of the acreage cleared. Tanana Loop is adjacent to Delta Junction and may receive some fallout interest generated by the Delta project. Additional financing at rates comparable to those available in the project areas might assist these people to complete their development plans and aid in starting a cash flow for them from the land.

In some of the areas where development plans are only required to be started when access is available, some owners have expressed an

interest in delaying access in order to delay their having to develop the land. This is a means of getting title to wilderness estates under agricultural right title without having to put the land to agricultural use.

Potlatch Ponds, a 1980 sale of 61 parcels of 14,356 acres near Fairbanks, is still in court, so development cannot proceed.

SECTION III

A STRATEGY FOR FUTURE ALASKAN AGRICULTURE

The future of Alaskan agriculture will be whatever the people of Alaska want it to be. If they do not want agriculture as a part of the Alaskan economy or way of life, it will remain at a very low level of activity. If the people want agriculture, the State has the land, capital and human resources to make it a viable part of the economy.

Agriculture will not be created or developed by the State or any agency or institution created by the State. It will be developed on the land by the farmers themselves on the basis of their production capability and access to profitable markets (24). The focus of their efforts must be on those things in which they can determine a comparative advantage, and they must serve the consumer at least as effectively and cheaply as he is presently served by the existing system. The role of government should be to create the climate in which this can happen, not through creation of institutions and hierarchies that serve no useful function. Care must be exercised not to institutionalize activities that should be and must remain purely temporary.

The basic strategy remains one of providing opportunity for a farmer to make a profit. All else is pure enhancement, and should be examined carefully to determine if it is really in the public interest. In all of the efforts made to improve agriculture in the developing nations over the past many years, one thing stands out most clearly as a means to success of the efforts, and that is simply, if a farmer in one of the developing nations is shown how he can make a profit or improve his income by adoption of new techniques, he will change his way of doing things. Usually this means an increased productivity and better access to markets.

Development of an economic agriculture in Alaska, one returning a profit to the farmer while maintaining our policy of cheap food for the consumer, will be a long-term undertaking in view of the need to develop the infrastructure of a modern, state-of-the-art industry. Full development of Alaska's agricultural capacity might take as much as 50 years and the investment of many billions of dollars, depending on the extent to which people want agriculture to develop. These would by no means be all State dollars.

There are those who may object to developing large commercial agriculture aimed at production for world markets, but such size is necessary in order for local agriculture to compete in the local markets with production from other areas, and profit is the incentive to make farming work. There is a statement in an article in Business Week for December 21, 1981 that is pertinent to this situation. The article on page 53 refers to the development of computer technology by the Scandinavians, and states:

"For one thing, their home markets are too small to lull them into thinking they can avoid world competition . . ."

Alaskans must realize that if they develop agriculture, they must develop a world class agriculture to be in the game at all. Otherwise, the agriculture we develop will be either a subsidized recreational activity for the well-to-do on their country estates, or subsidized subsistence agriculture for the very poor. In neither of the latter two cases will the benefits exceed the cost.

Small-scale agriculture must not be overlooked in the total scheme of development, since it is very desirable from the standpoint of life-style, local nutrition, family firm income enhancement, and improved subsistence, and beneficial in many other ways such as providing open space for urban dwellers and improved recreational opportunities.

However, most opportunities for small farm development will be based on the infrastructure created by economical, large scale agriculture and access to additional job opportunities. This paper assumes the desirability of developing a wide range of types of agriculture, but is based on the premise that an economical, self-sustaining and self-supporting industry must be the basis of development.

Before mounting a development effort therefore, it is necessary to ask the question as to whether there is a place for Alaskan agriculture in the world market. There is no overabundance of food in the world, but distribution and ability to pay restricts the amount used in any given year. Trends over the past 20 - 30 years show that the developing nations are increasing their food production at a higher percentage rate than the developed nations and at a higher rate than population increase. There are local disparities in these trends, of course. Barr (4) concludes that it is not the trends that are the problems, but the fluctuations from year to year. On the whole, it appears that grain production may well increase sufficiently in the next few decades to accommodate the increase in population (22), but fluctuations in availability may cause even more violent fluctuations in price and therefore in incentives to increase at the most desirable rate. Also, the decrease in the percentage increase in production for the developed countries may indicate a plateau in technology that will require adjustments in agricultural systems in order to be able to produce enough for expanding populations worldwide.

The significance of this information for Alaska is that, yes, there is a place for Alaskan agriculture if we are willing to compete in the world market, but there is no void just waiting to be filled (29). Our possible niche in the market needs to be well-identified, and when we decide to move into that niche, it must be in a manner and at a time to stay in the market.

One very important and often overlooked aspect of agriculture is the

transitional role it plays both geographically and culturally. It provides both a physical transition from urban to wilderness and a conceptual transition from subsistence, self-sufficient life style to a money-based, job-oriented, industrial economy. In time structure, agricultural work fits the pattern of the weather and the seasons rather than the artificial "time packaging" of industrial age 20th century, but provides a concept of postponement of return on investment of labor which is characteristic of the urban-industrial environment. Agriculture helps "humanize the wilderness" (8) while relieving the pressure-cooker tensions of urban living, without the dramatic and traumatic contrasts between pure urban and pure wilderness.

As a planned and activated ecological system, agriculture enhances the ecological awareness of the urban culture (9) and awareness of the subsistence culture for the economic aspects of controlled ecology. Agriculture may, therefore, have a large social effect that could be as important to Alaska as the economic impact.

Total development of Alaska's potential agricultural industry must be viewed as a long-term process, not as a project or a series of similar projects. Planning for such a process must conceive of development extending over 2, 3, 4, or more generations, and be sufficiently flexible to accommodate changes as they occur in economic and social theory and structure as well as fantastic changes in technology and information flow that appear to be just over the horizon. Such flexibility in planning will prevent our superimposing obsolete concepts on our future state residents.

The tremendously productive U.S. agriculture that presently supplies the U.S., plus \$40 billion of surplus production for export, is the result of at least a century of development of institutions relating to our present system. Most of these are designed and have to support the farmer in the field in making his decisions. These institutional arrangements have been so effective

in twentieth century America, and we have tried to export them intact to the developing nations." Fortunately, there are those who recognize that institutions do not transfer directly, but must be modified to fit the time and place of introduction, otherwise, they serve as additional burdens. The same is true for development in Alaska. Imported institutions must be modified to fit our own realities. And in fact, there should be a process of constant examination of our institutions to see if they are really serving the purpose of support that they should be serving.

Technology development and transfer have been and continue to be especially important components of improvements in modern agriculture. The emphasis of industry in agriculture has been on the development of specialized machinery and the efficiency of mechanical power.

An additional industrial involvement following World War II was from the chemical companies as a result of the discovery of certain pesticides. For instance, the introduction of DDT as a control for potato insects in 1946 caused a doubling of per acre yields through control of Colorado potato beetle and especially leafhoppers. The herbicide, 2-4-D, which was the direct result of wartime research, provided us with the first concept that chemicals could be used selectively to kill weeds without harming the crop plants to which they were applied. The hormonal nature of this chemical opened up the field of growth control chemicals for plants such as was already known for animals.

The other major industrial component of our agricultural system, other than fossil fuels for energy, is plant food, fertilizer. This involves mining companies and also the oil industry since petrochemicals serve as feedstocks for the production of nitrogen fertilizers.

Because of the decreasing real cost of fossil fuel energy from the 20's to the 80's, a period of 60 years, a massive transportation network was developed which served not only to get food into the local market by farm-to-market roads,

but very extensive transportation systems also allowed regionalization and even nationalization of agricultural markets. For instance, New Jersey, which used to be called the "Garden State", now imports about 50% of its produce from California on the other side of the continent. This massive transportation network allows the people of Alaska to eat Florida radishes and Mexican tomatoes during the winter.

One resource area that long remained almost the exclusive domain of the public agency research system was plant genetic improvement, especially in the major field crops. Plant breeding was almost a public prerogative, although there was some private plant breeding mainly in the area of asexually propagated material where improved strains could be patented. Sexually propagated plant materials were not patentable in the U.S. until the passage of the Plant Variety Protection Act. Other countries had long recognized breeders' rights. The Plant Variety Protection Act plus more recent concepts that have developed in genetic engineering have led companies with large cash reserves such as the oil companies to acquire many of the larger seed companies and genetic engineering firms. This is not to say that the plant genetic resources will become controlled by the oil companies. Industry has yet to sort out its role in this area. The very rapid advances in computer technology and the breaking of the genetic code of DNA, both of which relate to information flow, are so intriguing that industry cannot afford to overlook the possibilities and potentialities inherent in this newer technology. Many new institutional arrangements will be tried and discarded before the most effective ones are settled upon.

The information industry is probably the fastest growing industry in the U.S. today. This is impacting agriculture as intensely as any other segment of the economy. Information exchange has greatly speeded up the rate of adoption of new technologies on the farm, and this rate of increase will continue to go

faster and faster through the use of computers and new communications techniques. For instance, one of the first applications of Teletext in this country will be to bring to farmers information on their TV screens of weather and commodity market trends. Nebraska has developed an information network called AGNET which now serves 35 states, two Canadian provinces, Venezuela and Saudi Arabia (16). Alaska has not even started to think in terms of these newer technologies, but it must if it is to develop an agriculture that can compete continually in the world market and in the local market.

