LEG. FINANCE - BILLS 1979 - 1980 1372

SB 475 cont.,

(372)

IV. The fourth priorty is the expansion of processing facilities

Processing and transportation are the vital links between the producer and the consumer. Without efficient facilities to upgrade, refine, and transport agricultural production there can be no economic success. Several areas that need immediate attention are grain stroage processing and transfer facilities, red meat processing and marketing, vegetable processing, coordination of fishing industry by-products with livestock industry, and agricultural input transportation, i.e., fertilizer, machinery, seed, breeding stock, etc.

Adequate financing is the most crucial need in establishing a sophisticated, efficient agricultural processing sector. The Renewable Resources Corporation may be the financing vehicle to provide the necessary infrastructure for processing and handling of Alaska's red meat, grain, oilseed, and vegetable crops. Initial construction and management of such facilities could be under the interim control of the Alaska Agricultural Action Council. As soon as possible, the ownership and management function should be transferred to the private sector.

POINT MACKENZIE PROJECT PROPOSAL

I. INTRODUCTION

In accordance with its vested resposibility and with experience obtained under the Delta Project, the Alaska Agricultural Action Council proposes a new agricultural project in the Susitna Valley across Knik Arm from Anchorage. Titled the Point MacKenzie Project, this proposal is another step toward further planned development of Alaska's agricultural potential.

II. OBJECTIVES

The Point MacKenzie Project supports the Governor's goals to 1) stimulate the development of a renewable resource industry with non-renewable resource funds, 2) to encourage economic development which offers long-term net benefits to all Alaskans and 3) to improve the ability of the private market to provide needed goods and services. In addition the Matanuska Borough has long supported, and recently reinforced its support for this agricultural development project. The Borough also released a substantial portion of land to the State to provide a better managed project. The project also satisfies a recommendation of the Alaska Growth Policy Council, that "The Department of Natural Resources should make land available for agricultural development based on a proved potential and demand, and dispose of agricultural rights to these lands when appropriate..."

An expanding dairy industry in Alaska will more completely satisfy the existing market for dairy products, especially fresh milk, which is now being largely met by fluid milk from the Pacific Northwest. The dairy industry contributes to a year-round stable economy; encompassing production, processing, marketing and relevant service oriented industries. A modern

dairy farm is a major capital facility which includes livestock of high genetic potential, housing adequate to meet the needs of those animals, and sopisticated feed production equipment. These provide an important addition to the industrial-taxbase of Alaska. A major objective of the Point MacKenzie Project is the implementation of the program with deliberate speed to provide economy of scale to the dairy industry as quickly as possible, recognizing the need at this time for expanded in-state milk production to insure the very survival of the farmer-owned processing industry.

The Delta Project demonstrates the only large scale agricultural development in Alaska since statehood. It is perhaps simplistic to point out that the Point MacKenzie dairy project will provide an Alaskan market for Delta barley and straw.

The impact of the Matanuska Valley dairy industry is felt from the Kenai Peninsula to the Tanana Valley as it provides the formal framework for the artificial insemination industry in Alaska. The augmentation of the south-central dairy industry through initiation of the Point MacKenzie project could provide a base of support to developing dairy programs distant from it.

III. ECONOMIC FEASIBILITY

A thorough analysis of the feasibility of on-farm and processing operations has been made. That analysis indicates that the dairy expansion will be profitable if the project proceeds as planned. Modern production

units using the latest, most cost efficient methods of handling the required high producing dairy cattle are considered key components of the project. The financial analysis assumed the development of adequate services such as power and ground transportation as the project proceeds. This project enjoys the bonus of an existing sophisticated marketing structure already in place and serving the market. In fact, the processing part of that industry has excess capacity, which if unused threatens the health and feasibility of the present industry. The present dairy industry also enjoys an existing, although small, infrastructure including feed processing and manufacturing capability, the technology of artificial insemination, and a computer record processing system which will not have to be developed as part of this effort.

The economic analysis has shown the need for high levels of animal performance and management required to attain it. Levels of performance attained by Alaskan dairy herds presently on the Dairy Herd Improvement record system affirm that these goals are realistic. It must be emphasized that the net return to individual dairy farms is dependent upon the attainment of high levels of milk production and management. Irrespective of farm size, production levels below 14,000 lbs per cow per year are considered to be inadequate. Furthermore, the success of the project is highly dependent upon the ability of the Alaska milk industry to maintain a competitive position relative to fluid milk available from the Pacific Northwest. Increased milk production and the addition of new technology to both farm and processing components would be dominant factors in reaching this goal. With an agressive marketing approach, an increasing share of the Alaskan

milk markets will be gained by local milk.

The detailed analysis is attached.

IV. ECONOMIC IMPACT

The Point MacKenzie Dairy Proposal is designed to augment the small, viable industry remaining in the state. It will give economy of scale and stability to Alaska's present small, but profitable dairy industry which in turn provides the seed upon which this project will grow and develop. The project will initiate and support industry expansion to increase our fresh milk self-sufficiency from present levels of 20 - 30% to the total requirements in greater Anchorage and the railbelt area. An expanded industry will provide additional support for agricultural and support industries that are related to both commercial and subsistence lifestyles in Alaska. There are a number of factors contributing to the impact of the project to the local and state economies. It is difficult to document all of them for a project of this scope. An Alaskan based industry means that the multiplier effect will be felt to a considerable extent for any dollars spent to put Alaskan milk on the retail shelf compared to the limited dollar turnover for milk produced outside. This project will support 29-39 families and over 94 farm workers. It is expected an additional 15 families and workers will be added by off farm, new jobs. The project will add $18.2 million of farm revenue to the Alaskan economy, and $38.6 million in assessed property valuation

to the Matanuska Susitna Borough tax rolls. The development phase will add construction employees and a total construction payroll of approximately $9,645,000 over the first two years.

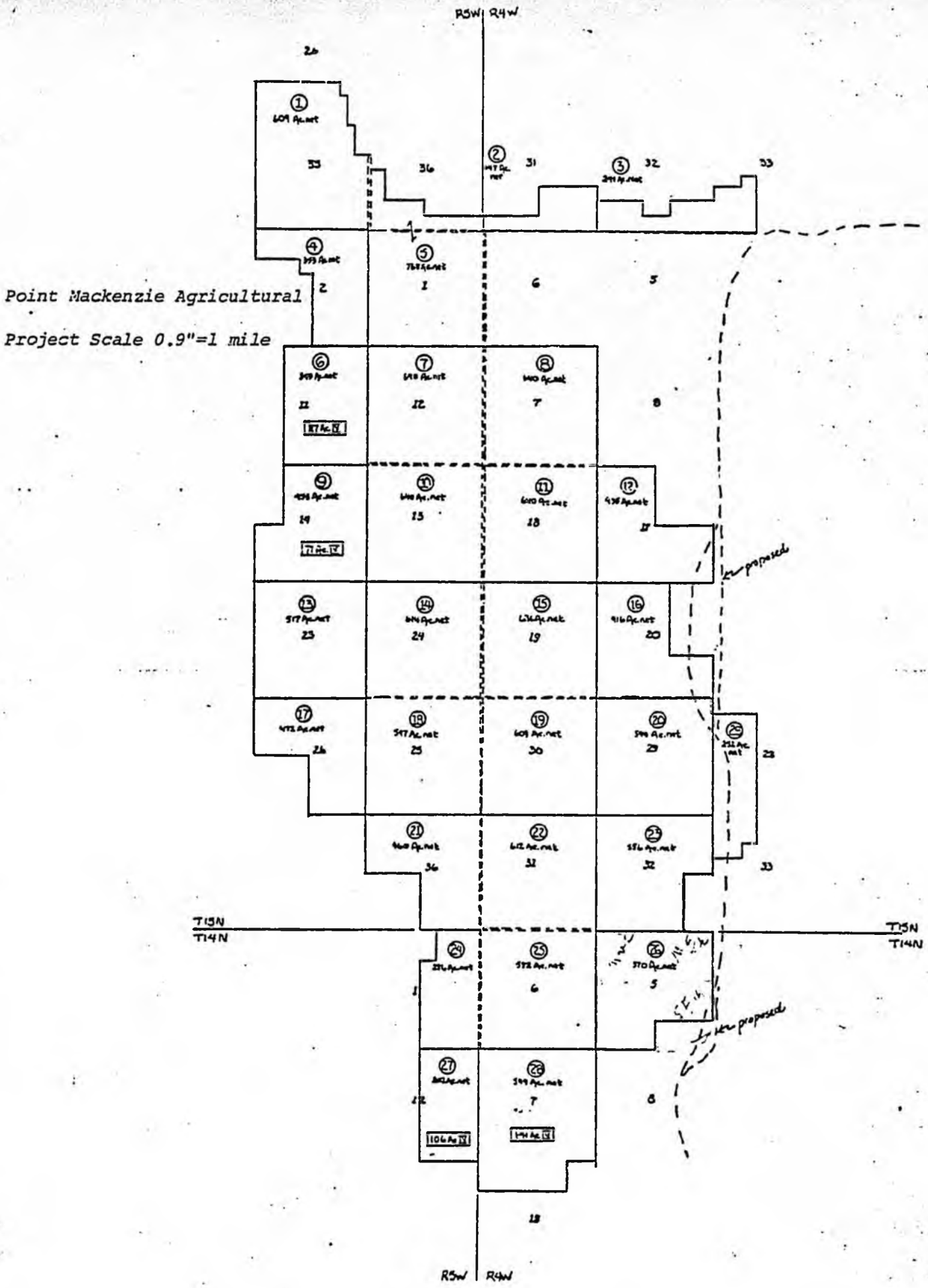
The Point MacKenzie area is forested with birch and spruce of marginal commercial value, but with a resource recovery potential of 100 to 200 thousand cords that could be available to immediately provide a favorable impact for local labor and mills of the area.

V. RECOMMENDATION

We recommend that the Point MacKenzie Project Proposal be given consideration and support by the legislature.

When consummated, this plan will see the development of 15,535 acres of agriculturally classified State lands in the Point MacKenzie area into 29-39 farms, designed as an economical size for dairying, vegetable and other agricultural uses. The State will build access roads to the parcel, and the proposal calls for State financing under existing, normal banking rules, of farm development, land clearing, operating chattel and livestock and to finance commercial timber and lumber operations.

The large increase of Alaskan produced grade A milk from the Point MacKenzie farms will not only enable the existing dairy industry to survive and flourish in competition with "outside" milk, but will also produce a more reliable supply of higher quality dairy products for Alaskan consumers.



29 PARCEL LAYOUT

POINT MACKENZIE AGRICULTURAL PROJECT

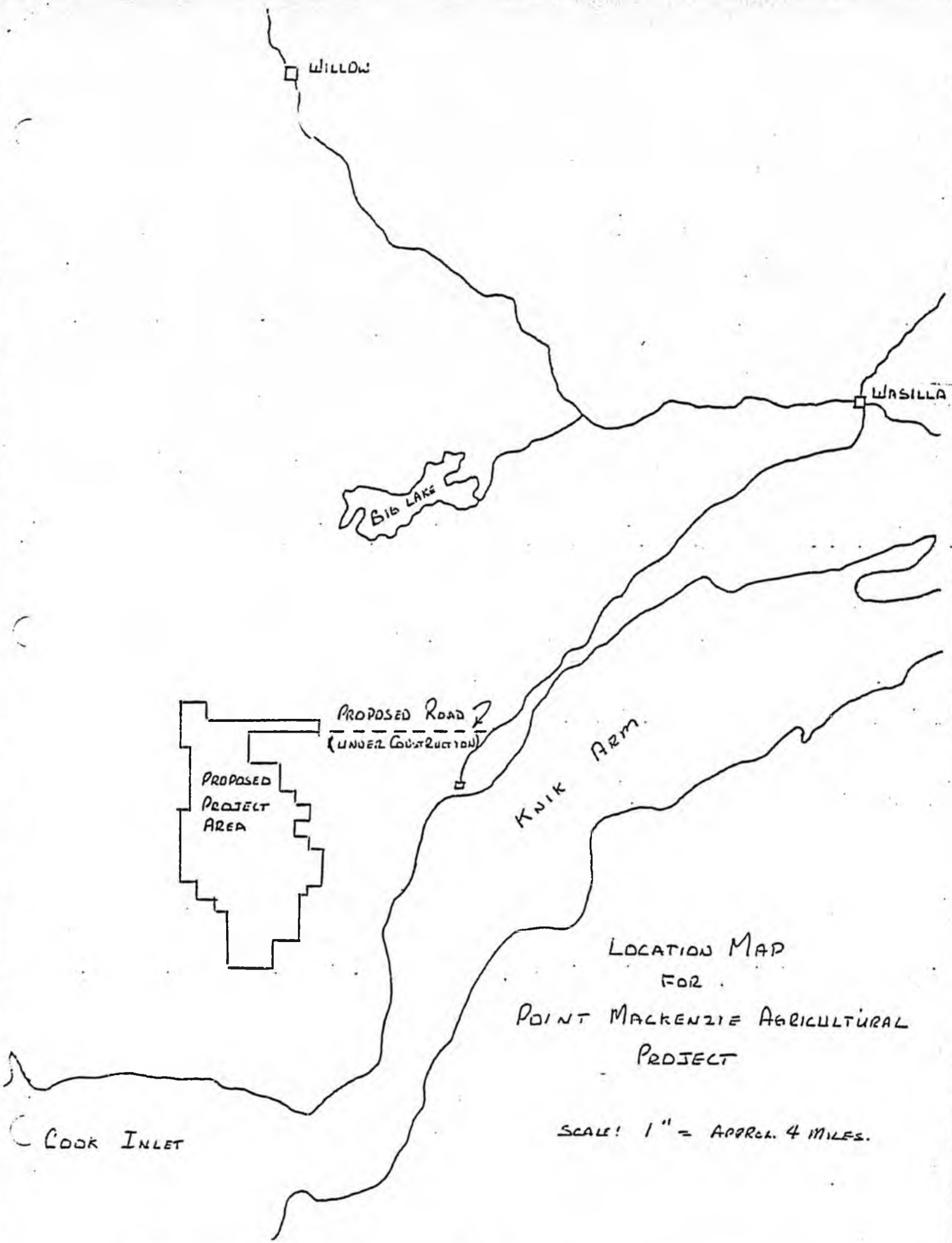
Scale - 2" = 1 mile

Acreages shown on the various parcels as net are the estimated acres of Capability Class II and/or Class III soils. Capability Class IV soils where significant are shown on various parcels in a rectangle. Refer to the acreage summary for detailed acreage information.

This layout is intended for planning purposes only. The design of the proposed layout is based on soil survey data from the Matanuska Valley Area, Alaska (1968) and the Susitna Valley Area, Alaska (1973) Soil Surveys. The layout was completed without full consideration for photo distortion and/or detailed unit measurements, so it may have an error factor of plus or minus 5%.