The reason these new technologies will be developed and adopted by U.S. agriculture at a rapid rate is that most agriculturists concede that our level of productivity in our most important crops has reached a plateau. Even though U.S. production greatly exceeds present U.S. food needs, the growing demands worldwide will put more and more pressure on the U.S. farmer to increase production. Even with present technology, the U.S. could produce more. We are highly productive on a per man-hour basis because of the substitution of fossil fuels, machinery, and chemicals for human labor. On a per acre basis, U.S. production does not measure up to some of the areas in the world where there is more intense concentration on land and labor utilization.

Holland, which is a very small country, exports flower bulbs and cheeses to all parts of the world, and surprisingly controls about 90% of the world export market in seed potatoes. England, which is usually thought of as a completely industrialized country, claims to have the most productive agriculture in the world. This claim may be disputed by the Danes who supply vast quantities of bacon and eggs for the English breakfast. Japan has been a very efficient producer of food, producing about 50% of the population's requirements on about $\frac{1}{4}$ acre per person. This per acre production in relation to population needs in Japan is reported to be changing rapidly in this end of the 20th century because

of a shift to higher consumption of meat.

Americans tend to do things in a big way - large machines, large acres, large profits hopefully. We are still thinking in terms of economies of scale so that if a little is good, more is better. This is certainly an option where there is a great deal of land available for agriculture, and where land is a relatively cheap economic input. This option is available to Alaska for agriculture for a time. It has certain definite advantages in initial development of the industry since it can bring the cost of production down to allow us to compete at world market prices and establish a position in the market.

Alaska is often thought of, and rightly so, as the equivalent of a developing nation. A great deal of effort has been spent by the Rockefeller Foundation, the Ford Foundation, USAID programs, World Bank, church groups of various denominations, and by most of the more developed nations of the world to analyze and define systems that work to improve the food production capability of the lesser developed countries. Some of the concepts developed for this purpose may apply to Alaska, but many do not.

Concepts developed to aid the lesser developed nations generally assume an indigenous farm population and an agriculture of one sort or another in place; programs are then conceived to increase the efficiency and productivity of the farmers. The Alaskan situation more nearly resembles developments that have taken place and are taking place in Canada, Australia, and perhaps Israel and Brazil, where systems are applied to bring new areas into production where there has not previously been farming.

Wortman and Cummings have prepared a very thoughtful work characteristic of those studies on lesser developed nations and programs to aid them. Their four requisites for increased productivity and increased income at the farm level are

very similar to Mosher's five essential elements for agricultural development as listed by Wortman and Cummings (32). These five elements are:

1. Markets for products
2. Constantly changing technology
3. Local availability of supplies and equipment
4. Transportation
5. Production incentives for farmers

Mosher also adds five "accelerators":

1. Education for development
2. Production credit
3. Group action by farmers
4. Improving and expanding land
5. National planning

If Alaska is to develop a meaningful and viable agriculture in the future, all of the above are necessary plus a few additional requisites that are specific to Alaska's needs. The above requirements and the additional prerequisites are restated below in terms of Alaska and Alaskan agriculture.

1. A GENERAL AWARENESS OF THE POTENTIAL FOR AGRICULTURE AND THE CONTRIBUTIONS AGRICULTURE CAN MAKE TO THE LONG TERM ECONOMIC STABILITY OF ALASKA IN A WORLD OF RAPIDLY INCREASING FOOD NEEDS.

There have been some attempts by public agencies and the University of Alaska to make estimates of the potential for agriculture and to bring this to the attention of the public at large, as well as to the attention of policy makers. Hard data are difficult to come by and difficult to interpret. The best data are those of the Soil Conservation Service which has made actual on-the-ground assessments of soils for cropping suitability. Some limited weather data are available from remote sites, and a very limited amount of actual experimental cropping has been done. A greater effort needs to be made on a

continuing basis to acquire actual crop response information over a much wider area. Even so, it is very easy to become extremely enthusiastic about the agricultural possibilities based on what is known at present. This enthusiasm can be helpful in creating a public awareness, but it must be restrained to the point of reality as shown by actual data in hand.

2. A VERY CAREFUL ASSESSMENT AS TO WHAT THE PRODUCTION POTENTIAL OF CROPS AND LIVESTOCK ARE, AND WHAT MARKETS EXIST OR CAN BE REALISTICALLY PROJECTED FOR THESE PRODUCTS.

The history of agriculture in Alaska is a long one as shown in an earlier section of this report. The history of scientific research in Alaska as applied to agriculture goes back over 80 years and provides an assessment of the kinds of crops and livestock that can be produced, but there is only limited information on what kind of production could be achieved using the best of modern technology. For instance, estimates were made for the Delta project of 50 bushel per acre barley based on general production in Alaska (25). This was roughly twice the national average per acre yields. In the first year of production in the area using modern techniques, varieties, and equipment, some farmers turned in records exceeding 70 bushels per acre over large acreages. Underestimation of production in feasibility studies may not be bad, but an error of this magnitude in the opposite direction would have serious consequences.

Market assessments are even more difficult because there has been virtually no modern marketing techniques applied to Alaskan production, and only limited marketing experience. An agricultural industry consists of both production and marketing, but these have been separated for so long in the public image that few people seem to recognize that wholesaling and retailing of food is a part of agriculture. The demand that Alaskan agricultural production be for local markets neglects the fact that most Alaskans are fed by competitive production

from outside the state. The rapidly growing sophistication in the transportation and marketing of agricultural products makes local penetration of the market system by Alaskan products very difficult. Computerization of inventory control and ordering makes it easier for the grocer or the wholesaler to order from suppliers outside the state than to discuss orders with brokers or producers inside Alaska. A realistic assessment of the market system as it applies to Alaska is mandatory, and such a study must point out ways in which Alaskan producers can participate in the market process.

It can be predicted that resistance to agricultural development will be found within the business communities of the state because they will view market penetration by local production as an intrusion on the well-developed systems of which they are a part. It is characteristic of underdeveloped nations that the wealth and political power of the state become concentrated in one or a few centers, and that the short-range views and objectives of the few limit the development of the hinterland. Alaska clearly resembles an underdeveloped nation in this regard.

3. FIRM DECISIONS BETWEEN ALTERNATIVE USES OF LAND.

The Growth Policy Council survey of what kind of development the people of Alaska wanted clearly showed they wanted development of renewable resources. The survey did not determine which renewable resources and renewable resource industries were meant. They may have meant fisheries and hydropower; or if they were talking about land resources, they could have meant agriculture, forestry, tourism, and wildlife management, all of which compete for the same space. Agriculture and forestry compete not only for land as space, but also for land as a resource component of the industry. It is unfortunate that we seem to have reached a state of mind where everything has to be one thing or the other. There is plenty of room in Alaska for all the forests we need for a few generations plus all the agriculture we can develop in the next 50 to 100 years,

and still have a great deal of land left over for wildlife and other amenities we desire. Since each of these could flourish in exactly the same place but not at the same time, then we must make firm decisions as to which shall occur where. These need not be cast in concrete for all time, since undoubtedly other forces will bring about future adjustments.

An example of changes that do occur over time as a result of changing conditions is what happened in Massachusetts land. Over a period of 20 to 30 years, a great deal of land went out of agricultural production. The general assumption was that the land was paved over as a result of urban sprawl, a reasonable assumption since we have been bombarded with this kind of information for two decades. A survey of land use, and a comparison with land use 20 years before, revealed the startling information that most of the land was not into urban sprawl, but into trees. The same has been found true in other areas of the East. As agriculture lost its regional character and became more nearly national, the East Coast has become one of the fastest growing timber regions in the country. So in Alaska, establishment of agriculture in one area with removal of trees for crop production may be a temporary matter in terms of generations. Agriculture has always been transitional and probably always will be moving and changing to accommodate the realities of the historical period. In order for development to occur, definite areas must be designated for agricultural use even though that may not hold for eternity.

The concept in Alaska of disposing of "agricultural rights only" in State land reflects a misunderstanding of why some areas on the East Coast were buying up land and leasing back the agricultural rights to that land.

The problem was not urbanization but that open space so needed and enjoyed by urban dwellers was disappearing into trees or out of agriculture because of high taxation or other disincentives. Agriculture provides open space

for urban dwellers, and is more important to the vast majority of them than is the true wilderness. Short-term views of decision makers may neglect this aspect of a congenial community.

4. ARTICULATION OF GOALS AND ACHIEVABLE OBJECTIVES.

Fortunately the State has already made excellent progress in this direction, and has made a commitment to bring 500,000 acres into production by 1990 in an effort to meet the goals and objectives for agriculture as developed by the Department of Natural Resources.

These goals and objectives are as follows:

- a. Identify and maintain an agricultural land base.
- b. Provide financial incentives to establish an agricultural industry not based on permanent subsidy.
- c. Develop transportation and processing facilities.
- d. Develop a cooperative management program with State, Federal, and private landowners.
- e. Develop marketing programs for Alaska production.
- f. Support agricultural development with research, teaching, public service programs.
- g. Increase public understanding of the agricultural industry.
- h. Use Alaskan sources of fertilizer, lime and other soil amendments, and alternative energy sources.

THE SPECIFIC GOALS ESTABLISHED TO MEET THE ABOVE GENERAL OBJECTIVES ARE:

- a. Produce sufficient grain and oilseed crops to meet Alaskan needs and to compete in world markets.
- b. Produce a major portion of the meat consumed by Alaskans (beef, pork and others).
- c. Produce the milk consumed in Southcentral and Interior Alaska.
- d. Achieve seasonal self-sufficiency in fresh produce, and develop a viable vegetable processing industry.

- e. Meet regional demands for reindeer meat.
- f. Develop subsistence-scale agriculture to improve nutrition and reduce food costs in more remote areas of the State.

It should be kept in mind that the State will not do the development but should provide the climate and incentives for industry to achieve the State goals and objectives for people. The State is presently developing a 10-year plan.

5. CONCEPTUALIZATION OF INITIAL SYSTEMS FROM WHICH GROWTH AND DEVELOPMENT CAN PROCEED.

In order to be realistic, these systems must be the kinds of systems that are already in operation successfully in other parts of the nation and the world, or soon will be. There is no reason to go backwards to systems that have already been abandoned by others in spite of the emotional appeal attached to the memory of those systems. Systems must be credible, and hard facts must be present to demonstrate their credibility. The Delta project is a case in point. The Delta Junction area was chosen, among other important reasons, for the fact that farming had already been demonstrated to be feasible in the area with over 20 years background experience to demonstrate that feasibility. Large-scale land clearing had been demonstrated by at least one farm in the area. Barley was chosen as the major crop of emphasis because grain production and marketing requires the least infrastructure of any of the major world crops, and barley is the fastest maturing cereal grain. Processing of grain may be limited to cleaning and drying. As long as it is kept dry, it stores readily, it can be moved easily by mechanical means so it can be handled and shipped without particular difficulty, and grain is freely traded in the local and in world markets. Quality standards are well-defined and constant throughout the market. Also, successful production programs in grain can lead to a quantum jump in agricultural production to livestock feeding which provides alternative use for the product and therefore a stabilizing effect on the whole industry. Livestock

systems, of course, require a very sophisticated processing and marketing system which will take time to develop.

Systems devised for various areas must fit the climatic, soils, and market requirements. This could vary from region to region, and this regionalization in itself can have detrimental political consequences. Planners should consider how the regions should mesh together into larger overall systems rather than allowing regions to destroy each other by unwarranted forms of competition. The legislature should consider funding a continuing economic study of State agricultural projects in progress as a basis for projecting needs. Delta I, for instance, is in progress with the farmers on the land generating hard data which would be extremely useful in translating success to other developments throughout the State. Historical documentation of this project can disappear very rapidly, and archives should be established either by the University or the State library to keep the records permanently before they are gone. This should include not only the sale and following results, but the actions of the Agricultural Action Council, the former Governor's ad hoc Agricultural Committee, and the Agricultural Policy Task Force established by Senate Joint Resolution 77 which all bear on this matter. Also important in this regard are the planning meetings by the Tanana Rural Development Council and their documentation of community participation in planning.

In addition to maintaining documentation and continuing records, a computer simulation model of the Delta I project should be constructed in such a fashion that the economic realities can be built into a model designed to make relatively accurate projections into other areas.

6. AVAILABILITY OF LAND AND OTHER INPUTS.

Since land is a resource component of agriculture, land must be available to those who will farm. Only "domesticated" forestry, which is a long-range cropping system, uses land in the same way as conventional agriculture. Most other land uses only occupy land rather than using it. It is instructive in

this regard to look at the ownership and use patterns of land in the lower 48 states and compare them to Alaska.

In the U.S., excluding Alaska, there are 2.3 billion acres of land (28). Sixty percent, or 1.3 billion acres, are in non-Native private ownership, leaving 40% (0.92 billion acres) in public and American Indian ownership. Of the privately owned land, 95% is owned by farmers, ranchers, and foresters. Two percent of the private land is owned by 52 million home owners, and the remaining 3% is owned by commercial, industrial, and recreational interests.

In Alaska, by contrast, $\frac{1}{4}$ of 1% of the land is in non-Native private ownership, 11.7% (14) is scheduled to be transferred to Native private ownership, and the other 88% will remain in public ownership.

This, of course, does not tell the whole story for land and agriculture. Whereas in the lower 48 states, public policy throughout our history has been to assure that lands suitable for cropping be transferred from the public domain to private ownership, and diversity through the family farm ownership has been policy also. The same has not necessarily been true in Alaska since statehood. Also, in the lower 48, American Indians were often relegated to lands unsuited to agriculture except in a few instances. By contrast, the Alaskan Native groups are entitled to 44 million acres of land under the Alaska Native Claims Settlement Act which they were allowed to select on the basis of the best information available to them. Since the land they selected included their villages, and since the villages were scattered along the major river systems of the State, the land selections made by the Native corporations include the majority of the potential agricultural lands to be found in private ownership. Whether or not they use the land for that purpose is entirely up to the Native groups themselves. Since the Alaska Native has a much better understanding of the need for a local food supply than the non-Native, it would not be surprising to see them take the lead in agricultural development either directly or through joint venturing with other groups.

Land is not the only resource input necessary for agriculture. There must also be plant and animal resources adapted to the climatic zones and capital resources in the form of initial investment capital and continuing production credit.

7. IDENTIFICATION OF FARMERS.

Agricultural projects initiated thus far in Alaska have taken considerable pains in the identification of those who might have the best chance of success. The only real reason for this is the limited amount of land and opportunity being made available, so it has been necessary to try to assure the success of these early projects. If enough land were made available, and if we did not try to restrict access to this land to people presently in Alaska, there would be no problem in identifying those who would be willing to undertake farming. As it is, there have been many more good applicants for every parcel of land in agricultural projects than there have been parcels of land. To those who continue to ask where the farmers are going come from, the answer is that they are just waiting for the opportunity to farm. A Bedfordshire, England farmer (23) says:

"Eventually Alaska will have to realize the hard truth that outsiders with the necessary toughness, skill and determination must be given every chance and encouragement to take on the challenge of farming in the far north. What is needed now is an influx of men and women who will put down their roots in the cold soil of Alaska and make it their home. Only then will Alaska have developed an agricultural system of sufficient size to ensure the desired measure of self-sufficiency."

To date, we have been concerned in agricultural projects that Alaskans have first opportunity. There are two major reasons: 1) the amount of land in projects is so small that there are only very limited opportunities available, and 2) by the time lands were designated for State Parks and wildlife refuges,

there was very little potential agricultural land left in State ownership available for agricultural development projects. The actual difficulty that the State has had in locating enough class II and III lands in state ownership to meet legislative requirements for classification of 650,000 agricultural acres indicates the lack of land in state hands. Boroughs claim a portion of state lands, but in spite of the fact that at least four boroughs (Mat-Su, North Star, Kenai Peninsula, and Bristol Bay) have passed resolutions favoring the development of agriculture, they have, in general, tended to defer to the State for leadership.

Boroughs tend to be run as "for profit" corporations rather than as servants of the people. As such, boroughs generally favor activities that will generate higher tax returns, such as home ownership, subdivisions, and commercial or industrial enterprises. They have heartily endorsed the State's policy of creating artificial shortages of private lands because that has increased assessed value, thus raising taxes by default rather than by legislation.

A farmer, to be successful, need not necessarily have had previous farming experience, but it helps. Going through the motions of farming will yield a certain level of return, but the success of farming is dependent on the management of tremendous numbers of variables. The better one handles information and puts it to work, the more successful he will be in farming. Management may be much more important in farming than in most other kinds of business because one is required to manage biological systems under seasonal regimes that are essentially unpredictable. Cash flow is a serious matter because of the long time span between sales and therefore the ability to manage credit is especially important in determining success.

8. SURFACE TRANSPORTATION NETWORKS.

Perhaps the most important effort to be undertaken by the State in support of agricultural development will be the establishment of surface transportation

nets. Farmers must have ready access to the land they farm, and they must be able to move seed, feed, fertilizer, machinery, and other necessary inputs to the farm in a timely manner, and to move production outputs to market. For the present time, and probably for the next 50 years or more, this means surface transportation. While it is true that people can be moved rather economically to and from almost any location in Alaska by air, movement of materials is most economically achieved by water, pipeline, rail or road transport. Rail and barge transport work very well between different production areas or between production areas and major markets, but management within production areas requires much greater individual flexibility which indicates that automobiles and trucks will remain important for this purpose.

These transportation nets should not be constructed just for agriculture, nor should the cost of such transportation nets be charged to agriculture. They will be just as important for other human activities as they are for agriculture. Planners should try to link a variety of resources through such nets. Transportation is a part of the overall "infrastructure" of society to which all of society contributes and from which all of society receives a wide variety of benefits, both economic and social. The transcontinental railroads, for instance, were constructed to tie our nation together into a single unit. Construction was subsidized by granting large acreages of public lands to the western railroads which, in turn, stimulated settlement and agricultural production along these railroads; eventually agricultural products became the major haul that kept the railroads in business and provided the general public with cheaper food.