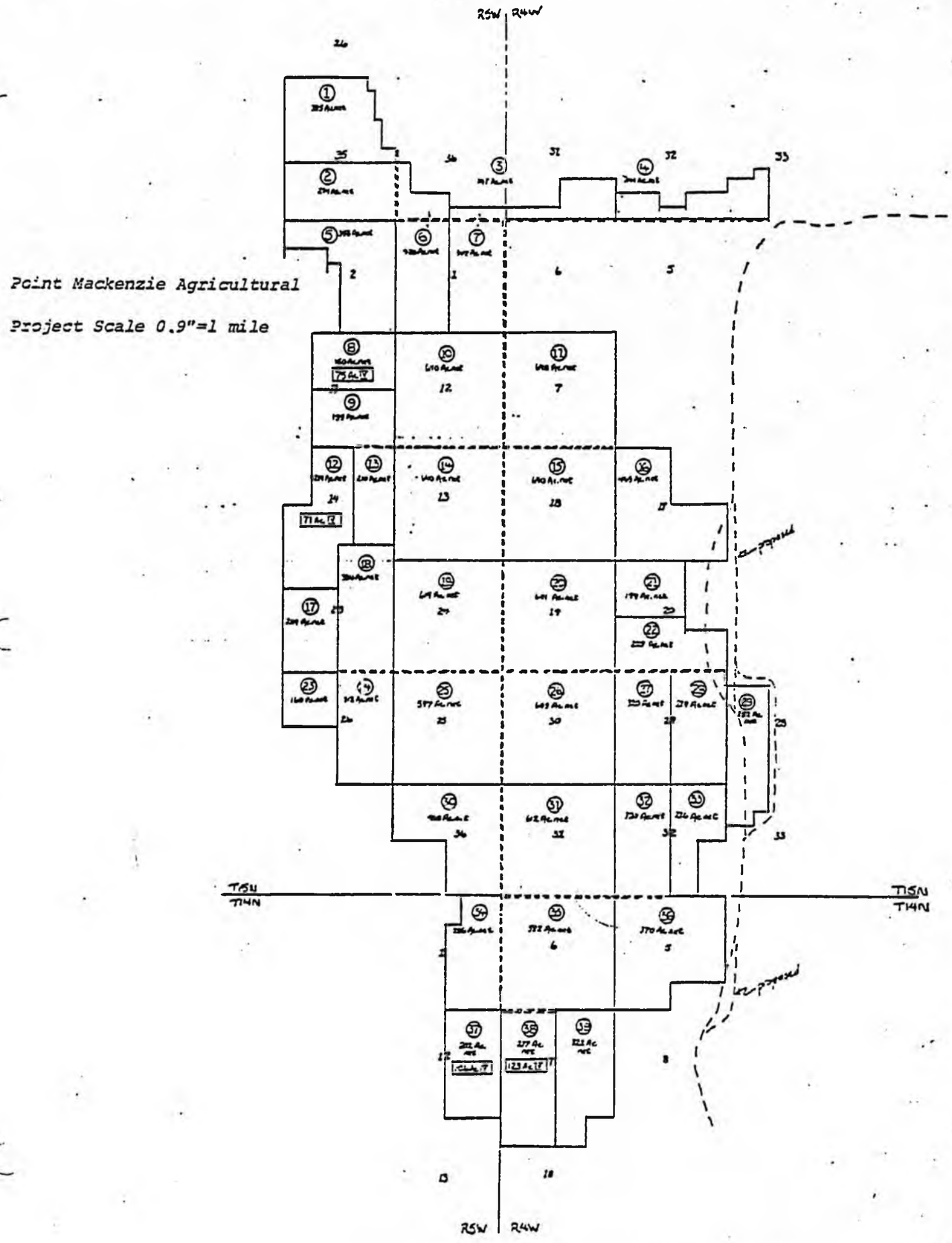
POINT MACKENZIE AGRICULTURAL PROJECT
29 PARCEL LAYOUT
1/2,80 DRAFT

	II & III	IV	(w)	VI	(w)	VII	(w)	Water	Total
1.	609	16			(17)		(83)	5	730
2.	147						(5)	8	160
3.	241	4		11					256
4.	353	22			(9)		(25)		410
5.	768	12							780
6.	343	117					(20)		480
7.	640								640
8.	640								640
9.	455	71					(29)	5	560
10.	640								640
11.	640								640
12.	435	7		38					480
13.	517						(73)	50	640
14.	614						(9)	17	640
15.	631	9							640
16.	416	5		54		11		4	490
17.	472			5			(3)		480
18.	597	6					(11)	26	640
19.	609	31							640
20.	599	24		17					640
21.	460						(20)		480
22.	612	9						19	640
23.	556						(4)		560
24.	296						(4)		300
25.	582						(6)	52	640
26.	370	14	(62)	13			(101)		560
27.	202	106					(12)		320
28.	599	141	(14)	6					760
29.	252			48					300
	14,295	594	(76)	192	(25)	11	(406)	186	15,786



LOCATION MAP
FOR
POINT MACKENZIE AGRICULTURAL PROJECT

SCALE: 1" = APPROX. 4 MILES.



39 PARCEL LAYOUT

POINT MACKENZIE AGRICULTURAL PROJECT

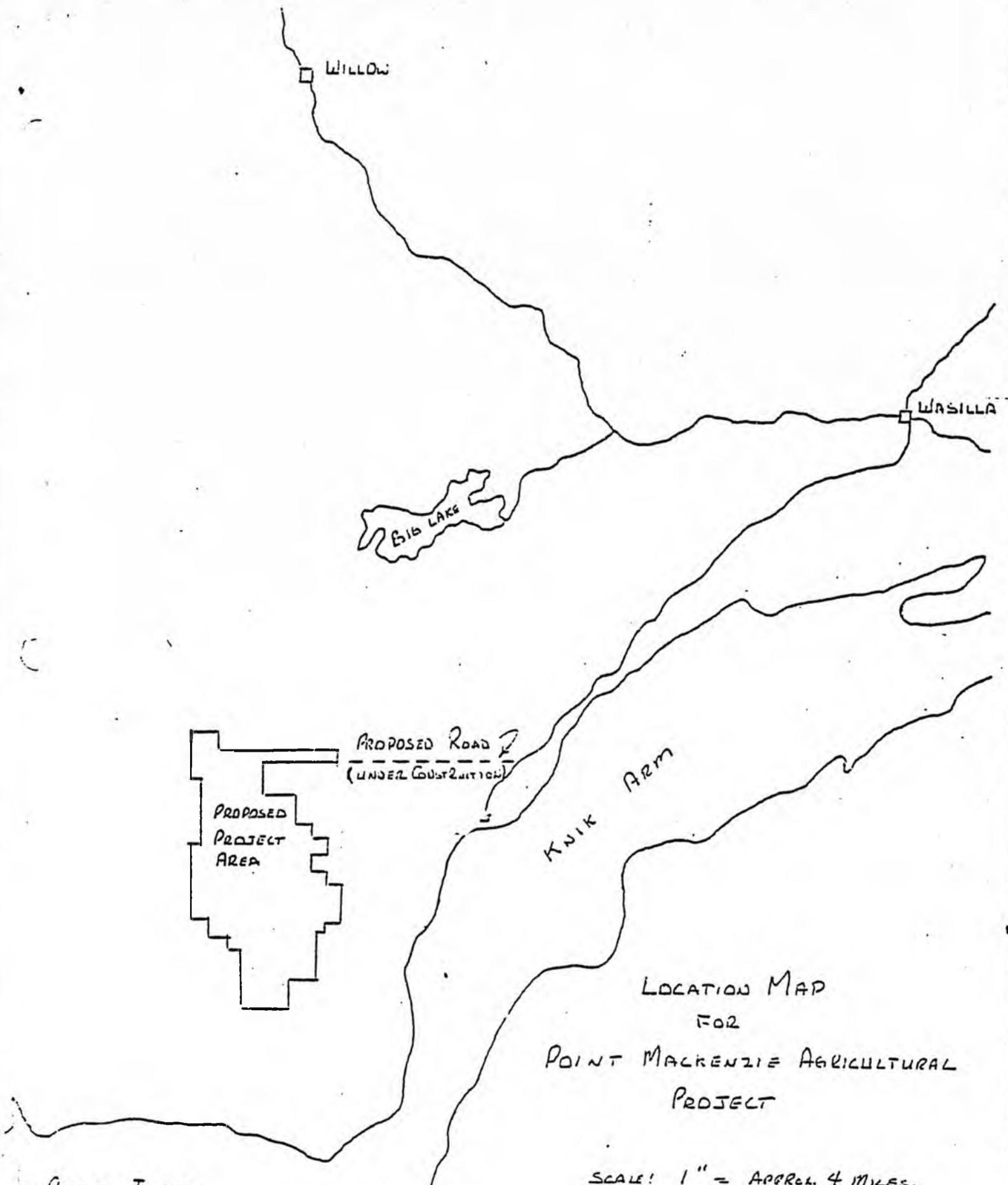
Scale - 2" = 1 mile

Acreages shown on the various parcels as net are the estimated acres of Capability Class II and/or Class III soils. Capability Class IV soils where significant are shown on various parcels in a rectangle. Refer to the acreage summary for detailed acreage information.

This layout is intended for planning purposes only. The design of the proposed layout is based on soil survey data from the Matanuska Valley Area, Alaska (1968) and the Susitna Valley Area, Alaska (1973) Soil Surveys. The layout was completed without full consideration for photo distortion and/or detailed unit measurements, so it may have an error factor of plus or minus 5%.

POINT MACKENZIE AGRICULTURAL PROJECT
39 PARCEL LAYOUT
1/2/80 DRAFT

	II & III	IV	(w)	VI	(w)	VII	(w)	Water	Total
1.	335	16			(7)		(47)	5	410
2.	274				(10)		(36)		320
3.	147						(5)	8	160
4.	241	4		11					256
5.	353	22			(9)		(26)		410
6.	420								420
7.	348	12							360
8.	150	75					(15)		240
9.	193	42					(5)		240
10.	640								640
11.	640								640
12.	219	71					(77)	23	390
13.	210								210
14.	640								640
15.	640								640
16.	435	7		38					480
17.	209						(20)	11	240
18.	334						(5)	21	360
19.	614						(9)	17	640
20.	631	9							640
21.	188			12					200
22.	228	5		42		11		4	290
23.	160								160
24.	312			5			(3)		320
25.	597	6					(11)	26	640
26.	609	31							640
27.	320								320
28.	279	24		17					320
29.	252			48					300
30.	460						(20)		480
31.	612	9						19	640
32.	320								320
33.	236						(4)		240
34.	296						(4)		300
35.	582						(6)	52	640
36.	370	14	(62)	13			(101)		560
37.	202	106					(12)		320
38.	277	123							400
39.	322	18	(14)	6					360
	14,295	594	(76)	192	(26)	11	(406)	186	15,786



LOCATION MAP
FOR
POINT MACKENZIE AGRICULTURAL PROJECT

SCALE: 1" = APPROX. 4 MILES.

POINT MACKENZIE LEGAL DESCRIPTION

T.14N, R.4W, S.M.
Sec. 5: W1/2, NE1/4, N1/2SE1/4
Sec. 6: All
Sec. 7: All
Sec. 18: N1/2NW1/4, NW1/4NE1/4

Total: 1,960 Acres

T.14N, R.5W, S.M.
Sec. 1: SE1/4, S1/2NE1/4, NE1/4NE1/4, E1/2NW1/2NE1/4
Sec. 12: E1/2

Total: 620 Acres

T.15N, R.4W, S.M.
Sec. 7: All
Sec. 17: S1/2, NW1/4
Sec. 18: All
Sec. 19: All
Sec. 20: W1/2, W1/2NW1/4NE1/4, W1/2SW1/2NE1/4, W1/2NW1/4SE1/4, SE1/4NW1/4SE1/4, S1/2NE1/4SE1/4, S1/2SE1/4
Sec. 29: All
Sec. 30: All
Sec. 31: All
Sec. 32: N1/2, SW1/4, W1/2SE1/4

Total: 5,330 Acres

T.15N, R.5W, S.M.
Sec. 1: All
Sec. 2: E1/2, N1/2NW1/4, NE1/4SE1/4NW1/4
Sec. 11: E1/2, W1/2NW1/4, E1/2SW1/4
Sec. 12: All
Sec. 13: All
Sec. 14: E1/2, SW1/4, E1/2NW1/4
Sec. 23: All
Sec. 24: All
Sec. 25: All
Sec. 26: N1/2, SE1/4
Sec. 36: N1/2, SE1/4

Total: 6,250 Acres

T.16N., R.4W., S.M.
Sec. 31: S1/2SE1/4, S1/2NE1/4SE1/4, S1/2NW1/4SE1/4, S1/2SE1/4SW1/4
S1/2SW1/4SW1/4
Sec. 32: SE1/4SE1/4, E1/2SW1/4SE1/4, SW1/4SW1/4SE1/4, SW1/4SW1/4,
W1/2SE1/4SW1/4, SE1/4SE1/4SW1/4
Sec. 33: S1/2NW1/4SW1/4, S1/2NE1/4SW1/4, NE1/4NE1/4SW1/4,
N1/2SE1/4SW1/4, N1/2SW1/4SW1/4

Total: 385 Acres

T.16N., R.5W., S.M.
Sec. 26: S1/2SE1/4, S1/2SW1/4
Sec. 35: All
Sec. 36: W1/2NW1/4NW1/4, W1/2SW1/4NW1/2, SE1/4SW1/4NW1/4,
W1/2NW1/4SW1/4, S1/2SW1/4, S1/2SW1/4SE1/4, S1/2SE1/4SE1/4

Total: 990 Acres

Grand Total: 15,535 Acres

Additions to Point MacKenzie Legal Description

Please make these changes in the legal description of Point MacKenzie:

T.15N, R.4W, S.M.
Sec. 20: All

Sec. 28: W1/2

Sec. 32: All

Sec. 33: W1/2

The total acreage for T.15N, R.4W, S.M. will be 6,170 acres bringing the grand total for the Project to 16,375 acres.

DELTA II — WEST OF DELTA RIVER

T.8S., R.9E., F.M.
Sec. 36: S½SW¼

TOTAL: 80 Acres

T.9S., R.9E., F.M.
Sec. 1: West of Tanana River
Sec. 2: S½, NE¼
Sec. 3: E½NE¼
Sec. 12: All
Sec. 13: E½, NE¼NW¼
Sec. 24: NE¼NE¼

TOTAL: 2,060 Acres

T.9S., R.10E., F.M.
Sec. 7: West of Delta River
Sec. 18: NW¼NW¼, W½NE¼NW¼, S½NW¼, N½SW¼, SW¼SW¼, S½SW¼NE¼, W½SE¼, SE¼SE¼, W½NE¼SE¼
Sec. 19: E½NE¼, S½, NW¼
Sec. 20: W½NW¼NW¼, W½SW¼, SE¼SW¼
Sec. 28: SW¼SW¼
Sec. 29: S½, NW¼, NW¼NE¼
Sec. 30: All
Sec. 32: NE¼NE¼, S½SE¼, NW¼SE¼, SE¼NW¼, S½SW¼, NE¼SW¼
Sec. 33: W½, SW¼SE¼

TOTAL 3,075 Acres

T.10S., R.10E., F.M.
Sec. 4: W½, SE¼, S½NE¼, NW¼NE¼
Sec. 5: N½NW¼, SE¼NW¼, N½NE¼, SW¼NE¼, E½SW¼, W½SE¼
Sec. 8: N½SW¼, S½NW¼, NE¼NW¼, N½NE¼, E½NE¼, E½SE¼
Sec. 9: All
Sec. 10: W½NW¼, W½SW¼
Sec. 15: SW¼, S½NW¼, NW¼NW¼
Sec. 16: N½, SW¼
Sec. 17: E½NE¼, E½SE¼, SW¼SE¼
Sec. 20: S½, NE¼, SE¼NW¼
Sec. 21: S½, NW¼
Sec. 22: W½NW¼
Sec. 28: E½ West of Delta River & North of Military Boundary
Sec. 29: All
Sec. 31: NE¼SE¼
Sec. 32: North of Military Boundary
Sec. 33: North of Military Boundary

TOTAL: 5,450 Acres

GRAND TOTAL OF DELTA WEST: 10,665 Acres

DELTA II - NORTH & EAST OF PROJECT, cont.