9. SETTLEMENT POLICY.

It is virtually impossible, and in any case questionable, to have agriculture without having settlement. Even with absentee landlords, there generally needs to be someone present as a caretaker. In addition, the service sector that makes agriculture possible has to have business in place, and people

who can provide the necessary goods and services. These activities range from provision of specific inputs such as seed and fertilizer to the community services such as energy, distribution, communications, schools, doctors, etc. Agriculture is a long-term industry calling for the establishment of communities with the whole range of social services that any community demands.

With the State withholding development rights to all the property in project areas, and restricting on-farm building to personal use and to use of the State agricultural projects, there have been no provisions in state projects for the development of service centers on privately held land. Planners should understand that geographical principles govern where towns will form. Generally speaking these locations are in the vicinity of resources that may be put to use, and towns form where there is a disruption of rapid flow in a surface transportation system. The most common disruption in flow is the intersection of two separate lines of transport. These may be the same or different modes. Intersection of roads, or roads and rivers, or roads and railroads, etc.

Alaska seems to have been more concerned with preventing the development of new communities than it has with helping them develop. The pipeline, for instance, was constructed under a plan described by Joseph Fitzgerald (12) which consciously prevented settlement along the pipeline route. The system created construction camps which could subsequently be dismantled after construction was completed. The construction workers were taken to the camps for various periods, and then returned to the south after a tour of duty. The purpose was to prevent the degradation of the North Slope environment and presumably along the rest of the line since the same system was used throughout. The purpose was served and the environment was saved, but only at a tremendous cost in human terms. Families were separated for long periods, and many families that accompanied the workers to Alaska found wives and children transplanted into new and often harsh (in their terms) environments without the daily support of man in the family. The children were placed in new school environments with

additional adjustments to be made. Many wives could not cope adequately and homes were broken. The impact of the military approach to construction of the line has affected a great many Alaskans who participated in construction and may continue to have negative impacts on their perception of societal values. The Alaskan economy gained tremendously from the oil, but there was little of a redeeming social value in the systems used for construction of the pipeline. Alaska will pay for that for a long time to come.

Alaska seems to have the attitude that new cities are bad. The main advantage to creating a new capital city would be to relieve the pressure of a continually growing population in Anchorage long after it has reached and exceeded its optimum size. The other advantage is apparent in the pressure the capital move issue put on Juneau to create a productive economic base rather than depending on transfer payments from the rest of the State as an economic base. New communities may be good if properly sited where they can perform a useful function.

Alaskans must realize that more and more people are going to come to the State to live in the future. As work opportunities decrease in the other states with the deepening of the present recession, there will be increasing numbers who will look for new opportunities here. Alaska has always been good to those who want to do a good job. The only thing that presently prevents a flooding of new people into the state is the perception that Alaska is a cold inhospitable place that is not a decent place to live. Increasingly, that notion is being dispelled, and Alaska, although not one of the fastest growing states, has a high level of population growth. Much of the growth, admittedly, is due to the increase of births over deaths. Alaska's population is vibrantly young. The median age of the population is 26. Another indication of the youth of the population shown by the 1980 census is that Alaska has the lowest percentage of population in what the Census Bureau calls the middle years (44-64) of any of the states, 14%. In other words, the majority of the population is in the age

where they are establishing families and settling down to long-term careers. These are the creative years and Alaska would do itself a long-term favor by providing maximum opportunity for this group to participate in creative development through a settlement policy based on transportation systems and resource areas, new centers of excellence.

10. CAPITAL AVAILABILITY AND CREDIT

The long range U.S. farm policy has been to encourage diverse ownership of our food production base by special concessions to the family farm unit. On the other hand, short-range policies such as allowing industrial and commercial profits to be capitalized into farm land along with the profits from farming, and the inheritance tax system which punishes the farmer for owning the land, have almost eliminated the chance for young people to get into farming, unless the farm is transferred within the family by very careful estate planning. How many young people can inherit a farm in Alaska? The establishment of a modern farm is very capital intensive, ranking at least in cost with the establishment of a small to moderate sized business. Capital costs for land clearing, essential building construction, and acquisition of machinery can easily cost a half million dollars before any cash flow is generated.

Returns to investment are generally low, except that there has been a constant increase in land values over the past 15 years that has exceeded the return to farming per se. Increased costs of input have transferred farm profits into other segments of the economy, so that net increase in food products in the coming year is not expected to be as great as the general level of inflation.

Many people consider that farm capital and credit supports are subsidies to the farmer. In actuality, they are subsidies to the consumer. The consumer in America pays only about 16% of his take-home pay for food, a percentage lower than any other country in the world. If the prices charged by the farmer were put on the same basis that industry charges for goods and services, the consumer

would have to pay somewhere in the neighborhood of 40% of his take-home pay for food. The lack of industrialization of agriculture operates in concert with our national cheap food policy which requires the farmer to purchase his input in a controlled economy and sell his products in a highly competitive market. Put another way, the businessman calculates his price by determining the cost of inputs plus profit. The farmer offers his perishable goods for sale for whatever he can get, regardless of the costs of his production. This is the reason a farmer may get less than minimum wage for his labor.

In any development scenario, it should be realized that the capital inputs for developing large acreages will be exceptionally large. At \$1,000 per acre, for instance, it would require an investment of \$1 billion to bring a million acres into production. The banking community does not have that kind of money for investment in agriculture within the state, nor does it have the information to evaluate large-scale investment in agriculture. Unfortunately, it would even have trouble buying this kind of expertise, since investment in a development climate is not the same as investment in a developed situation. Experience in agricultural banking is only half the equation. The other half is in high-risk venture capital experience. The suggestion that the Alaska Renewable Resources Corporation was not a viable institution in the agricultural field (19) was due to the perception by the rest of the banking community of the State that it could do a better job making money with State funds by investing the State's money in other things. The banking community is right about short-term investments, but the object of venture capital-development banking is something quite different. The returns are long-range and may have other far-reaching but not easily perceived benefits.

In addition to initial capital investment, there has to be continuing production credit. The Commercial Fisheries and Agricultural Bank can and does

provide for the that type of financing. It will not be totally effective until we reach a well-developed stage in our agriculture, since it is an institution designed to operate in a completely established and well-defined situation. There has been certain resistance to this operation also from the banking community. We are not alone. Banks all over the country look askance at the federal farm credit system for two reasons. Farms are viewed as a subsidized operation since it was government money that initially financed the credit system, just as the state provided the original financing for CFAB. The federal government also refinanced the farm credit system following the depression of the 30's. However, the participants in the loans eventually are required to buy out the government's interests. The same is true with the state. The second reason that the banking community looks askance at the CFAB and the farm credit system is that it is essentially a cooperative such as the credit unions. This farm credit system has been very effective nation-wide and has supported the cheap food policy.

The agricultural revolving loan program was established as a development program, but never operated as such except in some loans made for land clearing. It has not yet been funded to a level which could support actual development, and will probably always be more useful for production credit loans than development loans. It can provide a better system of production credit in a development era than can CFAB, since it can provide low interest loans during the development period. CFAB is not a loan agency of last resort as the loan fund can be.

If the banking community can become structured to fund development projects in agriculture, then it should be welcomed to participate. Efforts should be resisted to have the banking community take over the state agricultural loan functions under the guise that it has the expertise to evaluate loans. It

does not have that expertise in place, and is not likely to develop it in any reasonable time frame. Somewhere down the road we may see the beginning of the rural bank in Alaska that services the local agriculture. Until that time, our present banking community should invest in the agricultural support industries.

Development of long-range renewable resource industries such as agriculture is a better means of ensuring returns on investment to our children and our children's children than investment of State money in short-term high interest commercial paper. The investment is surer and the returns more meaningful.

11. PUBLIC AND PRIVATE SERVICE INSTITUTIONS

There are at least four major areas of service that may be provided by either public institutions, by private enterprise, or by both:

a. Research. Research is, and should be, a continuing process, and may be provided to agriculture by either public or private institutions, but probably can be provided most effectively by the University of Alaska through the research system that links Alaska to the rest of the nation. A very thorough study of research needs and organization should be undertaken to determine how best to serve Alaska beneficiaries on one hand and to enhance professional reputations and capabilities of the researchers on the other.

On the face of it, it would appear that we should take a page from the Canadian book and concentrate on applying the results of basic research being done in the other states and Canada. Canada found that it could do this very effectively using basic research results from the U.S. until they finally reached a stage where they could do a better job in their areas of specific interest. Alaska might consider the same. If Alaska were to concentrate almost solely on spending research dollars on applications of very immediate interest, however, participants in the research would suffer not only professionally, but would suffer a lack of self-esteem through loss of the stimulating experience of searching for new knowledge

regardless of where the search might lead. Double returns could be expected if the scientists involved could be transferred every few years to some related institutions such as can be found in Canada and other areas of the world for periods of unrestricted research which might be related to Alaska. The only requirement to be demanded would be publication of the results in a reputable referred scientific journal.

Research has also been authorized by the legislature as a legitimate function of the Plant Materials Center of the Division of Agriculture. That research can only be research that is not pursued by other state and federal agencies, which leaves a wide latitude. Certainly, there is no reason why there cannot be cooperative research between the University researchers and the Plant Materials Center personnel, especially in the area of crop adaptation.

Research has been found to be most productive where there are people with mixed interests in practical research and in what is called "basic research." The above suggestions on research must be viewed as a temporary expedient to try to get as much for the money as possible. Perhaps the State could establish a check-off system of financing research by charging a fee per bushel or some other measure of production. Many states have gone to this kind of approach with commodity groups.

As the only state in the Union located in a high latitude position, with climatic factors more comparable to many foreign nations than to the other states, our agriculture can use genetic material found in these other countries even though the same genetic material may not be of use anywhere else in the nation. Under federal quarantine regulations, much woody plant material introduced from a foreign country must be sent to and

grown in isolation for at least three years in Glen Dale, Maryland. The undeniably beneficial purpose is to prevent the introduction of pests and diseases, but quite often this quarantine location is so far out of the range of adaptation for the plant material of interest to Alaska that it is dead before it can be released to us. The federal quarantine people are willing for the State of Alaska to construct and staff a quarantine station in Alaska under the operating supervision of the Animal and Plant Health Inspection service. The establishment of such a quarantine station in conjunction with the Plant Materials Center would allow the importation of useful plant materials from all other high latitude countries directly to Alaska while still providing protection against the introduction of pests and diseases.

b. Education. The vocational agricultural programs in the secondary school can be valuable, not only in training future farmers of our state but for non-farming students as well, to give them basic concepts as to what agriculture is all about and to alert them that the supermarket is not the basis of our food system.

Within the University of Alaska, there could be established an actual degree program in agriculture. Presently, Alaska is the only Land Grant College in the U.S. that does not teach agriculture. On the basis that there are not enough students to justify an agricultural curriculum, the School of Agriculture and Land Resources Management has had to resort to such strategies as courses in Natural Resources Management. Although highly valuable for agricultural students, it tends to lose something in translation. An alternative might be to provide a fourth or fifth year curriculum of combined work and courses in agriculture only, as a requirement for an agricultural degree.

There also needs to be continuing education for those involved in the industry. This could be informal sessions provided by the Cooperative Extension Service, or there could be a special effort within the Community College system to provide special courses in a more formal setting. The Mat-Su Community College is doing just that.

With the increase in the so-called "Seminar Industry", it is possible that private enterprise may enter the education picture, although that does not seem all that likely at the moment. Perhaps instead consultants will come to be used more to provide information on specific subjects, which may be more a part of the next section than this one on education.

The University will not provide adequate educational and research support to agricultural development if the Board of Regents to whom the President of the University responds does not favor agricultural development. At present, at least two members of the Board appear to be opposed to agricultural development. As a result, education and research in support of agricultural development may have to take place outside the normal and usual land grant university context. If this proves to be true, then the Division of Agriculture and the Plant Materials Center would be the logical focus for these efforts. Also if this were true, the Governor could designate one of these institutions to receive the federal matching funds for agricultural research and the State matching funds that support the federal grant. It might be worthwhile to bring this possibility to the attention of the concerned agencies, not as any sort of threat, but rather as an expression of the critical need for providing these services to a developing agriculture in this state.

c. Information Services. Management of any business enterprise requires access to major amounts of information. In these days of rapidly growing

information and data sources, it is imperative that accurate information be available on rapid notice for decision-making. Probably no enterprise requires information of such a broad nature as agriculture. This ranges from a variety of information needs in production of plants including nutrition, variety response, moisture, plant health and pest control; market information, animal production systems; waste disposal; credit; cash flow and other financial information; and a broad spectrum of other information. The Extension Service can provide access to much of this kind of information, consultants can provide some, accountants and bookkeepers may be helpful, and various advisory sources are available, in addition to a number of publications and periodicals. With the advent of satellite communications and microcomputer technology, we can look forward to the time when the farmer can have access at his fingertips to more information than he may be able to use. Interpretation of that information and putting it to use has always been the major task of the farmer. One place where government can serve agriculture very well would be in the realm of statistical compilation of a variety of information in a format readily and easily put to work by the farmer. Support of a communications network that could provide this information on an easily accessible and timely basis could aid development immeasurably.

It might be well to think in terms of creating an "intelligence section" within the Division of Agriculture. This section would compile a wide range of agricultural industry information on a very current basis, analyze this information for its direct applicability to the Alaskan situation, and make the results available on an instant retrieval basis to those interested in agricultural development. This process could also serve to identify gaps in our knowledge and provide a genuine basis for

determining basic research needs and to define our position relative to world markets.

d. Quality Control. Establishment of standards for the marketplace and aid to farmers in meeting those standards through inspection services has long been a legitimate concern of government. Where such standards are put on a strict regulatory basis, the farmers seem to be encouraged to play games with the inspectors to see what they can get by with. On the other hand, if regulation and assistance go hand in hand, they can be complementary and exceptionally advantageous to a developing industry.

12. GROUP ACTION BY FARMERS.

Farmers must organize themselves in ways that can make their voices heard in the legislative halls and in the marketplace. If they produce a quality product, they have every right to expect that they will be able to market that product in fair competition with any other area. Their special concerns must become the concerns of the majority of the people. If they make a contribution to society, society should be told, and the only ones to tell that story are the farmers themselves. Working together they can also aid in acquisition of inputs for their operations, and together they can do a better job of marketing at a more favorable price than they can by cutthroat competition.

Farmers should not allow themselves to be over-organized so that their interests are dissipated; rather they should focus on their specific needs and concentrate their efforts.

It is necessary, in conclusion, to emphasize that the great majority of potential agricultural lands in Alaska will be in the hands of private owners, primarily the Native corporations. The State projects on State lands are, therefore, only experimental, and serve as demonstrations. Institutions created by the State to serve agriculture and agricultural development must be

structured to serve not only the State-controlled and devised project areas, but all the rest of the potential and actual agriculture in the State.

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ALASKA

LANDS

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BRIEFING

2-2-81

MEMORANDUM


State of Alaska

TO Senator Bettye Fahrenkamp
Senate Resources Committee

DATE: January 15, 1981

FILE NO:

TELEPHONE NO:

FROM  Dept. of Natural Resources

SUBJECT: Alaska Lands Budget

As per your request, attached is a copy of the Department of Natural Resources' task list for state projects related to implementation of the Alaska Lands bill. The list was prepared by a legal intern in the Division of Research and Development in December, 1980, after passage of the federal legislation. It is being used to prepare the State's Alaska Lands budget.

FEDERAL PROJECTS MANDATED UNDER THE ALASKA LANDS BILL

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3 months	<u>Notice of Requirements for Exploration on Unperfected Mining Claims in Misty Fjords and Admiralty Island National Monuments</u> - The Secretary must provide public notice of the requirements for exploration permits, means of obtaining mineral patents, and leases within 90 days from date of enactment.	441	504 (h)	DOA			
3 months	<u>Doyon-State Land Exchange</u> - Upon relinquishment by Doyon, Ltd., of selections in Charley River Watershed, which must occur within 90 days from date of enactment, certain selected lands shall be conveyed to the State.	703	1421	DOI			
3 months	<u>Bristol Bay Cooperative Management Plan</u> - Governor must notify Secretary of Interior within 3 months of State's election to participate in Federal-State preparation and implementation of comprehensive management plan.	613	1203 (c)	DOT			
6 months	<u>Study of Quartz Hill Area</u> - The Secretary of Agriculture, in consultation with other Federal agencies and the State, must prepare an analysis of mineral development in Quartz Hill area. The report must be available for public comment in draft form within 6 months after the date of enactment, and analysis must be completed within 9 months from the date of enactment.	429	503 (h) (2)	DOA			
6 months	<u>Native Allotment Applications</u> - Some applications pending prior to passage of ANCSA will be approved in 180 days unless the Secretary determines lands may be valuable for minerals, or unless State has	519	905 (a)	DOI			

1 Page number refers to page in H.R. 39 as amended by the Senate.

2 Agencies designated are expected to have an interest in the project, but the list is not to be considered definitive of all participating agencies.

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	selected land prior to December 18, 1971, and it was not later withdrawn for Village core township selection.					
6 months	The State must file within 180 days to protest any allotment application eligible for approval under the expedited process, stating such lands are necessary for access to Federal, State, or municipally-owned lands, resources, or water bodies used for transportation.	521	905 (a) (5)	DOI		
	<u>Conflicting Allotment Applications</u> - When there is a conflict between 2 or more allotment applications, the Secretary must adjust the descriptions to eliminate any conflict.	522	905 (b)	DOI		
6 months	<u>Amending Land Description</u> - The Secretary may allow allotment applicarts to amend their land description only after notification to the State and all interested parties, in which such parties shall have 180 days from date of Act, or 60 days after notice, to protest such amendment.	523	905 (c)	DOI		
	The Secretary must identify and adjudicate any record entry or title application made under an Act other than the Native Allotment Act or ANCSA, prior to issuing any certificate for allotment.	525	905 (e)	DOI		
6 months	<u>Consolidated Application Forms</u> - The Secretaries of Interior, Agriculture, and Transportation and other appropriate Federal agencies must publish within 180 days from date of enactment a consolidated application form to be used when seeking approval of a transportation or utility system unit.	582	1104 (b) (1)	DOI; DOA; DOT		