T.10S., R.15E., F.M.
Sec. 30: South of Tanana River
Sec. 31: West of Tanana River

TOTAL: 490 Acres

T.11S., R.13E., F.M.
Sec. 1: All
Sec. 2: All

TOTAL: 1,280 Acres

T.11S., R.14E., F.M.
Sec. 1: All
Sec. 2: All
Sec. 3: All
Sec. 4: North of Existing Project
Sec. 5: North of Existing Project
Sec. 9: E½
Sec. 10: All
Sec. 11: All
Sec. 12: West of Tanana River
Sec. 13: West of Tanana River
Sec. 14: All
Sec. 15: All
Sec. 16: E½
Sec. 21: East of Gerstle River
Sec. 22: North of Gerstle River & SE¼SE¼
Sec. 23: All
Sec. 24: West of Tanana River
Sec. 25: West of Tanana River
Sec. 26: E½
Sec. 35: All
Sec. 36: West of Tanana River

TOTAL: 9,780 Acres

T.11S., R.15E., F.M.
Sec. 6 West of Tanana River
Sec. 7 West of Tanana River
Sec. 31: West of Tanana River

TOTAL 420 Acres

T.12S., R.14E., F.M.
Sec. 1: All
Sec. 2: East of Gerstle River
Sec. 11: East of Gerstle River
Sec. 12: All
Sec. 13: All
Sec. 14: East of Gerstle River
Sec. 24: N½, N½SE¼
Sec. 36: E½NE¼, E½SE¼

TOTAL 3,360 Acres

DELTA II - NORTH & EAST OF PROJECT

T.10S., R.13E., F.M.
- Sec. 11: South of Gerstle River
- Sec. 12: South of Tanana River
- Sec. 13 All
- Sec. 14: South of Tanana River
- Sec. 15: South of Tanana River
- Sec. 16: South of Tanana River
- Sec. 21: E½NW¼, NE¼, N½SE¼, SE¼SE¼
- Sec. 22: All
- Sec. 23: All
- Sec. 24: All
- Sec. 25: All
- Sec. 26: All
- Sec. 27: All
- Sec. 28: E½, SW¼
- Sec. 29: S½
- Sec. 30: E½SE¼
- Sec. 31: NE¼NE¼
- Sec. 32: N½NW¼, N½NE¼
- Sec. 33: NW¼, W½NE¼
- Sec. 34: E½, N½NW¼, NE¼SW¼
- Sec. 35: All
- Sec. 36: All

TOTAL: 9,560 Acres

T.10S., R.14E., F.M.
- Sec. 7: South of Tanana River
- Sec. 8: South of Tanana River
- Sec. 16: West of Tanana River
- Sec. 17: All
- Sec. 18: All
- Sec. 19: All
- Sec. 20: All
- Sec. 21: West of Tanana River
- Sec. 22: All
- Sec. 25: South of Tanana River
- Sec. 26: South of Tanana River
- Sec. 27: All
- Sec. 28: All
- Sec. 29: All
- Sec. 30: All
- Sec. 31: All
- Sec. 32: All
- Sec. 33: All
- Sec. 34: All
- Sec. 35: All
- Sec. 36: All

TOTAL: 10,690 Acres

DELTA II - NORTH & EAST OF PROJECT, cont.

T.12S., R.15E., F.M.
Sec. 6: West of Tanana River
Sec. 7: West of Tanana River
Sec. 8: South of Tanana River
Sec. 9: South of Tanana River
Sec. 10: West of Tanana River
Sec. 15: West of Tanana River
Sec. 16: All
Sec. 17: All
Sec. 18: All
Sec. 19: All
Sec. 20: All
Sec. 21: All
Sec. 22: West of Tanana River
Sec. 27 West of Tanana River
Sec. 28: All
Sec. 29: All
Sec. 30: NE¼NE¼, S½NE¼, SE¼, E½SW¼, SW¼SW¼
Sec. 31: All
Sec. 32: N½, N½SW¼, N½SE¼
Sec. 33: N½

TOTAL: 9,500 Acres

T.13S., R.15E., F.M.
Sec. 3: S½ & SW¼NE¼ West of Tanana River
Sec. 4: S½
Sec. 5: North of Alaska Highway
Sec. 6: North of Alaska Highway & East of Gerstle River
Sec. 9: North of Alaska Highway
Sec. 10: North of Alaska Highway & West of Tanana River
Sec. 11: South of Tanana River
Sec. 13: South of Tanana River
Sec. 14: North of Alaska Highway
Sec. 15: North of Alaska Highway
Sec. 24: E½ North of Alaska Highway

TOTAL: 3,360 Acres

GRAND TOTAL: 48,440 Acres

Potential Milk Production in the Point MacKenzie Area of Southcentral Alaska

University of Alaska
Alaska Agricultural Experiment Station
Cooperative Extension Service
Fairbanks

Potential Milk Production

in the

Point MacKenzie Area of Southcentral Alaska

Carol E. Lewis*

J. Michael Harker**

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University of Alaska
Alaska Agricultural Experiment Station
Cooperative Extension Service
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December 3, 1979

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FOREWORD

The information presented in this bulletin is part of a report prepared for the Agricultural Action Council of the State of Alaska. The group was formed in 1979 by legislative action to plan and manage agricultural development projects within the state headed by W. I. Palmer, Special Projects Director of the Office of the Governor.

The report on the feasibility of milk production in the Point MacKenzie Area presented to Governor Hammond through the Alaska Agricultural Action Council was prepared by the authors of this bulletin and Dr. Boyd Buxton, Agricultural Economist, U.S.D.A., stationed at the University of Minnesota at St. Paul and Dr. Paul Fugelstadt, Agricultural Economist, U.S.D.A.,. stationed in Anchorage, Alaska, both of whom are acknowledged with gratitude.

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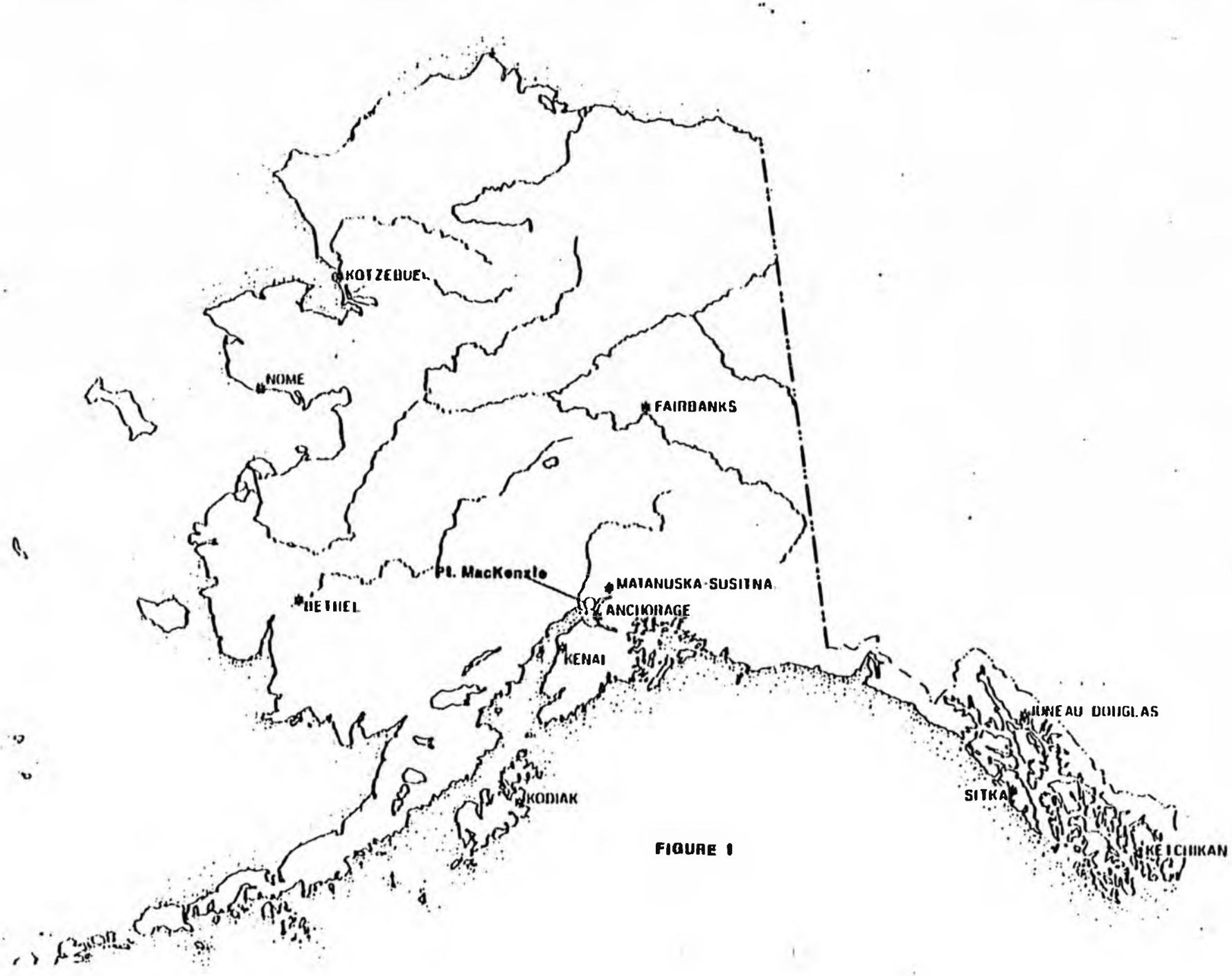

KOTZEBUE
NOME
FAIRBANKS
Pt. MacKenzie
MATANUSKA-SUSITNA
BETHEL
ANCHORAGE
KENAI
JUNEAU DOUGLAS
KODIAK
SITKA
KETCHIKAN

FIGURE 1

SECTION 1

INTRODUCTION

Point MacKenzie is an area northwest of Anchorage directly across the Knik Arm of Cook Inlet (see Figure 1). It is located in the Matanuska-Susitna Borough and contains a subtantial amount of latent agricultural land. Discussion regarding Point MacKenzie and its agricultural potential have been ongoing for some time. The catalyst which activated the recent planning process directed at MacKenzie is a concern over potential loss of the southcentral dairy industry. This was expressed on May 4, 1979, in a letter from Jack Flint, General Manager, Matanuska Maid, Incorporated, to Governor Jay Hammond. "It is my opinion that if we do not take immediate steps to stabilize this important phase of agriculture, [the dairy industry] will pass from the scene. I think that if it should occur, it would be a serious blow to the State of Alaska, economically and socially. I believe we should also realize that if the dairy industry should cease to exist within the state, it is going to be very difficult to re-establish it."

Mr. Flint's letter and collateral action by the Matanuska-Susitna Borough have activated planning processes of the State of Alaska toward the Point MacKenzie area by the Alaska Agricultural Action Council which was created by the 1979 state legislature to plan, recommend and administer agricultural development projects on state lands in Alaska.

The council held a meeting in the Matanuska Valley in September, 1979, and determined that a feasibility study should be undertaken for the Point MacKenzie area. The study was to be directed toward dairy production. This report is that feasibility study.

Before we present the analysis, certain general assumptions were made . These include:

1. Sufficient state land is available in the Point MacKenzie area to undertake a dairy development project.

2. Land price is $100 per acre with a $50 homestead credit making the effective price $50 per acre to the farmers.
3. Land clearing costs are $220 per acre for project farms.
4. The dairy farms will be designed for forage production in the form of silage and haylage; concentrate, hay and straw requirements will be met by off-farm purchases.
5. Private slaughter facilities are presently available in the Matanuska Valley to handle cull cows and calves from project lands.
6. Electrical power hook-up will be provided each farm.
7. Roads to each farm will be constructed.

In the next sections the farm economics of dairy production in southcentral Alaska will be considered as well as the marketing and transportation of milk from farm to processor. In addition, an aggregation of project capital costs will be presented to highlight the capital needs. The final segment will include implications of the study.

SECTION 2

FARM ECONOMICS

This portion of the report is divided into a number of subsections. The first provides a discussion of the physical facilities used in the simulated dairies. The total capital investment cost is estimated for four sizes of dairies milking 50, 75, 100, and 150 cows. These are the numbers of cows milked daily. Because cows are dry for two months each year, herds actually total 60, 90, 120, and 180 cows, respectively. The next subsection provides total farm budgets for these dairy herds. This is followed by one possible plan for bringing new dairies into full production and a cash flow analysis for these dairies during their first three years of operation.

Capital Costs for Four Dairy Sizes

Capital costs were determined using examples from existing dairies in Alaska's Matanuska Valley, Minnesota and Wisconsin. Barn designs assume a controlled environment. Housing for replacement heifers and dry cows is assumed to be in cold facilities. Silage, haylage and/or hay is fed year-round. Feeding is automated to the point of using auger load-out into feed mixers and either feed carts or augers to feed bunks.

Costs of buildings and silos were estimated on a per square foot basis. It is recognized that this method does not account for economies which could be realized by expanding a 50 cow barn to a barn twice the size, that is; twice the amount of material is not required. The same is the case for silos. On the other hand, economies are realized in feed and milk handling equipment. As an example, feed load-out to service 100 cows would also service 150.

Trade-offs were made between labor and technology. The technology level in all units was kept in the medium range typical of that in existence in the majority of the United States dairies. No system in any of the dairies is completely automated. State-of-the-art energy technology was also not incorporated although some items are currently available. Two particular examples are the production of methane from wastes and heating a portion of the barn area with waste heat from cooling warm milk.

Barns and Milking Facilities

Barn and milking facility construction costs were based on a full truss structure, 4-inch insulation in walls and ceiling, and concrete floors and bunks. A figure of $15.00/ft.^{2} was estimated from Fairbanks construction cost for similar structures (utility buildings). This figure includes the iron-work for free stalls, stanchions, and milking facilities. as well as heating and ventilation.

Typical layouts for stanchion barns and free stall barns are shown in Figure 2. The stanchion barns are based on 36-foot barn widths, two rows of cows facing out. Free stall barns are 78-feet wide with four rows of stalls and a center feed bunk. The stanchion operations do not require a milking parlor. Milking is performed in the stalls using individual milkers and a pipeline to the milk room. Free stall barns have been provided with a milking parlor and an area for holding cows, maternity pens, hospital area, office and lavatories, as well as a milk room.

All barns are controlled environments kept at a minimum of 45°F throughout the year. Ventilation systems for the barns are adequate to move a maximum of 200 cfm of air per 1,000 lb. of animal weight. Heating is accomplished through the ventilation system using oil fired burners. Construction costs include year-round heating capacity (a minimum of) to 45°F with an oil fired burner and ventilation fans moving 3,000 cfm in the milk house and 400 cfm per stall in the milking parlor. Units using a fuel other than oil could be used to obtain the same results at approximately the same costs.

Milking equipment in the stanchion barns includes the bulk tank, milking units, pipeline, vacuum pump, cooling compressors and associated plumbing. Four milking machines handling 40-50 cows per hour were included as were tank sizes of 900 gallon average assuming an every other day milk pick-up. The free stall milking operations were based on six and eight stall double herring bone (DHB) parlors. All other components are the same as in stanchion facilities. Sizes are based on gallons of production.

Barn and milking parlor designs and sizes are summarized in Table 1.