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9 months	<u>Unperfected Mining Claims in Misty Fjords and Admiralty Island National Monuments</u> - The Secretary will issue an exploration permit for an unperfected mining claim if application has been submitted within 270 days after date of enactment and satisfies the other requirements of this section and Sec. 504(d).	437	504 (c)	DOA			
12 months	<u>EIS for Quartz Hill Area</u> - Secretary must prepare an EIS concerning the access road and bulk sampling phase of the Borax mining proposal in the Quartz Hill area. The draft EIS must be completed within 1 year after date of enactment.	430	503 (h) (3)	DOA			
12 months	<u>Establishment of Subsistence Resource Regions</u> - Secretary, in consultation with the State, will establish subsistence resource regions and local and regional advisory councils. One year after date of enactment to assist policy formation and management of wildlife resources for subsistence use.	490	805 (a)	DOI			
	The Secretary may establish local advisory committees if he finds that State fish and game advisory committees do not adequately provide recommendations for strategy implementation.	490	805 (a) (2)	DOI			
	The Secretary must assign staff to assist the regional advisory councils in collection and dissemination of relevant support data.	492	805 (b)	DOI			
12 months	The Secretary will not implement sections providing for Federal establishment of local and regional participation in subsistence management if the State enacts and implements laws within 1 year that are consistent with Federal provisions for specified	493	805 (d)	DOI			

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	<p>preference and participation. Regional advisory councils will then report to the State rule-making authority.</p> <p>If such local and regional advisory boards are established, the Secretary must reimburse the State up to 50% of the costs of establishing and operating the councils pursuant to Section 805(e)(1).</p> <p><u>Federal Monitoring of Subsistence Preference</u> - The Secretary must monitor State provisions for subsistence preference and must advise the State and Congressional committees annually with regards to implementation of these provisions.</p> <p><u>Judicial Enforcement</u> - If the Secretary determines, based on requests from local or regional advisory committees, that preferences for subsistence use are not adequately provided for, he can ask that the State make adequate and timely provision for such subsistence preference. If this is not done, the Secretary may bring an expedited suit in Federal court, in which the State must bear the burden of showing why its subsistence management provisions should not be enjoined.</p>	494	805(e)(1)	DOI			
	<p><u>Federal Monitoring of Subsistence Preference</u> - The Secretary must monitor State provisions for subsistence preference and must advise the State and Congressional committees annually with regards to implementation of these provisions.</p>	495	806	DOI			
	<p><u>Judicial Enforcement</u> - If the Secretary determines, based on requests from local or regional advisory committees, that preferences for subsistence use are not adequately provided for, he can ask that the State make adequate and timely provision for such subsistence preference. If this is not done, the Secretary may bring an expedited suit in Federal court, in which the State must bear the burden of showing why its subsistence management provisions should not be enjoined.</p>	495	807	DOI			
12 months	<p><u>Park Subsistence Resource Commissions</u> - A subsistence resource commission shall be established for each national park or monument within which subsistence uses are permitted. The commissions shall be established within one year of the date of enactment with the Secretary and Governor appointing three members each.</p>	498	808(a)	DOI			

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12 months	<u>Submerged Lands Statute of Limitations</u> - Any civil action to contest subject matter jurisdiction must be filed within one year of the date of enactment.	514	901(h)	DOI			
12 months	<u>Arctic Research Study</u> - The Secretary, along with the Secretaries of Defense and Energy, shall conduct a study of the Naval Arctic Research Laboratory (NARL), in consultation with the State and other interested parties. The study and recommendations shall be submitted to Congress, after public review and comment, no later than one year after date of enactment.	568	1007(a)	DOI; DOE; DOD			
12* months	<u>Oil and Gas Leasing Program for Federal Lands Other Than on North Slope</u> - Secretary is required to develop a program for oil and gas leasing on non-North Slope lands. In doing so, he shall seek the views of the Governor, local governments, Natives, and the Land Use Council. The Secretary must report to Congress by October 1, 1981, and annually thereafter with regards to the exploration, development, and leasing activities on these lands.	571	1008(a)	DOI			
12 months	<u>Chugach Region Study</u> - Secretaries of Interior and Agriculture, the Alaska Land Use Council, and the State, if it elects to participate, are directed to study land use and ownership patterns within the Chugach region. The study is to be completed within one year of date of enactment of this Act.	759	1430(a)	DOI; DOA			

* Legislation designates that report must be submitted by October 1, 1981, therefore, 12 month decision-making period assumes legislation will be enacted around October 1980.

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✓ 16 months	<u>Review of Quartz Hill Mining Proposal</u> - The Secretary must conduct and complete any administrative review of the decision concerning the Borax proposal for development of a molybdenum mine within 4 months after publication of the final EIS. If the proposal is approved, the Secretary must issue a special use permit for a surface access road for bulk sampling. The Secretary may not issue such permit until after determination of a full field season of work for gathering 1981 baseline data has ended.	431	503 (h) (4)	DOA			
✓ 18 months	<u>Baseline Study of Coastal Plain of ANWR</u> - Secretary, in consultation with Governor, will conduct a continuing study of fish and wildlife resources, and their habitat, on the coastal plain of the ANWR. Results of such study are to be published within 18 months after date of enactment.	558	1002 (c)	DOI			
18 months	<u>Park Subsistence Resource Commissions</u> - Within eighteen months of the date of enactment, each park commission is to develop a program for subsistence hunting within the park. The program is to be developed using information and data produced through studies conducted either jointly or separately by the State and the Department of the Interior.	498	808 (a)	DOI			
20 months	The Governor has 60 days following submission of a plan by the commission in which to propose changes or recommendations, prior to the Secretary taking any action on the plan.	499	808 (b)	DOI			

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✓ 2 years	<u>Implementation of ANCSA</u> - Any judicial review of the Secretary's decisions with the exception of determinations of ownership of submerged lands, must be initiated within 2 years after the day the Secretary's decision becomes final or date of enactment of this Act, whichever is later. Party seeking review must exhaust all administrative appeals first.	515	902(a)	DOI			
✓ 2 years	<u>Guidelines for Exploratory Activity in ANWR</u> - The Secretary must promulgate regulations establishing guidelines governing exploratory activities in ANWR within 2 years from date of enactment. An EIS, prepared by the Secretary, must accompany the initial guidelines.	559	1002(d)	DOI			
2* years	<u>Presidential Transmittal of Mineral Information</u> - The President must transmit to Congress before October 1, 1982, and annually thereafter, all public information obtained by all Federal agencies regarding minerals in Alaska.	578	1011	USGS; BOM			
3 years	<u>Kantishna Hills and Dunkle Mine Area Study</u> - The Alaska Land Use Council, in cooperation with the Secretary, is mandated to evaluate resources in this area of Mount McKinley National Park and make recommendations within 3 years from date of enactment of this Act concerning the mineral potential in the area.	383	202(3)(b)	DOI			

*Legislation designates action by October 1, 1982, therefore 2 year decision-making period assumes legislation will be enacted around October 1980.

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3 years	<p><u>Comprehensive Conservation Plans for Wildlife Refuges</u> - The Secretary must develop a comprehensive conservation plan for each refuge, which must be prepared in consultation with appropriate State agencies. Plans for at least 5 refuges must be completed within 3 years after date of enactment; plans for at least 10 refuges must be completed within 5 years from date of enactment. In any event, all plans for refuges must be completed within 7 years from date of enactment. Prior to adoption of any plan, the Secretary must issue public notice in the Federal Register and make copies of the plan available for public review and comment.</p>	415	304 (g) (4)	DOI			
3 years	<p><u>Studies on Potential Wild & Scenic Rivers</u> - The Secretary must conduct studies on 12 specified rivers with regard to designating them as part of the Wild & Scenic Rivers System. Reports must be transmitted to Congress within 3 years from date of enactment. Studies on the Utukok and Kanektok Rivers must be submitted to Congress concurrently with the Bristol Bay Cooperative Region Plan.</p>	468	604	DOI			
3 years	<p><u>Establish Boundaries and Management Plans for Wild and Scenic Rivers</u> - Within 3 years, the Secretary must establish boundaries and prepare detailed development and management plans for the Alagnak, Beaver Creek, Birch Creek, Delta, Fortymile, Gulkana and Unalakleet components.</p>	470	605 (d)	DOI			

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✓ 3 years	<u>Wilderness Study Within National Forest</u> - Within 3 years, the Secretary of Agriculture shall report to President and Congress his recommendation; for wilderness preservation in the Nellie Juan-College Fjord area of Chugach National Forest.	479	704	DOA			
	<u>Study of Increasing Timber Yields</u> - Within 3 years, the Secretary must transmit to Congress a study of methods of increasing timber yields on national forests in Alaska.	481	705(c)	DOA			
3 years	<u>Bristol Bay Cooperative Management Plan</u> - Cooperative Federal and State preparation and implementation of comprehensive and systematic cooperative management plan. Upon agreement, the plan will take effect within 3 years after date of enactment.	613	1203(c)	DOI			
	<u>Scenic Highway Study</u> - The Secretary shall conduct a study regarding establishment of a Denali Scenic Highway, in which the study team consists of representatives from the State, Natives, and Federal agencies. The study is to be conducted within a 3 year period beginning on the date of enactment of the Act.	641	1311(b)	DCI			
4 years	<u>Periodic Reports Concerning Subsistence Management and Use</u> - The Secretary is required to submit a report to Congress within 4 years of the date of enactment, and every 3 years thereafter, concerning implementation of the subsistence title. The report must include comment by the State and advisory councils.	503	813	DOI			