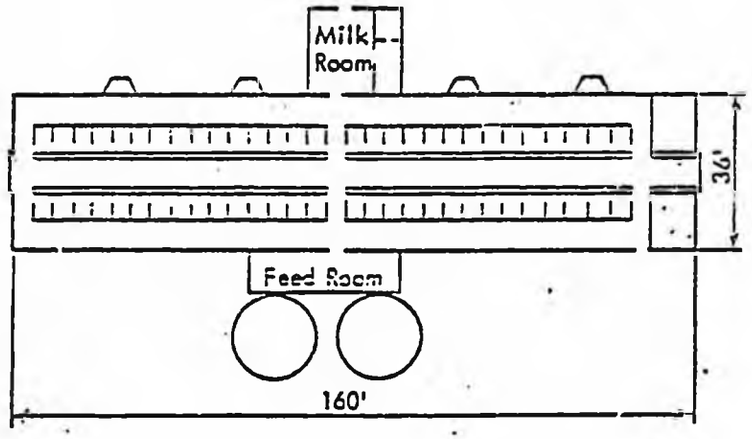
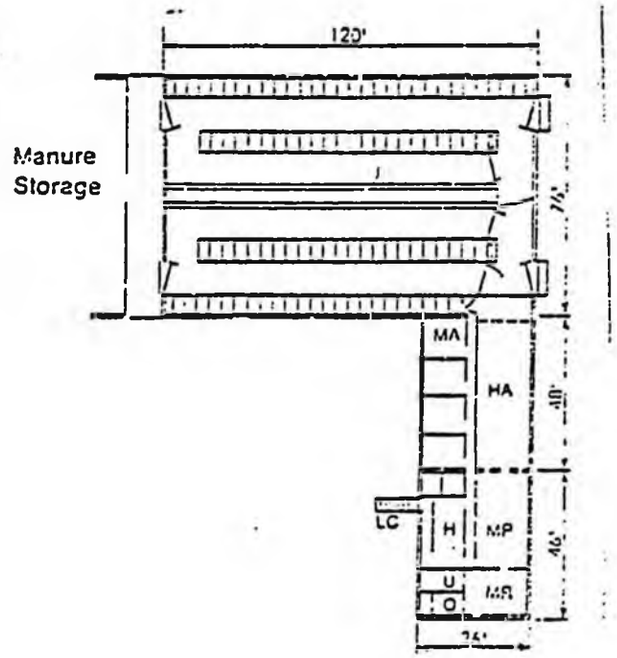


Figure 2. The upper drawing illustrates a typical stancheon barn. The unit shown houses 60 milking cows. The lower illustration is a 200 cow, free-stall facility including a holding area (HA), maternity area (MA), hospital (H), milking parlor (MP), milk room (MR), utility and office area (U,O) and a loading chute (LC).



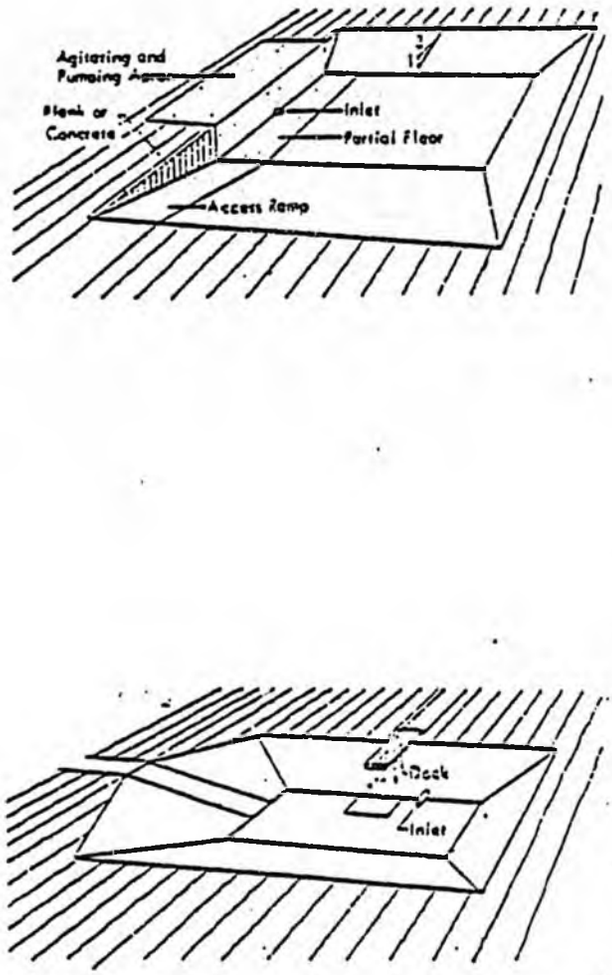


Figure 3. Two types of manure storage basins. The upper illustration includes a picket gate or a plank or concrete wall to facilitate unloading.

Table 1: Barn and Milking Facility Specifications

	Barn Size	Ft^2 per Cow	Milk Parlor Size	Milk Room Size	Milking Equipment	Tank Capacity	Total Cost
50 Cow Stanchion	36' x 133'	96		20' x 20'	1-1/2" pipeline 2 units	825 gal.	$117,820
75 Cow Stanchion	36' x 200'	96	—	20' x 20'	2" pipeline 3 units	1,100 gal.	$169,000
100 Cow Free Stall	78' x 120'	94	36' x 94'		6 stall DHB	1,375 gal.	$271,160
150 Cow Free Stall	78' x 180'	94	36' x 96'		8 stall DHB	2,200 gal.	$342,020

Waste Handling

All farming operations were based on handling manure in the semi-solid form. An earth basin slurry system without a liner similar to that shown in Figure 3 should be adequate in the Point MacKenzie area. Removal of manure from barns is accomplished by barn scrapers dumping into a settling pit where a piston pump moves it to the earth storage basin. Slurry pumps are used to agitate and load manure into tank wagons. Mats are provided in all barns for ease in stall clean-up.

Milk house waste was handled using a separate leach field for this cost study. Because barn wastes are handled as semi-solids, milk house wastes need not have a separate system. In fact, there are indications that problems such as plugging of the drain field may occur in colder climates. It was felt to be informative to include the separate system in this report, however. Lavatory wastes are diverted into a separate septic system at a cost of $3,000 for each farm unit. Table 2 shows the components and component costs for farm waste disposal systems.

Table 2: Waste Disposal Systems[a]

	50 Cow	75 Cow	100 Cow	150 Cow
Basin[b]	$ 6,392	$ 7,936	$11,664	$11,664
Barn Cleaner	5,040	9,040	10,300	10,300
Mats	4,020	5,640	7,176	8,058
Piston Pump[c]	8,300	8,300	8,300	8,300
Load-out Pump[c]	4,100	4,100	4,100	4,100
Slurry Pump[c]	5,000	5,000	5,000	5,000
Piping	2,000	2,000	2,000	2,000
Manure System Total	$34,852	$42,016	$48,540	$49,422
Leachfield	800	1,198	1,598	2,298
Septic System	3,000	3,000	3,000	3,000
TOTAL	$38,652	$46,214	$53,138	$54,720

[a]All hardware based on University of Wisconsin 1977 estimates. 1979 Wisconsin = 1977 Wisconsin x 1.20. 1979 Alaska = 1979 Wisconsin x 1.15.
[b]Basin size based on an 8 month or 240 day storage period holding 2 ft^3/day/cow.
[c]Pumps 20 HP in size are adequate to move 3,000 gpm over a rise of 10 feet.

Feed Storage

The two components of the dairy ration are roughage which includes silage or haylage, concentrates, and hay. Calf starter will be required for the calving operation. To obtain storage facility sizes, it was assumed all components would handle an annual supply. This may not be the case with calf starter. However, it forms a small portion of the total feed requirement and less than annual purchase would alter the space requirement very little.

Silos

Silos were assumed to be uninsulated. The maximum height of the silos was kept in the neighborhood of 60 feet, 10 feet of which is unloader space. The silo loading system uses a 30 HP electric motor with blowers for top loading. Top unloading silos load-out feed at the silo side into the feed room. This requires a 20 HP electric motor. To obtain a capital cost per ft^3, 1979 Wisconsin prices and adjusted southcentral Alaska prices were used. The estimated erected cost is

$2.18/ft^3 including loading and unloading facilities. Because of possible problems with freezing along silo sides, base diameters were kept as large as possible while still maintaining a near 60 foot height. The additional parameter of a load-out rate of no less than six inches per day was used to further alleviate the possible freezing problems. Table 3 gives silo sizes and capacities and total cost of silage storage.

Table 3: Silo Capacities

	Silage Stored	Silo Size	Number of Silos	Total Cost
50 Cow	1077T	28' x 60'	2	$160,997
75 Cow	1622T	28' x 60'	3	$241,496
100 Cow	2154T	30' x 60'	3	$317,257
		22' x 48'	1	
150 Cow	3231T	30' x 60'	5	$462,500

Concentrate

The concentrate fed will most likely be purchased in bulk. If annual storage is required for dairy operations, the cost of construction is estimated at $1.00 per bushel. Table 4 lists storage required and total cost. An alternate method would be to purchase a pelleted feed several times during the year. Less storage space would be required in this case.

Table 4: Concentrate Storage

	Bushels Fed	Storage Size	Total Cost
50 Cow	9,226	10,000 BU	$10,000
75 Cow	13,862	15,000 BU	$15,000
100 Cow	18,434	20,000 BU	$20,000
150 Cow	26,643	30,000 BU	$30,000

Starter, Hay, Bedding

Building storage for starter, hay and bedding is in metal, uninsulated buildings with concrete floors. The buildings are ventilated through louvres and eaves. Current Fairbanks cost estimates indicate that buildings can be constructed for $13.00/ft^2. Table 5 gives the amount of feed stored, building size and cost of construction.

Table 5: Starter, Hay and Bedding Storage

	Total Hay[a]	Total Straw[b]	Total Starter[c]	Building Size	Total Cost
50 Cow	9,599 ft^3	10,935 ft^3	75 ft^3	40 x 60	$31,632
75 Cow	14,587 ft^3	16,515 ft^3	109 ft^3	50 x 70	$46,130
100 Cow	19,053 ft^3	21,645 ft^3	146 ft^3	50 x 90	$59,310
150 Cow	28,507 ft^3	32,310 ft^3	216 ft^3	40 x 80 40 x 90	$89,624

[a]Bales 4' x 2' x 2' weighing 70 pounds were used.
[b]Straw bale size is 4' x 2' x 2' and weight is 50 pounds per bale.
[c]100 lb. bags sized at approximately 1.3 ft.^{3}.

Machinery Storage and Workshop

The dairies will be producing silage and haylage for use on each farm. In addition to equipment associated primarily with this operation, at least front end loader storage will be required for the dairy. Additionally, a heated workshop will be necessary for repairs and maintenance. The storage space required per machine includes 15% space for movement. The workshop size is based on the largest piece of equipment on the farm and includes a working area of approximately 100% the equipment space (8 feet on sidewalls, 5 feet at ends). Also included are a grease pit and refueling tanks. Capital cost and construction for the machinery storage are the same as those for hay and straw storage. Workshop capital costs include a metal building, four inches of insulation and heating using oil burning units. Construction costs are estimated at $14.50/ft^2. Table 6 gives the machinery and workshop sizes and total costs.

Table 6: Machinery Storage and Workshop

	Machinery	Workshop	Total Cost
50-75 Cow	40 x 60	40 x 46	$58,312
100-150 Cow	40 x 75	40 x 46	$66,220

Calf, Heifer, and Dry Cow Housing

Several controversies exist concerning the housing of calves. Indications are that calf death rates are less if they are removed to cold housing one day after birth. The cold housing recommended is a 4' x 14' hutch, 4' x 8' of which is a plywood shed free from drafts and bedded with straw, 4' x 6' being a hog wire enclosed exposed area for feeding. In high snow areas, management of the hutches may be difficult. Therefore, an alternative is offered by putting the "hutches" in a cold building. The additional advantage is that the calf housing can be combined with that for heifers and dry cows in a single building. The major plus in this type of system is that feeding can be accomplished in one building and that manure handling (a straw pack removed in spring and periodically throughout the summer) is a single operation. The straw pack waste is removed to the fields in spring and fall.

Housing costs are the same as those used for hay and straw storage plus $1.00/ft^2 for iron and $2,000 for all units for plumbing. Space for animals was determined using standard allotments. Twice the hutch area was used per calf to enable hutches to be moved before being occupied by a new calf. Table 7 shows space per cow by age, total number of cows housed, total space and total cost.

Table 7: Calf, Heifer and Dry Cow Housing

	SPACE PER COW			NUMBER OF COWS HOUSED[b]						
	0-2 mo.	2-12 mo.	12-24 mo.[a] dry cows	0-2 mo.	2-12 mo.	12-24 mo.	dry cows	Total Space ft^2	Building Size	Total Cost $
50 cows	56 ft^2	25 ft^2	110 ft^2	19	19	16	10	3,499	40' x 90'	$ 51,615
75 cows	56 ft^2	25 ft^2	110 ft^2	28	28	25	15	5,380	50' x 100'	78,288
100 cows	56 ft^2	25 ft^2	110 ft^2	37	37	32	20	7,037	50' x 140'[c]	101,784
150 cows	56 ft^2	25 ft^2	110 ft^2	55	55	48	30	10,515	60' x 180'[c]	151,103

[a]Includes 45 ft^2 of resting area and 65 ft^2 of lot area.
[b]Assumes a 15% loss at 0-3 months, no losses at 3-12 months, 12% loss at 12-24 months and a herd replacement of 25% of the total.
[c]Two 50' x 70' or two 60' x 90' buildings could be used.

Feed Handling

Feed handling in stanchion units is accomplished by electric cart although a feed bunk system could also be used. Free stall barn feeding is done by auger into the feed bunks. Provisions have been included for feed mixing at the silo unload area. The silos load-out into a feed mixer and then into either carts or the auguer hopper. A feed mixer is provided to keep feed consistency constant if both haylage and silage are fed. Approximate cost is $4,000 per silo.

Well

There is limited data which would indicate the depth of wells required in the Point Mackenzie area. It was assumed a 100 foot well at an eight inch diameter would be adequte to provide a 3,000 gpm flow rate. The current average cost for drilling, casing and pump is $35 per running foot. This cost is included in each farm unit.

Total Capital Costs

The total capital investment for the four dairy systems is given in Table 8. On a per cow basis, the 150-cow, free-stall dairy requires the least capital injection. Tables 9 through 12 show the annual and monthly cash and noncash owner costs associated with the dairies. Costs allocated to the dairies only are associated with milking and dry cows. Those allocated to the replacement heifers include animals required for a 25% annual herd replacement and are aged 0 to 24 months. Feed-associated cost allocation was accomplished on a feed requirement basis as follows:

Feed Storage Facility	Dairy Cows	Replacement Heifers
Silos	84%	16%
Hay and Bedding Storage	17%	83%
Concentrate Storage	81%	19%

Calf and dry cow housing costs are based on a 78% occupancy by heifers and 22% occupancy by dry cows.

Farm Budgets

Enterprise costs and returns presented in this report were estimated for several alternative-sized dairy operations that could be located in the Point MacKenzie area of Alaska. Costs were estimated for dairy herds milking 50, 75, 100, and 150 cows. Returns from the sale of calves and culls were specifically identified. However, a specific assumption of per herd milk production was not used in the analysis. Rather, revenues from calf and cull sales were first subtracted from costs, and then the average milk production per cow required to cover all remaining costs was estimated. Included in the costs was a charge for operator labor of $15,000 per year. Returns arising from milk production above that required to break-even is the return to management. Operator labor therefore was accounted at a level comparable to the cost of hired labor.