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5 years	<u>Land Use Plans for National Conservation Area and National Recreation Area</u> - Secretary must develop a land use plan for the Steese National Conservation Area and White Mountain National Recreation Area within 5 years from date of enactment.	419	402(a)	DOI			
5 years ✓	<u>Study of Timber Supply and Demand</u> - Study is required to be undertaken by the Secretary, but shall be conducted in cooperation and consultation with the State, Alaska Land Use Council, Natives, and other interested parties. The report is to be conducted within 5 years from the date of enactment of the Act and every 2 years thereafter.	482	706(b)	DOA			
5 years ✓	<u>Submerged Lands Statute of Limitations</u> - In order to challenge the Secretary's determination of the non-navigability of a water body and subsequent ownership of the submerged lands by a Native corporation, the State must file a civil action within 5 years after execution of an interim conveyance executed after date of enactment of Act or within 7 years if the interim conveyance was executed prior to the date of enactment of this Act.	508	901(a)	DOI			
5 years	<u>Stikine River Region Study</u> - Within 5 years, the President must consult with the Canadian Government regarding access by Canada in the Stikine River region and report his findings to Congress.	600	1113	DOI; DOT			
5 years, 9 months	<u>Congressional Report on Oil and Gas Development on the Coastal Plain</u> - The Secretary must report to Congress not earlier than 5 years and not later than 5 years and 9 months as to areas in the coastal	564	1002(h)	DOI			

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5 years	<p>plain having oil and gas potential and the effects of future mineral development on the resources in the area.</p> <p><u>National Park Service Plans.</u> The Secretary is required to develop, within 5 years from date of enactment, a conservation and management plan for each unit of the National Park System that was established or to which an addition was made. Development of these plans is to include, to the extent practicable, participation by the State and the Land Use Council, as well as provide for comment through public hearings.</p>	616	1301(a)	DOI			
5 years	<p><u>General Wilderness Review.</u> Within 5 years from date of enactment, the Secretary must review all lands within national parks and refuges as to their suitability for wilderness designation. Such review must include review by the State as well as public comment.</p>	650	1317(a)	DOI			
7 years	<p><u>Presidential Recommendations for Wilderness -</u> The President must advise Congress as to his recommendations with respect to lands reviewed for wilderness designation within 7 years from date of enactment.</p>	651	1317(b)	DOI			
8 years	<p><u>North Slope Land Studies -</u> The Secretary must conduct a study and make findings of all Federal lands in the North Slope to assess mineral potential, transportation systems, wildlife resources, and potential wilderness designation. The Secretary must consult with the State and provide an opportunity for public review and comment. This study must be conducted within 8 years from date of enactment,</p>	555	1001	DOI			

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	and results must be submitted to the President and Congress. Annual progress reports must also be submitted as to implementation of this title.						
10 years	<u>Report at Termination of Land Use Council</u> - Upon termination of the Council 10 years after date of enactment, the Co-Chairmen must submit a written report to Congress regarding the Council's accomplishments and recommendations.	609	1201(1)	Land Use Council			
10 years	<u>State Selections</u> - The Statehood Act is amended to provide the State with an additional 10 years in which to select lands to fulfill its entitlement.	526	906(a)				
20 years	<u>Tax Moratorium Extension on Native Conveyances - Undeveloped Native lands, conveyed pursuant to this Act, and used solely for exploration, shall be exempt from State and local real property taxes for 20 years from vesting of title or date of issuance of an interim conveyance, whichever is earlier.</u>	517	904				

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<p><u>Access in Gates of the Arctic National Park</u> - Secretary must give 30-day notice in the Federal Register upon application for access across the western unit of the Gates of the Arctic National Preserve to allow other applicants to apply.</p>	372	201 (4) (c)	DOI			
<p>Secretary of the Interior and Secretary of Transportation must jointly prepare an environmental and economic analysis to determine a route for the right-of-way, as well as terms and conditions required for issuance of the right-of-way. Such analysis must be prepared in draft form within 9 months from receipt of the application, and must be completed within 1 year thereof.</p>	373	201 (4) (d)	DOI; DOT			
<p>Both Secretaries must jointly agree upon a route for issuance within 60 days from completion of the analysis.</p>						
<p><u>Kenai Fjords National Park</u> - The Secretary is authorized to develop access to the Harding Icefield and allow use of mechanized recreation equipment.</p>	375	201 (5)	DOI			
<p><u>Wildlife Refuge Administration</u> - The Secretary must prescribe regulations and establish conditions needed to assure that activities permitted under any use or easement grants are compatible with purposes of the refuges.</p>	411	304 (b)	DOI			
<p><u>Ecological Study of Barren-Ground Caribou</u> - The Secretary, in cooperation with the Governor, must conduct an ecological study of the caribou herds.</p>	417	306 (b)	DOI			
<p><u>Fisheries on National Forest Lands</u> - The Secretary of Agriculture, in consultation with the State and Secretaries of Commerce and the Interior, shall promulgate regulations regarding the maintenance of</p>	442	505 (a)	DOA; DOC; DOI			

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<p>anadromous fish habitats and populations when such habitats and populations are affected by mining activities on national forest lands.</p>						
<p><u>Approval of Plan of Operations for Mining Activities</u> - All mining operations that will create a significant surface disturbance are required to obtain approval of their plan of operations. The Secretary of Agriculture shall approve these plans in consultation with the State and other Federal agencies. Such plans and mining activities are to be reviewed on an annual basis by the Secretary.</p>	442	505 (b)	DOA			
<p><u>Cooperative Fisheries Planning</u> - Secretary of Agriculture is directed to implement a cooperative planning process for development of fisheries resources with the State and nonprofit aquaculture corporations. Each revision of National Forest Management Plans must include a report on the status of this planning process, including an analysis of current projects and a prioritized list of future projects.</p>	460	507 (a)	DOA			
<p><u>Administrative Provision of Wild & Scenic Rivers</u> - The Secretary will determine the necessary access allowable to permit commercial development of asbestos deposits in the North Fork drainage.</p>	469	605 (b)	DOI			
<p><u>National Forest Timber Utilization Program</u> - The Secretary of Agriculture must establish a program to maintain the timber supply at the specified rate from the Tongass National Forest to dependent industry.</p>	480	705 (a)	DOA			

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<u>Guaranteed Loan Program</u> - The Secretary of Agriculture must establish a program of insured or guaranteed loans to purchasers of national forest materials to assist in equipment acquisition and implementation of new wood-utilization technologies.	481	705 (b) (1)	DOA			
<u>Regulations on Subsistence Management</u> - The Secretary is authorized to promulgate any regulations necessary to implement the provisions of the subsistence title.	504	814	DOI			
<u>Research on Subsistence Uses</u> - The Secretary, in cooperation with the State, shall undertake research on fish and wildlife and subsistence uses on public lands.	502	812	DOI			
<u>Alaska Land Bank</u> - The Secretary is authorized to establish a Land Bank Program and enter into agreements with private landowners whose land use affects Federal or State lands. The State has the option of participating in the program, but if the agreement is between the Secretary and a private party, the State must be given the opportunity to become a party to the agreement and enter in to negotiations.	543	907	DOI			
<u>Implementation of ANCSA - Use of Protraction Diagrams</u> - The Secretary may base a patent to lands issued under this title on a protraction diagram in lieu of field surveys upon agreement with the patentee. However, the recipient of the patent will bear any gain or loss of acreage due to errors in the protraction diagram.	552	909	DOI			

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<p><u>Exploration Plans for ANWR</u> - The Secretary shall determine within 120 days after application if a plan for exploration of the coastal plain is consistent with established guidelines. Prior to any determination of consistency and subsequent approval, the Secretary must publish notice and text of plan in the Federal Register and in a newspaper of general circulation within the State, and hold at least 1 public hearing for comment.</p>	560	1002(e)	DOI			
<p><u>Regulations for Oil and Gas Leasing Program</u> - The Secretary is authorized to promulgate regulations regarding the issuance of competitive oil and gas leases on non-North Slope Federal lands. Discovery of economic quantities of oil and gas under a non-competitive lease pursuant to the Mineral Leasing Act of 1920 will cause the Secretary to suspend further noncompetitive leasing and require him to determine the nearest favorable petroleum geological province to the discovery.</p>	574	1008(d)	DOI			
<p>Prior to any exploration or subsequent production and development on a lease, the Secretary must approve a plan if he finds that the activities could be conducted in a manner consistent with protection of the area. The Secretary must monitor the performance of the lessee.</p>	574	1008(f)	DOI			
<p><u>Oil and Gas Lease Applications</u> - The Secretary must issue a statement of reasons as to his decision regarding the approval or disapproval of any lease application. If an EIS is not necessary, the Secretary must render a decision within 6 months after receipt of the lease application, or within 3 months after publication of the final EIS, if required.</p>	576	1009	DOI			

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<u>Associated Lands Study</u> - The State will be encouraged to undertake similar studies of oil and gas potential on lands associated with Federal land either geologically or because of transportation needs.	573	1008 (b) (3)				
<u>Mineral Assessments</u> - The Secretary must assess mineral potential on all public lands and consult and exchange such information with the State regarding Federal responsibilities and similar state programs.	576	1010 (a)	DOI			
<u>Regulations Regarding Mineral Assessments</u> - The Secretary must promulgate regulations regarding mineral assessment activities in conservation system units.	578	1010 (b)	DOI			
<u>Transportation Systems - Agency Notice</u> - Within 60 days after application for approval of a transportation system has been made, the head of the Federal Agency must respond to the applicant in writing as to whether the application contains sufficient information.	583	1104 (d)	DOI DOA; DOT			
<u>EIS for Transportation Systems</u> - The draft of any EIS, required to be filed in conjunction with an application, must be completed 9 months from date of filing by the Federal agency having lead responsibility. The final EIS must be completed within 1 year from time of filing, after public review and comment.	584	1104 (e)	DOI; DOA; DOT			
<u>Federal Consideration of State Views Concerning Approval of Transportation Systems</u> - In determining application approval of transportation systems, the Secretary must consider the views of the State, the Land Use Council, and Natives.	585	1104 (f)	DOI; DOA; DOT			

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<p><u>Agency Decision</u> - Each Federal agency with jurisdiction to review applications must make a decision, supported by detailed findings, to approve or disapprove each aspect of the transportation system falling within its jurisdiction within 4 months after the final EIS.</p>	585	1104 (g)	DOI; DOA; DOT			
<p><u>Standards for Approval of Transportation Systems</u> - Each Secretary must make his decisions in accordance with applicable law. If no applicable law exists, the Secretary must make recommendations to grant authorization upon finding the transportation system compatible and that no feasible, alternative route exists.</p>	587	1105	DOI; DOA; DOT			
<p>If all involved Federal agencies give their approval, the system will be approved and each agency must promptly issue all necessary authorizations. Upon disapproval of an application, the applicant may appeal to the President, who will have 4 months to consider the appeal. Upon Presidential approval, each Federal agency must issue the necessary authorization. If the President denies the application, the applicant may file suit in Federal court.</p>						
<p><u>Standards for Approval of Transportation Systems Involving Wilderness Areas</u> - In cases in which no applicable law exists or a wilderness area is involved, each Federal agency must notify the President of their decision regarding approval of the application. Within 4 months after receiving such notification, the President must approve or deny the application. The President must submit his decision to approve the application to Congress for approval by joint resolution within the first 120 days of continuous Congressional session.</p>	590	1105 (b)	DOI; DOA; DOT			

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<u>Terms of Right-of-Way in Wilderness Areas</u> - Either the Secretary of the Interior or Agriculture must include use requirements pursuant to any issuance of right-of-ways to protect and maintain resources in any wilderness area.	593	1107(a)	DOI; DOA			
<u>North Slope Haul Road</u> - The Secretary of the Interior and Transportation, in conjunction with the State, are to determine the number of vehicles and seasonality of use on this road.	599	1112(a)	DOI; DOT;			
<u>Alaska Land Use Council</u> - In a cooperative federal-state effort, a land use council is to be formed in which the State may elect to participate. If so, the heads of various State agencies, along with a State Co-Chairman, will be appointed by the Governor to serve. The heads of the Alaska offices of the NPS, USF&W, NFS, BLM, Heritage Conservation & Recreation Service, NOAA, and DOT shall represent the Federal Government, along with a Federal Co-Chairman appointed by the President.	601	1201	DOI; DOA;			
<u>Functions of Council</u> - The council must conduct studies and advise Federal agencies, the State, local governments, and Natives with regard to land and resource uses. The council is to recommend cooperative planning zones to the State and enter into cooperative management agreements.	605	1201(i)				
<u>Nonacceptance of Council Recommendations</u> - If a State or Federal agency does not accept a council recommendation, the Agency must provide the council with written response within 30 days as to its reasons.	609	1201(k)	Land Use Council			

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<u>Public Participation</u> - The council must implement a public participation program with representatives of the public and private organizations to assist the council.	610	1201(m)	Land Use Council			
<u>Federal Coordination Committee</u> - A Federal Coordination Committee is established and will be composed of the of the Secretaries of Agriculture, Energy, the Interior, Transportation, the Administrators of EPA and NOAA, and the Federal and State Co-Chairmen of the Land Use Council. The Committee must meet once every 4 months to coordinate land and resource administration in Alaska.	611	1202	DOI; DOA; DOE; DOT; EPA; NOAA; Land Use Council			
<u>Cooperative Information and Education Centers</u> - The Secretaries of the Interior and Agriculture are authorized to investigate and develop information and educational centers with the assistance of appropriate State agencies.	633	1305	DOI; DOA			
<u>Local Hire Program</u> - The Secretary, in consultation with the Office of Personnel Management, must establish a program to provide for special hiring practices to employ local persons with special knowledge or expertise concerning a CSU. The Secretary must report periodically to Congress as to the implementation of this program.	637	1308	DOI; OPM; DOL			
<u>Effect of Prior Withdrawals</u> - State's relinquishment of selections made on November 14, 1978, will trigger revocation of the Federal Government's reservations and withdrawals made in November, December 1978, 1979, and 1980.	654	1322	DOI			

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✓ <u>Eklutna-State Agreements</u> - The Secretary must accept relinquishments and make conveyances of selections according to the terms of agreement executed by the State, the Municipality of Anchorage, and Eklutna, Inc.	718	1425	DOI			
<u>Koniag Village and Corporation Lands</u> - Each Koniag Village Corporation, to which conveyances specified in this title have been made, must convey 20 acres to the State to be held in trust for any future Municipal Corporation established in the Native Village for community expansion.	747	1427(e) (3) (B)	DOI			
✓ <u>Conveyance of Property in Lieu of Land to Cook Inlet Region, Inc.</u> - An Amendment to P.L. 94-204 allows the Native association to accept surplus property in exchange for acres of land. Prior to any such disposition, the Administrator of GSA must notify the governing body in the locality in which property is located and any appropriate State agency to allow for any formal objection within 90 days to such disposition.	796	1435	DOI; GSA			
<u>Boundaries</u> - The Secretary must comply with notice and reporting requirements, and receive State concurrence prior to any extension of coastal boundaries of conservation system units beyond the high tide line to include State-owned lands.	367	103(a)	DOI			
<u>Map and Legal Description of CSU</u> - As soon as practicable after enactment, the Secretary must publish in the Federal Register and file with both houses of Congress a map and legal description of all changes in land status.	367	103(b)	DOI			

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<u>Restrictions on Commercial Fishing Rights</u> - The Secretary may not restrict the exercise of any valid commercial fishing rights in Cape Krusenstern National Monument, Wrangell-St. Elias National Preserve, or Glacier Bay National Preserve without first conducting a public hearing and finding a significant expansion of park use beyond the 1979 level.	386	205	DOI			
<u>Admiralty Island Land Exchange</u> - In connection with any land conveyance by the Federal Government to Shee Atika, Inc., the Secretary must reserve those easements, as designated by the Secretary of Agriculture, necessary to maintain public access and utilization of adjacent Federal lands.	459	506 (c) (2)	DOI; DOA			
<u>Subsistence Land Use Decisions</u> - No Federal agency may withdraw, reserve, lease or dispose of land in any manner that would significantly restrict subsistence use without prior notice and consultation with the appropriate State agency.	500	810 (a)	DOI			
<u>Closure of Parks to Subsistence Uses</u> - The Secretary may temporarily close any public lands to subsistence use only after consultation with the State and adequate notice and hearing.	506	816	DOI			
<u>Implementation of ANCSA</u> - Judicial review of decisions by a Village Corporation to reconvey lands must be initiated within 1 year after filing a boundary map.	515	902 (b)	DOI			
<u>State Selections</u> - The Statehood Act is amended to provide the State with an additional 10 years in which to select lands to fulfill its entitlement.	526	906	DOI			

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<p><u>Patent on Lands Having Prior Tentative Approval</u> - If the State elects to receive patent to lands on the basis of protraction surveys instead of field surveys, the Secretary must issue patent to the State within 6 months after notice of such election.</p>	528	906 (c) (3)	DOI			
<p><u>Tentative Approval of Prior State Selections</u> As soon as is practicable on the date of enactment, the Secretary is to issue tentative approval on prior State selections. Section 906(h)(2) provides for issuance of tentative approval on specified lands.</p>	530	906 (d) (3)	DOI			
<p><u>Future Top Filings</u> - The State may file future land selection applications on lands not presently available, and these will become valid selections at such time as the land becomes available.</p>	531	906 (e)	DOI			
<p><u>Access to Inholdings</u> - The Secretary must permit access to inholdings by the State and private landowners via nonmotorized and motorized transportation methods, subject to reasonable regulation. Such access cannot be prohibited without prior notice and hearing.</p>	596	1110	DOI			
<p><u>New Facilities Within Conservation System Units</u> - The establishment of any new federally-operated facility within a CSU will be permitted upon consultation with the Secretary of the Interior or Agriculture.</p>	639	1310 (b)	DOI; DOA			
<p><u>Wilderness Management - Structures</u> - The Secretary of the Interior or Agriculture must notify the appropriate Congressional Committees prior to the removal or construction of any public use structures within wilderness areas.</p>	648	1315 (d)	DOI; DOA			