Table 8: Total Capital Investment

	50-Cow Stanchion	75-Cow Stanchion	100-Cow Free Stall	150-Cow Free Stall
Barn & Iron	$ 71,820	$108,000	$140,400	$ 2[illegible],000
Ventilation	7,500	11,278	10,000	15,000
Milk Room	6,000	6,000	N/A	N/A
Milk Parlor	N/A	N/A	50,760	51,420
Milking Equipment	40,000	55,000	80,000	80,000
Silos	160,997	241,496	317,257	462,500
Manure Handling	38,652	46,214	53,138	54,720
Concentrate Storage	10,000	15,000	20,000	30,000
Hay & Bedding Storage	31,632	46,130	59,310	89,624
Machine Storage	31,632	31,632	39,540	39,540
Workshop	26,680	26,680	26,680	26,680
Calf & Dry Cow Housing	51,615	78,288	101,784	151,103
Well	3,500	3,500	3,500	3,500
Feed Handling	8,000	12,000	16,000	20,000
TOTAL	$488,028	$681,218	$918,369	$1,234,687

Table 9: Annual Cash and Non-Cash Owner Costs for the 50-Cow Stanchion Dairy

	Depreciation (years)	Depreciation[a] ($)	Investment Cost[b] ($)	Insurance[c] ($)	Taxes[d] ($)	Repairs & Maintenance[e] ($)	Total Cost ($)
DAIRY							
Barn & Iron	30	2,394	2,155	503	934	1,436	7,422
Ventilation	10	713	236	53	98	150	1,250
Milk Room	30	200	180	42	78	120	620
Milking Equipment	10	3,800	1,260	280	520	800	6,600
Silos	20	6,520	4,057	947	1,758	2,704	15,986
Manure Handling	20	2,058	1,176	274	509	784	4,801
Concentrate Storage	20	450	243	57	105	162	1,017
Hay & Bedding Storage	20	269	161	38	68	108	644
Machine Storage	20	1,582	949	221	411	633	3,796
Workshop	20	1,334	800	187	347	534	3,202
Calf & Dry Cow Housing	20	568	341	79	148	227	1,363
Well		350	105	25	46	70	596
Feed Handling Equipment	10	760	252	56	104	160	1,332
ANNUAL TOTAL		20,998	11,915	2,762	5,126	7,888	48,689
REPLACEMENT HEIFERS							
Silos		1,288	772	180	349	515	3,104
Concentrate Storage		95	57	13	25	38	228
Hay Storage		1,312	789	184	341	525	3,151
Calf & Dry Cow Housing		2,013	1,208	282	524	805	4,832
ANNUAL TOTAL		4,708	2,826	659	1,239	1,883	11,315

[a]Depreciation is calculated using the straight line method. Salvage value is 5% of new cost for equipment and zero for buildings.

[b]Investment costs are charged at 6% annual rate using:

$$\text{Investment Cost} = \frac{\text{New Cost} + \text{Salvage}}{2} \text{ (Interest Rate)}$$

[c]Insurance rates are $7.00 per $1,000 new cost.

[d]Taxes are 13 mil, the current rate in the Mat-Su Borough.

[e]Repairs and maintenance are charged at 2% of new cost.

Table 10: Annual Cash and Non-Cash Owner Costs for the 75-Cow Stanchion Dairy[a]

	Depreciation (years)	Depreciation ($)	Investment Cost ($)	Insurance ($)	Taxes ($)	Repairs & Maintenance ($)	Total Cost ($)
DAIRY							
Barn & Iron	30	3,600	3,240	756	1,404	2,160	11,160
Ventilation	10	536	355	79	147	226	1,343
Milk Room	30	200	180	42	78	120	620
Milking Equipment	10	5,225	1,733	385	715	1,100	9,158
Silos	20	10,143	6,086	1,420	2,637	4,057	24,343
Manure Handling	20	2,426	1,456	323	601	924	5,730
Concentrate Storage	20	608	365	85	158	243	1,459
Hay & Bedding Storage	20	392	236	55	102	157	942
Machine Storage	20	1,582	949	221	411	633	3,796
Workshop	20	1,334	800	187	347	534	3,202
Calf & Dry Cow Housing	20	507	517	121	224	344	1,713
Well	10	350	105	25	46	70	596
Feed Handling Equipment	10	580	378	84	156	240	1,437
ANNUAL TOTAL		27,483	16,400	3,783	7,026	10,808	65,500
REPLACEMENT HEIFERS							
Silos		1,931	1,159	270	503	773	4,636
Concentrate Storage		143	86	20	37	57	343
Hay Storage		1,914	1,149	268	498	766	4,595
Calf & Dry Cow Housing		3,053	1,832	427	468	720	6,500
ANNUAL TOTAL		7,041	4,226	985	1,506	2,316	16,074

[a]Footnotes as in Table 9.

Table 11: Annual Cash and Non-Cash Owner Costs for the 100-Cow Free-Stall Dairy[a]

	Depreciation (years)	Depreciation ($)	Investment Cost ($)	Insurance ($)	Taxes ($)	Repairs & Maintenance ($)	Total Cost ($)
DAIRY							
Barn & Iron	30	4,788	4,309	1,006	1,867	2,873	14,843
Ventilation	10	1,425	473	105	195	300	2,498
Milk Room	30	200	180	42	78	120	620
Milking Equipment	10	7,600	2,520	560	1,040	1,600	13,320
Silos	20	13,324	7,994	1,865	3,464	5,330	31,977
Manure Handling	20	2,657	1,594	372	691	1,063	6,377
Concentrate Storage	20	810	486	113	211	324	1,944
Hay & Bedding Storage	20	504	302	71	131	202	1,210
Machine Storage	20	1,977	1,186	277	514	791	4,745
Workshop	20	1,334	800	187	347	534	3,202
Calf & Dry Cow Housing	20	1,119	672	158	291	448	2,688
Well	10	760	252	56	104	160	1,332
Feed Handling Equipment	10	1,520	504	112	208	320	2,664
ANNUAL TOTAL		38,018	21,272	4,924	9,141	14,065	$87,420
REPLACEMENT HEIFERS							
Silos		2,358	1,523	355	660	1,015	6,091
Concentrate Storage		190	114	27	49	76	456
Hay & Bedding Storage		2,461	1,477	345	640	985	5,908
Calf & Dry Cow Housing		3,969	2,382	556	1,032	1,588	9,527
ANNUAL TOTAL		9,158	5,496	1,283	2,381	3,664	21,982

[a]Footnotes as in Table 9.

Table 12: Annual Cash and Non-Cash Owner Costs for the 150-Cow Free-Stall Dairy[1]

	Depreciation (years)	Depreciation ($)	Investment Cost ($)	Insurance ($)	Taxes ($)	Repairs & Maintenance ($)	Total Cost ($)
DAIRY							
Barn & Iron	30	7,020	6,318	1,474	2,738	4,212	21,762
Ventilation	10	1,425	473	105	195	300	2,498
Milk Room	30	1,714	1,543	360	668	1,028	5,313
Milking Equipment	10	7,600	2,520	560	1,040	1,600	13,320
Silos	20	19,425	11,655	2,720	5,051	7,770	46,121
Manure Handling	20	2,747	1,648	385	714	1,099	6,593
Concentrate Storage	20	1,215	729	170	316	486	2,916
Hay & Bedding Storage	20	762	457	107	198	305	1,829
Machine Storage	20	1,977	1,186	277	514	791	4,745
Workshop	20	1,334	800	187	347	534	3,202
Calf & Dry Cow Housing	20	166	997	233	432	665	2,493
Well	10	350	105	25	46	70	596
Feed Handling Equipment	10	1,900	630	140	260	400	3,330
ANNUAL TOTAL		47,635	29,061	6,743	12,519	19,260	115,219
REPLACEMENT HEIFERS							
Silos		1,388	2,200	518	962	1,480	6,548
Concentrate Storage		285	171	40	74	114	684
Hay & Bedding Storage		3,719	2,232	521	961	1,488	8,921
Calf & Dry Cow Housing		5,893	3,536	825	1,532	2,357	14,143
ANNUAL TOTAL		11,285	8,139	1,904	3,529	5,439	30,296

[1]Footnotes as in Table 9.

Base assumptions reflected in estimated budgets were:

1. Cows are milked ten months of the year and dry two.
2. All feed is purchased except for silage which is grown on the farm.
3. Dairies replace 25% of the herds annually with springer heifers.
4. All replacement heifers are provided by dairies in the third year of operation.
5. Family labor is the only labor used on 50- and 75-cow dairies. It has been suggested that the 75-cow dairy may require one additional laborer if a stanchion barn is used.
6. Dairies with 100 cows require one laborer while the 150 head dairy requires two laborers and one herdsman in addition to family labor.
7. Dairies of 50 and 75 cows use a stanchion confinement-stall system. With 100 and 150 cows, a free-stall system is used.
8. An interest rate of 6% is charged against the capital investment. A 9% interest charge is leveled against operating capital.
9. All breeding is with artificial insemination.
10. Three acres of cropland in silage production are required for each milking and dry cow in the dairy herd.

Data for this analysis were obtained from several sources. Feed rations, production techniques, and production costs were developed in consultation with animal scientists of the University of Alaska Agricultural Experiment Station and experienced Alaskan dairymen. Silage production costs are detailed in a preliminary USDA working paper available from the authors. Investment requirements are described in an earlier section. Milk prices were obtained from the Matanuska Maid Inc., while prices for calves and culls were provided by marketing specialists of the Alaska Division of Agriculture and Alaskan dairymen.

Production costs are summarized in Table 13. Total costs for the 50, 75, 100, and 150 cow dairies were $173,059.53, $236,958.44, $320,637.46, and $472,166.45, respectively. Costs were divided into feed cash costs, non-feed cash costs, and non-cash costs. Of these three cate-

gories, feed was the major expense accounting for approximately 39% of total cost for each herd. The largest cost in the non-feed cash cost category was replacement heifer cost. As a percentage of all non-feed cash costs, this item ran from 46% for 50 cows to 48% for 75 cows, to 43% for 100 cows, and finally to 38% for 150 cows. Major costs in non-cash costs were operator labor and interest and depreciation on facilities . As noted previously, we have included an operator labor charge of $15,000 annually as an absolute minimum under which an owner would be willing to remain in business.

In Table 14, returns from sales of calves and culls and the average milk production per cow required to cover all remaining costs are provided. In our analysis, farmers receive 30 cents per pound for cull cows, $800 per animal for cull heifers, $12 per head for calves, and $16.84 per cwt for milk.

The required milk production to cover all costs generally decreases as herd size increases. The 50 cow dairy requires an annual average per cow production of 16,292 pounds of milk. This decreases to 14,742 pounds for a herd of 150 cows. Can Alaskan dairymen expect to obtain these per cow milk production averages when the average milk production per cow in Alaska was only 11,000 pounds in 1977 (Alaska Crop and Livestock Reporting Service, 1978)? With good management this should be possible. The current average production per cow for the six Alaskan

Table 14: Break-even Analysis for 50, 75, 100, and 150-Cow Dairy Farms

Herd Size	Cull Cows		Cull Heifers		Cull Calves		
	Number	Revenue	Number	Revenue	Number	Revenue	Required Milk Production
50	15	$ 6,750	1.5	$1,200	40.5	$ 486	16,292 lbs./cow
75	22.5	10,125	2.25	1,800	60.75	729	14,750 lbs./cow
100	30	13,500	3.0	2,400	81	972	15,032 lbs./cow
150	45	20,250	4.5	3,600	121.5	1,458	14,742 lbs./cow

Table 13. Total Costs for Dairy Herds of 50, 75, 100, and 150 Cows in Third Year of Operation

		50 COWS		75 COWS		100 COWS		150 COWS	
	Cost per Unit	Amount	Total Cost	Amount	Total Cost	Amount	Total Cost	Amount	Total Cost
FEED:									
1. Silage	$17.96-$22.63/ton	1,028.84T	$ 23,282.64	1,539.39T	$ 31,111.07	2,057.69T	$ 38,046.69	3,086.53T	$ 55,434.08
2. Concentrate	$220/ton	187.98T	41,355.60	281.78T	61,991.60	375.95T	82,709.00	563.93T	124,064.60
3. Hay	$120/ton	6.84T	820.80	10.04T	1,204.80	13.69T	1,042.80	20.53T	2,463.60
4. Salt	$14/cwt	104.94 cwt	1,469.16	156.95 cwt	2,197.30	209.88 cwt	2,938.32	314.81 cwt	4,407.34
Total Feed Cash Costs			$ 66,928.20		$ 96,504.77		$125,336.81		$186,369.62
NON-FEED COSTS:									
1. Replacement Heifers			$ 24,424.12		$ 35,637.56		$ 47,520.10		$ 68,350.49
2. Hired Labor		0	0	0	0	1	12,000.00	3	44,000.00
3. Property Tax[1]	$13/$1000		5,847.50		8,156.25		11,001.00		14,683.50
4. Dairy R&M			7,888.00		10,808.00		14,705.00		19,260.00
5. Electricity			6,000.00		6,000.00		8,000.00		8,000.00
6. Breeding Fees	$10/head	60 cows	600.00	90 cows	900.00	120 cows	1,200.00	180 cows	1,800.00
7. Semen (1.75 ampul/head)	$12/ampul		1,260.00		1,890.00		2,520.00		3,780.00
8. D.H.I.A.	$.25/head/mo.		180.00		270.00		360.00		540.00
9. Fuel & Oil			800.00		900.00		1,000.00		1,100.00
10. Insurance[2]	$7/$1000		3,125.50		4,421.75		5,925.00		7,908.50
11. Vet & Drugs	$20/head		1,200.00		1,800.00		2,400.00		3,200.00
12. Bedding	$2/65 lbs.	2,700.00 lb.	83.08	4,050.00 lb.	124.02	5,400.00 lb.	166.15	8,100.00 lb.	249.23
13. Dairy Supplies & Misc.	$25/milking head		1,250.00		1,875.00		2,500.00		3,750.00
Total Non-Feed Cash Costs			$ 52,658.20		$ 72,782.58		$109,297.25		$176,621.72
NON-CASH COSTS:									
1. Operator Labor			$ 15,000.00		$ 15,000.00		$ 15,000.00		$ 15,000.00
2. Interest on Investment:									
Cows[3]			3,690.00		5,536.00		7,380.00		11,070.00
Facilities			11,915.00		16,400.00		22,223.00		29,061.00
Feed[4]			2,008.38		2,973.00		3,788.67		5,597.08
Operating Capital			211.75		278.59		463.33		812.03
3. Depr. on Capital Investment			20,048.00		27,483.00		37,149.00		47,635.00
Total Non-Cash Costs			$ 53,473.13		$ 67,671.09		$ 86,003.40		$109,175.11
TOTAL COST			$173,059.53		$236,958.44		$320,637.46		$472,166.45

[1] Includes an annual property tax of $12.03/cow.
[2] Includes an annual insurance cost of $6.47/cow.
[3] (6%)(1600 + 450)(milkers + replacements)
2
[4] Interest calculated as follows:
(silage cost + hay cost + concentrate cost + salt cost + calf starter cost)(.09)
2 2 6 6 6

CORRECTION

THIS DOCUMENT
HAS BEEN REPHOTOGRAPHED
TO ASSURE LEGIBILITY

Table 13. Total Costs for Dairy Herds of 50, 75, 100, and 150 Cows in Third Year of Operation

		50 COWS		75 COWS		100 COWS		150 COWS	
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3. Property Tax[1]	$13/$1000		5,847.50		8,156.25		11,001.00		14,683.50
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8. D.H.I.A.	$.25/head/mo.		180.00		270.00		360.00		540.00
9. Fuel & Oil			800.00		900.00		1,000.00		1,100.00
10. Insurance[2]	$7/$1000		3,125.50		4,421.75		5,925.00		7,908.50
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NON-CASH COSTS:									
1. Operator Labor			$ 15,000.00		$ 15,000.00		$ 15,000.00		$ 15,000.00
2. Interest on Investment:									
Cows[3]			3,690.00		5,536.00		7,380.00		11,070.00
Facilities			11,915.00		16,400.00		22,223.00		29,061.00
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TOTAL COST			$173,059.53		$236,958.44		$320,637.46		$472,166.45

[1] Includes an annual property tax of $12.03/cow.
[2] Includes an annual insurance cost of $6.47/cow.
[3] (6%)(1600 + 450)(milkers + replacements)
2
[4] Interest calculated as follows:
(silage cost + hay cost + concentrate cost + salt cost + calf starter cost)(.09)
2 2 6 6 6

herds belonging to the Dairy Herd Improvement Association (DHIA)is 16,844 pounds. This compares favorably with the California, Wisconsin, and New York averages of 18,674 pounds, 15,553 pounds, and 15,763 pounds, respectively.

Although we have assumed that dairy herds through 75 cows need only family labor, it has been suggested that a 75-cow dairy may well require one hired laborer. If this is the case, then required milk production would have to increase from an average of 14,750 pounds per cow for 75 cows to an average production of 15,591 pounds per cow.

Herd Development and Cash Flow

The farm budgets just presented are for dairies that are fully developed. This will not occur, however, until the third year of operation. How do dairies reach this developed stage and what is the cash flow picture in the first two years of operation? These questions will now be addressed. In addition, a cash flow projection for the third year of dairy operation is presented.

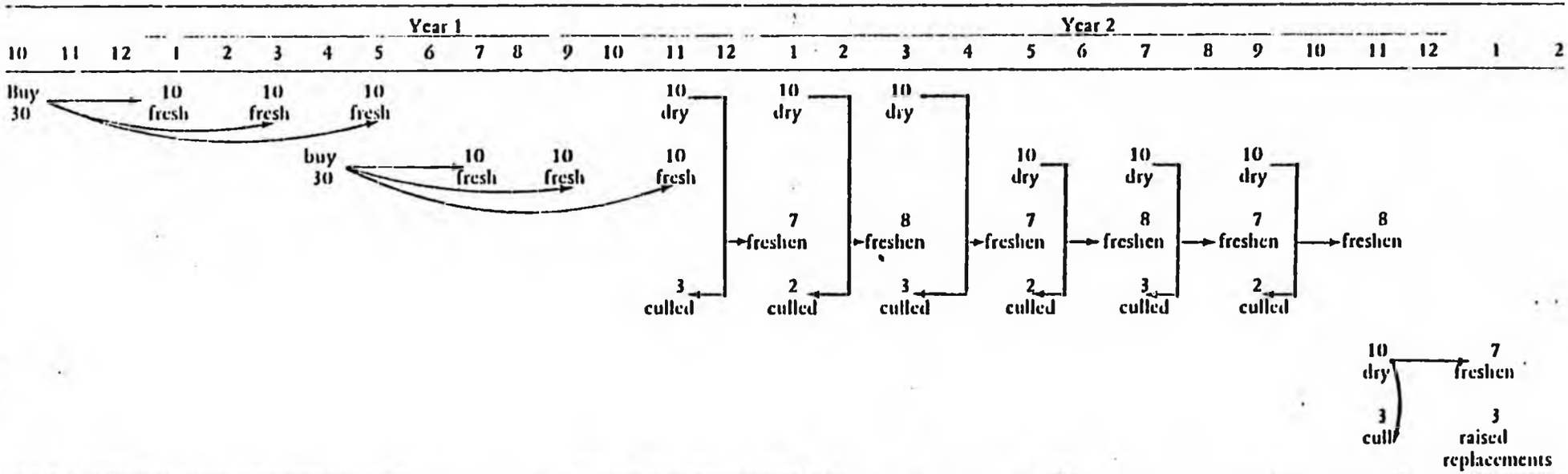
Herd Development

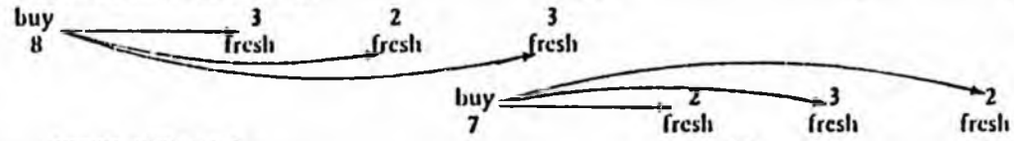
One of the first problems in starting a dairy is stocking the new dairy so that full production can be reached as quickly as possible and milk production can be constant each month. One possible plan for accomplishing these goals is presented here. Herd development plans for dairy herds milking 50, 75, 100, and 150 cows each month throughout the year are provided (see Tables 15, 16, 17, and 18).

Cows are assumed to be milked ten months and dry two. Dairies are also assumed to cull 25% of the milking herd annually with cows culled when dry.

Initially herds are stocked with purchased bred heifers. Animals arrive by contract air carrier before their last trimester of pregnancy, in two lots spaced six months apart. One-third of the heifers calve three months after delivery with the remaining two-thirds calving two and four months later. By the end of month nine of the first year dairies have reached full capacity in

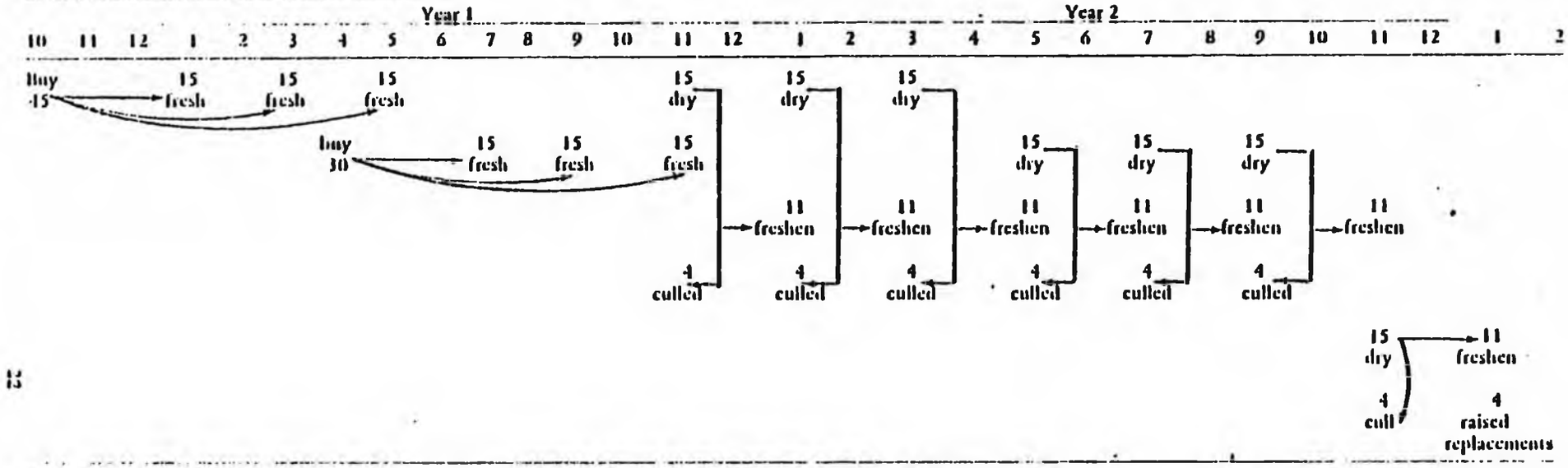
Table 15: Herd Development Plan for the 50 Cow Dairy Farm



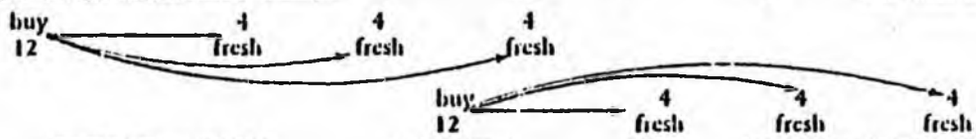


Cows Milked	10	10	20	20	30	30	40	40	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50				
Dry Cows																														
	30	30	30	20	20	10	40	30	30	20	20	10	18	15	15	13	13	10	17	15	15	12	12	10	10	7	7	8	8	
Culls Sold														3		2		3		2		3		2		3		2		

Table 16: Herd Development Plan for the 75 Cow Dairy Farm

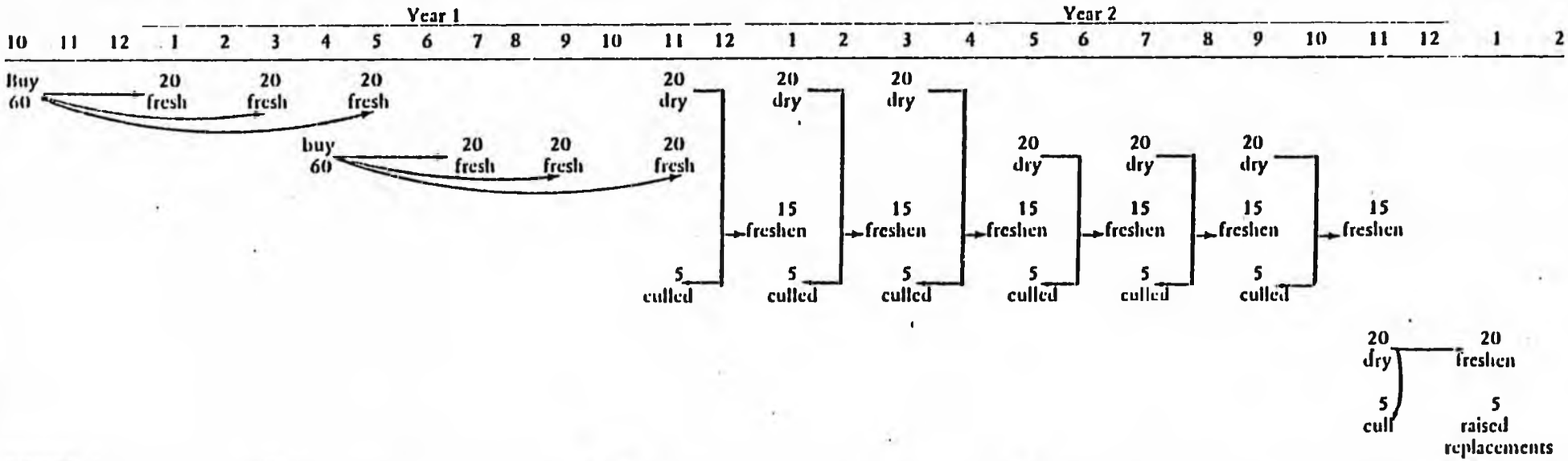


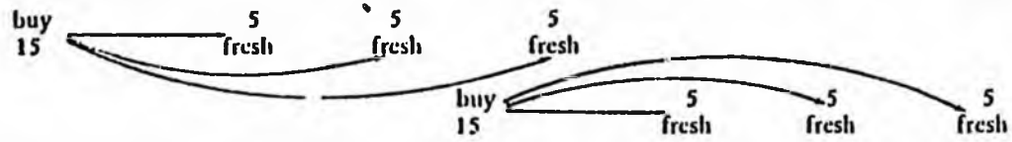
13



Cows Milked	15	15	30	30	45	45	60	60	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75			
Dry Cows																													
	45	45	45	30	30	15	60	45	45	30	30	15	27	23	23	19	19	15	27	23	23	19	19	15	15	11	11	11	11
Culls Sold														4	4	4		4		4		4		4		4			

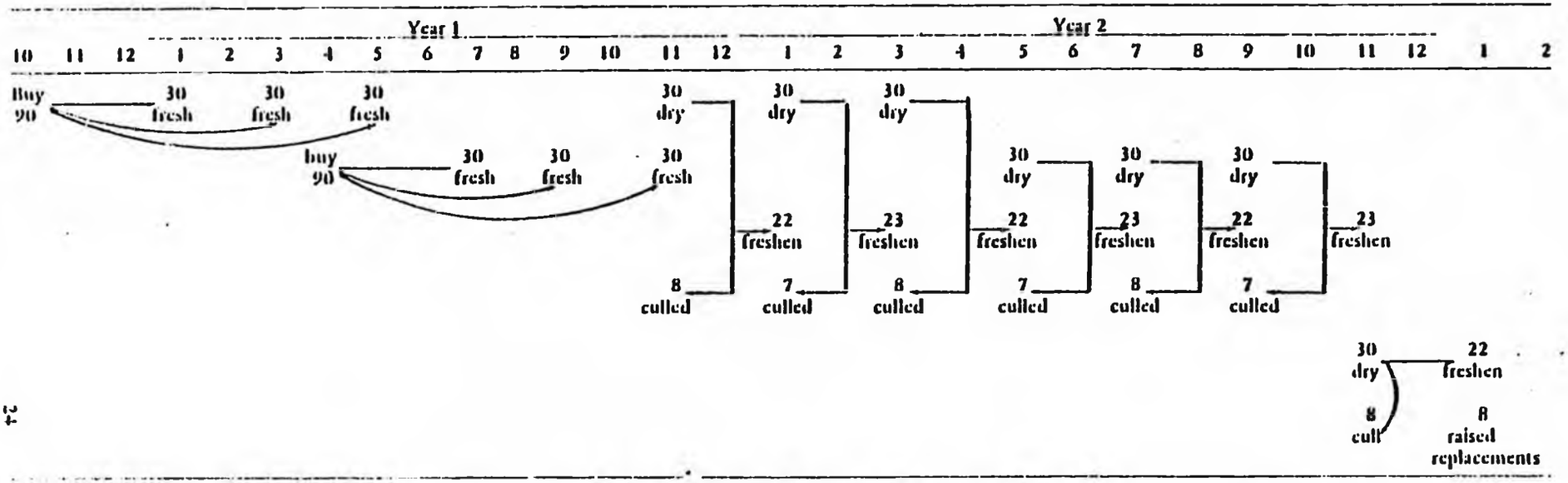
Table 17: Herd Development Plan for the 100 Cow Dairy Farm





Cows Milked	20	20	40	40	60	60	80	80	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Dry Cows																												
60	60	60	40	40	20	80	60	60	40	40	20	35	30	30	25	25	20	35	30	30	25	25	20	20	15	15	15	15
Culls Sold													5		5		5		5		5		5		5		5	

Table 18: Herd Development Plan for the 150 Cow Dairy Farm



Cows Milked	30	30	60	60	90	90	120	120	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150
Dry Cows																														
	90	90	90	60	60	30	120	90	90	60	60	30	53	45	45	38	38	30	52	45	45	37	37	30	30	22	22	23	23	
Calfs Sold														8		7		8		7		8		7		8		7		

milking cows. However, purchases of replacement heifers are required in month 11 of year one and also in year two. Starting with the third year, dairies are able to provide all their own replacements.

For a herd of 100 milking cows (see Table 17), for example, the development plan works as follows: As a start, 60 bred heifers are purchased with one-third scheduled to start milking in months one, three, and five of year one. These cows are then dry in month 11 of the first year and in months one and three of the second year. As they become dry, 15 of the 60 are culled. A second lot of 60 heifers are delivered in month four of the first year and calve in months seven, nine, and eleven. As these cows dry, 15 are again culled. An additional 30 heifers are purchased and brought on line in the second year. No more livestock purchases are required thereafter, since all replacements can be provided by the dairies beginning in the third year.

It should be noted that these development plans are based on exact schedules that may be highly idealized. It may be that a producer would want a larger number of animals in the first purchase to increase immediate cash flow and compensate for possible delays in future calving schedules.

Cash Flow

Table 19 provides a cash flow projection for a 150-cow dairy during the first three years of operation. The figures in this table can be multiplied by the appropriate factor—for example, .5 for a 50-cow dairy or .75 for a 75-cow dairy—for smaller sized dairies. This will yield a rough approximation of cash flows for these smaller dairies. Assumptions under which this cash flow was prepared are as follows:

1. All costs of feed for the first three months before the first lot of cows freshen are included in first quarter costs.
2. Cows produce only 85% of expected mature equivalent milk production during first lactation.

Table 19: Quarterly Cash Flow Projection for the 150 Cow Dairy Farm[1]

	1981-1982				1982-1983				1983-1984			
	Oct.-Dec.	Jan.-Mar.	Apr.-June	July-Sept.	Oct.-Dec.	Jan.-Mar.	Apr.-June	July-Sept.	Oct.-Dec.	Jan.-Mar.	Apr.-June	July-Sept.
Cash Receipts												
Calves	364	364	364	364	364	364	364	364	364	364	364	364
Cull Cows	0	0	0	3,375	5,062	5,062	5,062	5,062	5,062	5,062	5,062	5,062
Cull Heifers	0	0	0	0	0	0	0	0	900	900	900	900
Milk	25,335	50,671	82,341	95,009	99,480	103,951	109,539	111,775	111,775	111,775	111,775	111,775
Total	25,669	51,035	82,705	98,748	104,906	109,377	114,965	117,201	118,101	118,101	118,101	118,101
Cash Expenses												
Feed[2]	80,332	22,247	79,899	51,603	43,092	36,571	84,628	52,648	46,909	36,649	84,667	52,648
Hired Labor	0	2,000	9,000	11,000	11,000	11,000	11,000	11,000	11,000	11,000	11,000	11,000
Property Taxes	0	12,811	0	0	0	14,683	0	0	0	14,683	0	0
Repairs & Maintenance	4,815	4,815	4,815	4,815	4,815	4,815	4,815	4,815	4,815	4,815	4,815	4,815
Electricity	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
Breeding Fees	0	300	300	300	300	450	450	450	450	450	450	450
Semen	0	630	630	630	630	945	945	945	945	945	945	945
D.H.I.A.	540	0	0	0	540	0	0	0	540	0	0	0
Fuel & Oil	550	0	550	0	550	0	550	0	550	0	550	0
Insurance	3,954	0	3,954	0	3,954	0	3,954	0	3,954	0	3,954	0
Vet. & Drugs	800	800	800	800	800	800	800	800	800	800	800	800
Dairy Supplies	1,000	235	470	700	937	937	937	937	937	937	937	937
Calf Supplies	600	100	200	225	225	225	225	225	225	225	225	225
Bedding	3,750	0	0	0	4,100	0	0	0	4,100	0	0	0
Total	98,341	45,938	102,618	72,073	72,943	72,426	110,304	73,820	77,225	72,504	110,143	73,820
Net Profit (Loss)	(72,642)	5,097	(19,913)	26,675	31,963	36,951	4,661	43,381	40,876	45,594	7,758	44,281
Payment to Debt									32,141	32,141	32,141	32,141
Cumulative Operating Deficit or Net Profit	(72,642)	(67,545)	(87,458)	(60,783)	(28,820)	8,131	12,792	56,173	64,908	78,364	53,758	65,898
Livestock Purchases	144,000	144,000		36,800		36,800						
Dairy Facility Investment	1,234,909											

[1] All costs incurred in period prior to freshening of first cows are charged to first quarter of first year.
[2] In cash flow projection, feed cost includes feed fed to replacement stock.

3. Property taxes are paid in January.
4. Labor is first hired in months five, seven, and nine of year one.
5. Repairs, maintenance, and electric costs are equally distributed through the year.
6. Fuel is purchased twice yearly in April and October.
7. Insurance is paid semi-annually in April and October.
8. An initial purchase of $1,000 of dairy supplies and $600 of calf supplies is assumed. Thereafter, replacement of these supplies is proportionate to the number of cows milked in each quarter.
9. All bedding is purchased October 1.
10. Seventy-five percent of silage costs are incurred in April through May. The remaining 25% are encountered in July through September. Hay is purchased October 1.
11. All other costs are distributed equally over yearly quarters.
12. Repayment of debt on capital begins in the third year.

Assuming that production begins in October of 1981, a cumulative operating deficit results through December of 1982. Beginning in January through March of 1983, all losses have been recovered. A cumulative net profit continues for the remainder of the cash flow projection, even after the repayment of debt on the capital investment begins in the last quarter of 1983. Further, the dairy has cumulative silage assets of $55,000 at the end of the 1983-1984 production year.

SECTION 3

PROJECT CAPITAL REQUIREMENTS

To increase the volume of local milk to five million pounds per month, the initial phase of the Point MacKenzie Development Project will bring on-line dairy enterprises which will add 3,600 cows to the current 1,000 now producing milk in the Matanuska Valley. In addition, the dairy enterprises will produce haylage or silage for consumption on each farm. Each dairy enterprise will require an initial injection of capital. However, the total capital required will depend on the size mix of the dairies. Economic analyses indicate that 150 cow operations will probably generate the highest positive return. On the other hand, if herds are kept at approximately the annual production levels derived in a previous section, negative returns are not indicated for any of the dairy sizes considered. Therefore, it is likely that the size mix of dairy enterprises in the Point MacKenzie Project will depend on the management preference of the owners.

Table 20 lists the capital requirements for facilities, equipment and livestock, for milk, silage and haylage production on 50, 75, 100, and 150 cow dairies. Three scenarios were developed from these figures to indicate a low, possible intermediate and high level of capital requirement. The first (low), assumes that all dairies will be of the 150 cow size. The third (high) assumes all dairies at the 50 cow level. Neither of these is considered most likely. The intermediate scenario assumes an equal mix of the four sizes. Some type of mix will probably occur. This particular type is used only as an illustration. The resulting total capital requirements are shown in Table 21.

Table 20: Project Capital Requirements for 50, 75, 100, and 150 Cow Dairy Farms

	50 Cow	75 Cow	100 Cow	150 Cow
Dairy & Replacement Heifer Facilities	$488,023	$681,218	$ 918,369	$1,234,687
Silage Equipment[a,b]	77,050	77,050	77,800	101,875
Livestock	96,000	144,000	192,000	288,000
TOTAL	$661,073	$902,268	$1,188,169	$1,624,562

[a]Natural Resource Economics Division—Economics, Statistics and Cooperative Service—USDA.
[b]Excludes the price and clearing cost of land.

Table 21: Low, Intermediate and High Project Capital Requirement Scenarios

	High	Intermediate	Low
Size of Dairies	50 cow	50, 75, 100, 150 Cow	150 cow
Number of Dairies	60	5—50 cow 10—75 cow 8—100 cow 8—150 cow	20
Number of Cows	3,600	3,600	3,600
Cropped Acreage Required[a]	9,000	9,000	9,000
Capital Required[b]	$42.1 M	$37.3 M	$34.9 M

[a]If each farm were allotted 640 acres, this figure would increase to 38,400, 19,840 and 12,800 acres for the high, intermediate and low scenarios, respectively.

[b]$2.43 M is land cost at $50 for purchase and $220 for clearing. Only the cropped acreage is included in this figure. If 640 acres were allotted to each farm, the land cost would increase to $10.4 M, $5.4 M, and $3.5 M for the high, intermediate and low scenarios, respectively.

SECTION 4

MARKETING AND COMPETITIVE POSITION

Marketing

Milk is one of the few agricultural products which currently has a well organized marketing system in Alaska. In a letter to Governor Hammond dated May 4, 1979, Matanuska Maid, a dairy farmer cooperative, identified the fresh milk market in Alaska, excluding the southeast portion of the state, as approximately 6,500,000 pounds per month. About 19% is milk produced in Alaska, with the remainding 81% being shipped in by bulk and processed here or processed and packaged for retail sales outside the state before shipment to Alaska.

There are currently two major milk processors in Alaska, Matanuska Maid and Arden Farms both located in Anchorage. Matanuska Maid processes all the milk produced in Alaska. The problem for the two major processors is maintaining a market share relative to outside price and, thereby, maintaining a volume of milk for efficient processing. In state milk production has declined from 22.1 million pounds in 1961 to 14.4 million pounds in 1978. Importation of milk has been used to replace the loss in state milk production.

Fresh milk producers in Alaska are being pressured by high land values in the Matanuska Valley. Existing dairymen may now be able to realize significant gains by selling their land to speculators and subdividers, gains much higher than would be realized by continuing to farm or by selling to another farmer. As a result, since the 1960's dairy farms have been declining rapidly. The industry thus weakened, has had a difficult time meeting increased competition from outside dairymen. Increased milk production from Point MacKenzie farms may help increase the competitiveness of the industry.

An important question is "can new milk producers at Point MacKenzie reasonably expect to have a market for their milk?" As might be anticipated, there is no easy answer to this question. Some consumers may not buy Alaska produced milk out of choice even if it is price competitive, while other consumers likely would be willing to pay a premium for local milk. Some

retail firms may prefer and be under economic pressure not to handle local milk unless it is competitive with outside milk. It is likely that considerably less than 100% of market will be supplied by local milk even with Point MacKenzie.

Competitive Position of Alaskan Produced Milk

The current competitive position of Alaskan produced milk compared with alternative sources is analyzed below. The analysis is important when considering the future of the Alaskan dairy industry. While disagreement is possible for any figure given, we are confident that the cost data in the analysis are generally accurate. To the degree that there are inaccuracies, their magnitude would not be great enough to alter any of our conclusions.

Milk produced in Alaska must compete for a reasonable market share with milk shipped in from outside the state. As shown in Column 1, Table 22 Alaska farmers price were receiving $16.84 per hundred weight (cwt) in November, 1979. Farm to processor transportation costs by regulated carrier was $1.36 per cwt. The total cost for Alaska produced milk to an Anchorage processor was $18.20 per cwt. Local processing costs add another $13.61 per cwt and bring the total cost delivered to the retail store dock to $31.81 per cwt. Milk shipped in by bulk and processed locally had a slightly higher wholesale cost of $33.04 per cwt. Prepackaged milk shipped in from the Puget Sound had a significantly lower wholesale cost. Columns 3 and 4 in Table 22 present the cost of prepackaged milk using a Class I price (regulated handler) and blend price (non-regulated producer/distributer). These total $27.20 and $26.20 per cwt which is a reduction of $4.61 and $5.60, respectively over Alaskan produced and processed milk. Recombined milk (dry skim milk and butterfat shipped in from out of state and recombined in Alaska) was competitive with the prepackaged milk even with the higher Alaska processing costs.

Ignoring recombined milk because its ingredients are not produced in Alaska, further consideration is required to understand the large difference between local and outside processing costs. Anchorage milk processing plants generally have substantially lower volume then their

Table 22: Estimated Costs for Alternative Sources of Milk Delivered to Anchorage Retail Stores November 1979

	Local Farmers	Fresh Milk from Seattle			Ingredients to Recombine
		Bulk	Prepackaged Class I	Processor-Distributor	
Farm Value	16.84[a]	12.85[b]	12.85[b]	11.85[b]	
Delivered to Plant	18.20[a]	13.10[d]	13.10[d]	12.10[e]	11.34[f]
Processing Cost	13.61	13.61	5.27	5.27	13.61
Butter and Powder					1.00[i]
Haul to Washington Pier		.65[j]			
Transportation to Alaska	–	3.68[j]	8.83[k]	8.83[k]	.70[l]
Service charges	–	2.00[m]	–	–	
Recombining Cost	–	–	–	–	.10[i]
Cost at Wholesale					
Per 100 Pounds	31.81	33.04	27.20	26.70	26.75
Per 1/2 gal.	1.37	1.42	1.13	1.17	1.15
Cost Per 1/2 gal. Retail[n]	1.58	1.63	1.35	1.30	1.32

[a]FOB price at farm for milk produced in the Matanuska Valley.
[b]Transportation cost of $.25 from farm to processor in Puget Sound area is an estimate.
[c]Cost of local milk at an Anchorage processing plant.
[d]Estimated Puget Sound Class I price, November 1979.
[e]Estimated Puget Sound Blend price, November 1979.
[f]Estimated manufacturing milk price in all federal order marketing areas.
[g]Includes fluid bottling and distribution to retail. Source: an Anchorage milk processing plant.
[h]Calculated from $.79 per half gallon wholesale price in Seattle or $17.53 per cwt less $13.10 equals $4.83.
[i]Source: Hammond, Buxton and Thraen.
[j]Source: An Anchorage milk processing firm.
[k]Based on a quote of $.38 per half gallon transportation cost between Seattle and Anchorage. Source: A Seattle milk processing company.
[l]Source: Based on Matanuska Maid quote of $4.50 transportation cost per 100 pounds of non-fat dry milk or 100 pounds of butter.
[m]Cost of pasteurization, profit, etc. Source: An Anchorage milk processing firm.
[n]Assumes 15% markup.

Seattle competitors, therefor a higher cost per unit processed. The Anchorage plants also have higher labor costs. An important question to ask is "can these economic disadvantages be overcome?" Table 23 represent the cost associated with a typical processing plant in Anchorage. A monthly volume of 2 million pounds was assumed and the total cost per cwt was determined to be $31.81. This production level, however, implies that such a plant is substantially underutilized. If volume were to increase to 5 million pounds per month, plant costs per unit of production would drop substantially. Cost per hundred weight at this volume would be approximately the same as prepackaged Class I milk shipped in from Seattle. Further, if improved technology were incorporated into this plant and interstate bulk milk shipment was deregulated, than local milk could be produced and processed at a cost approaching processor-distributor milk from Puget Sound. In other words, with changes in the industry Alaska milk can again become competitive.

Is this scenario a real possibility? First, 5 million pounds is 76% of the current market for fresh milk in Alaska excluding southeast. State population is expected to grow to 496,000 in five years. This means that the milk market, assuming no change in consumption patterns, would increase to 8 million pounds. Thus the 5 million pounds of locally produced milk would account for only 62% of total consumption.

It is clear that without greater volume and plant modernization, dairy farmers in Alaska must bear a greater portion of the differential that currently exists between prepackaged outside milk and local milk to be fully competitive. The existing small dairy industry may be able to survive with its premium priced product. However, the only way to lower the price of Alaska milk to the consumer, assuming no relative cost changes, is through expansion of local milk production, subsequent increases in processing volume and additions in processing technology.

Table 23: Estimated Cost Per Hundred Weight of Milk Through a Typical Anchorage Milk Processing Plant and Delivered to Retail Stores

	VOLUME PER MONTH		
	2 Million Pounds	5 Million Pounds	
	No Change in Technology	No Change in Technology	Improved Technology
Milk and Carton	19.64	19.64	19.18[a]
Plant Labor	1.80	1.17	.99
Plant Overhead	1.77	1.15	.98
Distribution to Retail	6.28	4.08	4.08
Administration and Profit	2.32	1.50	1.50
Total	31.81	27.54	26.73

[a]Reduction in bulk transportation cost from Matanuska Valley/Point MacKenzie to Anchorage due to deregulation of intrastate bulk milk movement.

SECTION 5

IMPLICATIONS

Dairying at Point MacKenzie appears economically feasible if the price paid to the dairyman remains at $16.84 per cwt. The largest herd size considered, 150 cows, was the most economically viable. A positive cash flow could be generated for this dairy by the middle of the second year of operation. Table 24 indicates the number of pounds of milk per cow required annually to cover all costs at $16.84 per cwt.

The critical aspect of a new milk industry in Alaska is processing. The dairy farmers both new and old must press for greater efficiency in processing. A major concern is high labor costs relative to Seattle. We conclude that Anchorage milk processing labor wages should be related to Seattle wage levels for comparable employment plus an appropriate cost of living differential. Presently, we have no evidence that this is the case.

A second suggestion is that along with increased volume, an effort should be made to modernize milk processing in Alaska. The Alaska Renewable Resources Corporation should be considered a potential financier for improved equipment. Another source could be existing state loan programs in the Alaska Department of Commerce and Economic Development. However, these financing agencies should be very cognizant of the need for greater efficiency and improved management within the processing sector.

Our suspicion is that future transportation rates to Alaska will reflect a greater than relative change to other costs. This will be due in large measure to the higher costs of petroleum. If so, the transportation advantage currently available to imported prepackaged milk may be reduced. A second factor to consider is the possible adoption of a fair trade practice law or milk marketing order for Alaska, which ever is most appropriate. These approaches are used in other states to prevent market disruption caused by pricing below cost. We do not have sufficient evidence to indicate this practice is occurring, but such activity would surely be detrimental to a small but expanding local dairy industry.

Table 24. Production Rates and Returns for 50, 75, 100, and 150 Cow Dairy Farms

	50 Cows	75 Cows	100 Cows	150 Cows
lbs/cow to cover all costs @ $16.84/cwt	16,292[a]	14,750	15,032	14,231
Net return/cwt at 16,000 lbs/cow	($.31)[b]	$1.26	$1.02	$1.32
Net return/cwt at 15,000 lbs/cow	($1.22)	$.22	($.04)	$.29
Net return/cwt at 14,000 lbs/cow	($2.76)	($.96)	($1.24)	($.89)

[a]At a production rate of 17,000 pounds per cow, the 50 dairy would realize at net return of $.70/cwt.
[b]( ) implies negative returns.

To conclude this report several points should be noted. While we are confident that our analysis is a good approximation of real world conditions, it should be kept in mind that the data are estimates. We have identified a major weak link in the present Alaskan dairy industry, that of local processing. Still, realizing that risk is associated with any action, we believe the local dairy industry can grow if two conditions are met. First, individual dairy farms will require good management to be successful. Second, and most important, the processing sector must become more efficient. If milk production increases, some gains in efficiency will result with no action required from the processing sector as economies are realized because of added volume. Also, it is reasonable to expect that with the prospect of a continuing industry and the availability of low interest loans from the state, processors will take advantage of cost reductions available through the latest technology.

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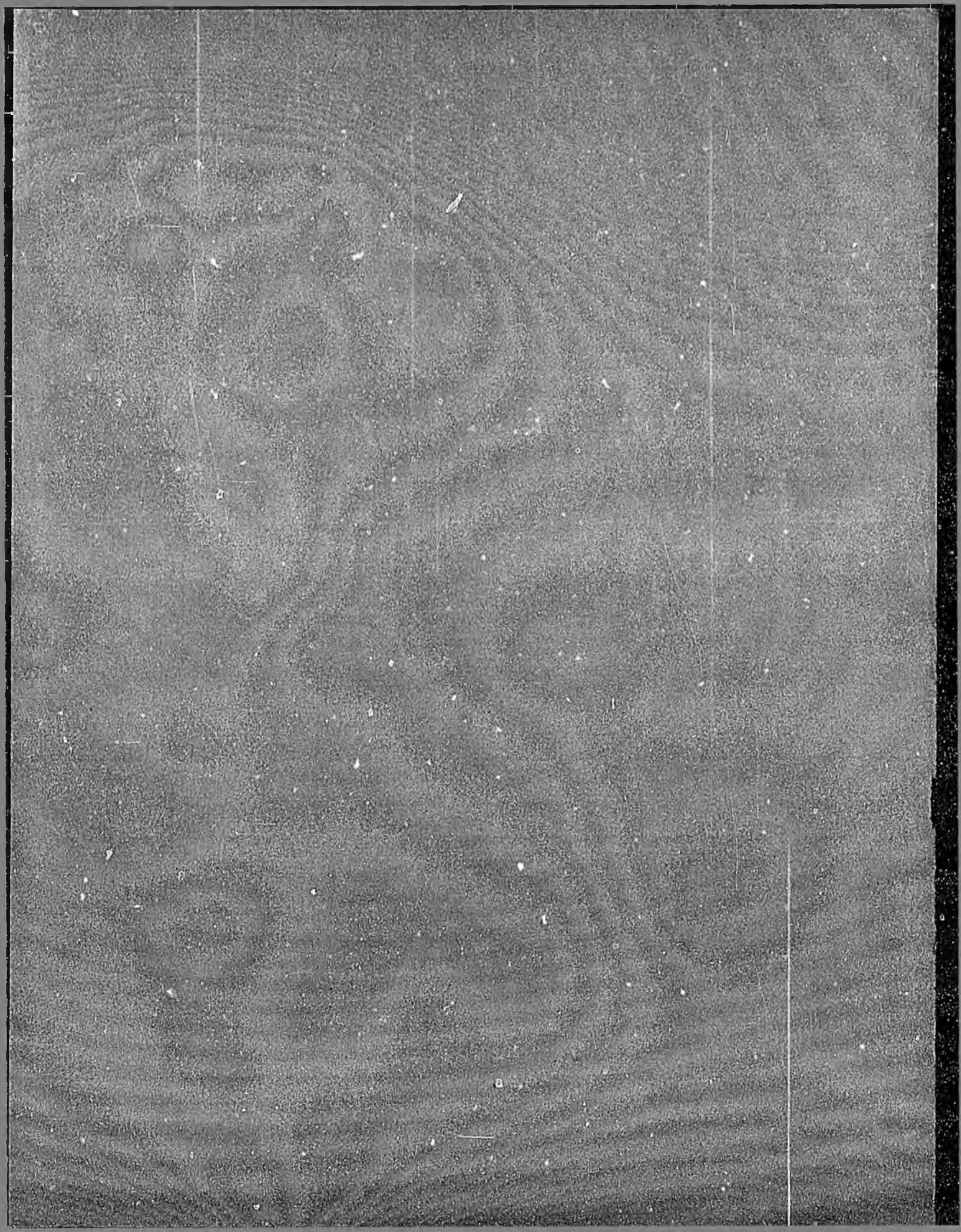
Figure 2. Typical Stanchion Barns. The upper drawing illustrates a typical stanchion barn. The unit shown houses 60 milking cows. The lower illustration is a 100 cow, free-stall facility including a holding area (HA), maternity area (MA), hospital (H), milking parlor (MP), milk room (MR), utility and office area (U, O), and a loading chute (LC). (From: Midwest Plan Service. Dairy Housing and Equipment Handbook. Iowa State University, Ames. 1978).

Figure 3. Manure Storage Basins. Two types of manure storage basins. The upper illustration includes a picket gate or a plank or concrete wall to facilitate unloading. (From: Midwest Plan Service. Dairy Housing and Equipment Handbook. Iowa State University, Ames. 1978).



BUDGET REQUIREMENTS FOR THREE YEARS

Financing Needs:

Land Clearing - 12,000A+ @ $220/acre 1st yr. - $1.2 mil, 2nd yr. - $1.0 mil, 3rd yr. - $0.5 mil	$2,700,000
Dairy Buildings and Equipment - 1,000,000 per unit average for 25 operators	25,000,000
Livestock and Chattles for above units 1st yr - $2.4 mil, 2nd yr - $4 mil	7,300,000
Logging Operations Loans 1st yr - $1 mil, 2nd yr $0.5 mil	1,500,000
Assistance for processing plant renovation and milk transportation upgrading 2nd yr - $2 mil	2,000,000
TOTAL LOANS	$38,500,000

Capital Costs for State Projects:

Market Roads @ $100,000/mile - 14.5 miles (Funded through Department of Transportation Budget) 1st yr - $1.45 mil	1,450,000

Administrative Costs:

Survey Costs (Funded through Alaska Division of Lands Budget) 1st yr - $0.3 mil	300,000
Project Coordinator and related cost 1st yr - $150,000, 2nd yr - $100,000, 3rd yr - $100,000	350,000
Extension Services (Funded through U of A Cooperative Extension Budget)	
- Extension Dairyman and support 1st yr - $80,000, 2nd yr - $80,000, 3rd yr - $80,000	240,000
- Extension Forester and support 1st yr - $80,000, 2nd yr - $80,000, 3rd yr - $30,000	190,000
- Extension Engineer and support 1st yr - $80,000, 2nd yr - $80,000, 3rd yr - $30,000	190,000
Miscellaneous Costs 1st yr - $150,000, 2nd yr - $150,000, 3rd yr - $100,000	400,000
Loan Fund Administration Additional	60,000
Total State Capital	
TOTAL PROJECT FUNDING REQUIRED FOR THREE YEARS	$41,680,000

PT. MACKENZIE PROJECT

Estimated Labor Payroll

Clearing Operations	$ 2.7 million	40% labor	$ 1,080,000
Dairy Buildings and Equipment	$25.0 million	30% labor	$ 7,500,000
Logging Operations	$ 1.5 million	30% labor	$ 450,000
Road Construction	$ 1.45million	30% labor	$ 435,000
Survey Operations	$ .3 million	50% labor	$ 180,000
		Total Project Area Labor	$ 9,645,000

MATANUSKA-SUSITNA BOROUGH

RESOLUTION SERIAL NO. 79-56

A RESOLUTION OF THE ASSEMBLY OF THE MATANUSKA-SUSITNA BOROUGH CONCURRING WITH THE RECOMMENDATION OF THE RURAL DEVELOPMENT COUNCIL FOR A DAIRY PROJECT FOR THE POINT MacKENZIE AREA.

WHEREAS, there is an active Rural Development Council within the Matanuska-Susitna Borough; and

WHEREAS, there is a need for the expansion of agriculture and, specifically, for dairy products in the State of Alaska; and

WHEREAS, the State of Alaska has classified thousands of acres as agricultural land within the Point MacKenzie area and this acreage would support an invaluable dairy industry for the State of Alaska; and

WHEREAS, the Matanuska-Susitna Borough, in concert with the State of Alaska, is pursuing road access to the entire Point MacKenzie area; and

WHEREAS, the Rural Development Council has determined that the Point MacKenzie area would support a viable dairy industry and has indicated its intent to make a recommendation to the Governor of the State of Alaska that a Point MacKenzie Dairy Project be developed;

NOW THEREFORE, BE IT RESOLVED that the Borough Assembly of the Matanuska-Susitna Borough concur with the recommendation of the Rural Development Council and request that the Governor of the State of Alaska take any action necessary to implement the Point MacKenzie Dairy Project.

PASSED AND APPROVED by the Borough Assembly of the Matanuska-Susitna Borough this 3rd day of May, 1979.

Ronald L. Larson
Borough Mayor

ATTEST:

Evelyn Thompson
Borough Clerk

(SEAL)

WO#7658
Baldwin

Funding Information
General Fund $56,030,000
Other Funds -0-
$56,030,000

IN THE SENATE

SENATE BILL NO.

IN THE LEGISLATURE OF THE STATE OF ALASKA

ELEVENTH LEGISLATURE - SECOND SESSION

A BILL

For an Act entitled: "An Act making appropriations for the development of agriculture; and providing for an effective date."

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

* Section 1. The sum of $2,000,000 is appropriated from the general fun to the Alaska Agricultural Action Council, Department of Commerce and Econo Development, to finance the operation of the Delta agricultural development project. The sum appropriated shall be allocated as follows:

(1)	Land clearing	$1,000,000
(2)	Administration expenses	100,000
(3)	Continuation of test marketing program	900,000

* Sec. 2. The sum of $5,580,000 is appropriated from the general fund t the Alaska Agricultural Action Council, Department of Commerce and Economic Development, to finance the Point MacKenzie agricultural development projec The sum appropriated shall be allocated as follows:

(1)	Survey cost	$ 300,000
(2)	Land clearing	3,600,000
(3)	Administration expenses	150,000
(4)	Construction of access roads	1,450,000
(5)	Dairy specialist and support	80,000

* Sec. 3. The sum of $7,950,000 is appropriated from the general fund t the Alaska Agricultural Action Council, Department of Commerce and Economic Development, to finance a new agricultural development project in the vicin of Delta to be known as the Delta II agricultural development project. The sum appropriated shall be allocated as follows:

(1)	Survey cost	$ 300,000
(2)	Land clearing (phase I)	4,000,000
(3)	Loan for elevator construction	1,500,000
(4)	Administration expenses	150,000
(5)	Construction of access roads	2,000,000

* Sec. 4. The sum of $40,500,000 is appropriated from the general fund to the agricultural revolving loan fund established under AS 03.10.040 to be available for agricultural loans under AS 03.10.

* Sec. 5. The unexpended and unobligated portion of the appropriations made in secs. 1-3 of this Act lapse into the general fund June 30, 1983.

* Sec. 6. This Act takes effect immediately in accordance with AS 01.10.070(c).

WO 7464 (2)
Baldwin✓

IN THE SENATE

IN THE LEGISLATURE OF THE STATE OF ALASKA

ELEVENTH LEGISLATURE - SECOND SESSION

A BILL

For an Act entitled: "An Act relating to the sale of agricultural land located in an agricultural development project."

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

* Section 1. AS 44.33.450(a) is amended to read:

(a) There is established in the Office of the Governor [DEPARTMENT OF COMMERCE AND ECONOMIC DEVELOPMENT] the Alaska Agricultural Action Council The council is composed of five members appointed by the governor. The chairman of the council is to be designated by the governor from among the members

* Sec. 2. AS 44.33 is amended by adding new sections to read:

Sec. 44.33.480. SALE OF AGRICULTURAL LAND. (a) Before state land located in an agricultural development project may be sold or leased, the following procedures must be completed:

(1) the council shall determine the uses for agricultural land located in an agricultural development project;

(2) the department shall, according to instructions from the council, survey the agricultural land in an agricultural development project into parcels which are consistent with criteria developed by the council;

(3) the council shall adopt criteria establishing residency, skill, experience, and financial qualifications it considers necessary for purchasers or lessees of agricultural land in an agricultural development project;

(4) the department shall offer the agricultural land for

disposal under the procedures prescribed in the Alaska Land Act (AS 38.05), in the manner and at the time consistent with criteria adopted by the council, and subject to review and approval by the coun cil of the

(A) terms of sale,

(B) land values,

(C) farm development requirements, and

(D) requirements, terms, and administration of land clearing contracts;

(5) the department shall transmit all lottery applications received for the agricultural land and a statement of the qualificatio of persons who wish to bid on the land to the council for evaluation according to the residency, skill, experience, and financial qualifica tions adopted by the council;

(6) the council shall advise the department which bidders o lottery applicants are qualified to purchase the agricultural land; an

(7) if the other requirements of AS 38.05 are satisfied, th department shall conduct the lottery or auction.

(b) A determination by the council that a bidder or lottery appl cant is unqualified to purchase agricultural land is a final administr tive order which is subject to judicial review under AS 44.62.560 and 44.62.570.

Sec. 44.33.485. PROJECT ADMINISTRATOR. The council shall employ project administrator who will be in charge of the detailed affairs of each agricultural development project authorized under AS 44.33.475. project administrator serves at the direction and at the pleasure of th council. A project administrator is authorized to employ and determin the compensation of members of his staff within the limitation of the budget approved by the council. A project administrator is in the

partially exempt service under AS 39.25.120.

* Sec. 3. AS 44.33.500 is amended by adding a new paragraph to read:

(3) "department" means the Department of Natural Resources.

* Sec. 4. AS 38.05.045 is amended to read:

Sec. 38.05.045. GENERALLY. All lands owned in fee by the state to which the state may become entitled, excepting tide, submerged or shorelands, and timber or grazing lands, may be sold as provided in AS 38.05.045 - 38.05.069 and AS 38.08. However, this section does not prevent the disposition of lands as provided in AS 38.05.300 - 38.05.3 and AS 44.33.480.

* Sec. 5. AS 38.05.057(c) is amended to read:

(c) The Alaska Agricultural Action Council established under AS 44.33 [COMMISSIONER] may adopt criteria [REGULATIONS UNDER THE ADMI ISTRATIVE PROCEDURE ACT (AS 44.62)] which specify qualifications for lottery participants different from those specified in (b) of this section if

(1) an interest in land limited to agricultural purposes is to be sold under (a) of this section;

[(2) THE SALE IS A PART OF A PROGRAM TO DEVELOP AGRICULTURAL LAND AS A RENEWABLE RESOURCE OF THE STATE; AND]

(3) the criteria [REGULATIONS] include residency, skill, experience, and financial requirements necessary to qualify persons who are competent [AND FINANCIALLY ABLE] to develop the land as a successfu agricultural enterprise; and

(4) the land is located in an agricultural development project authorized under AS 44.33.475.

* Sec. 6. AS 39.25.120 is amended by adding a new paragraph to read:

(12) an agricultural development project administrator under the direction of the Alaska Agricultural Action Council in the Office o

the Governor.