ALASKA LEGISLATURE COMMITTEE FILES 1987 - 1988 8672
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2 - PLANNING FRAMEWORK

2.1 - General

In the years since the previous Transportation Plan was developed, a number of changes have occurred in the Southeast Alaska Region. Some of the changes have been generated internally but many have been generated by outside forces which have impacted on the needs and opportunities within the area.

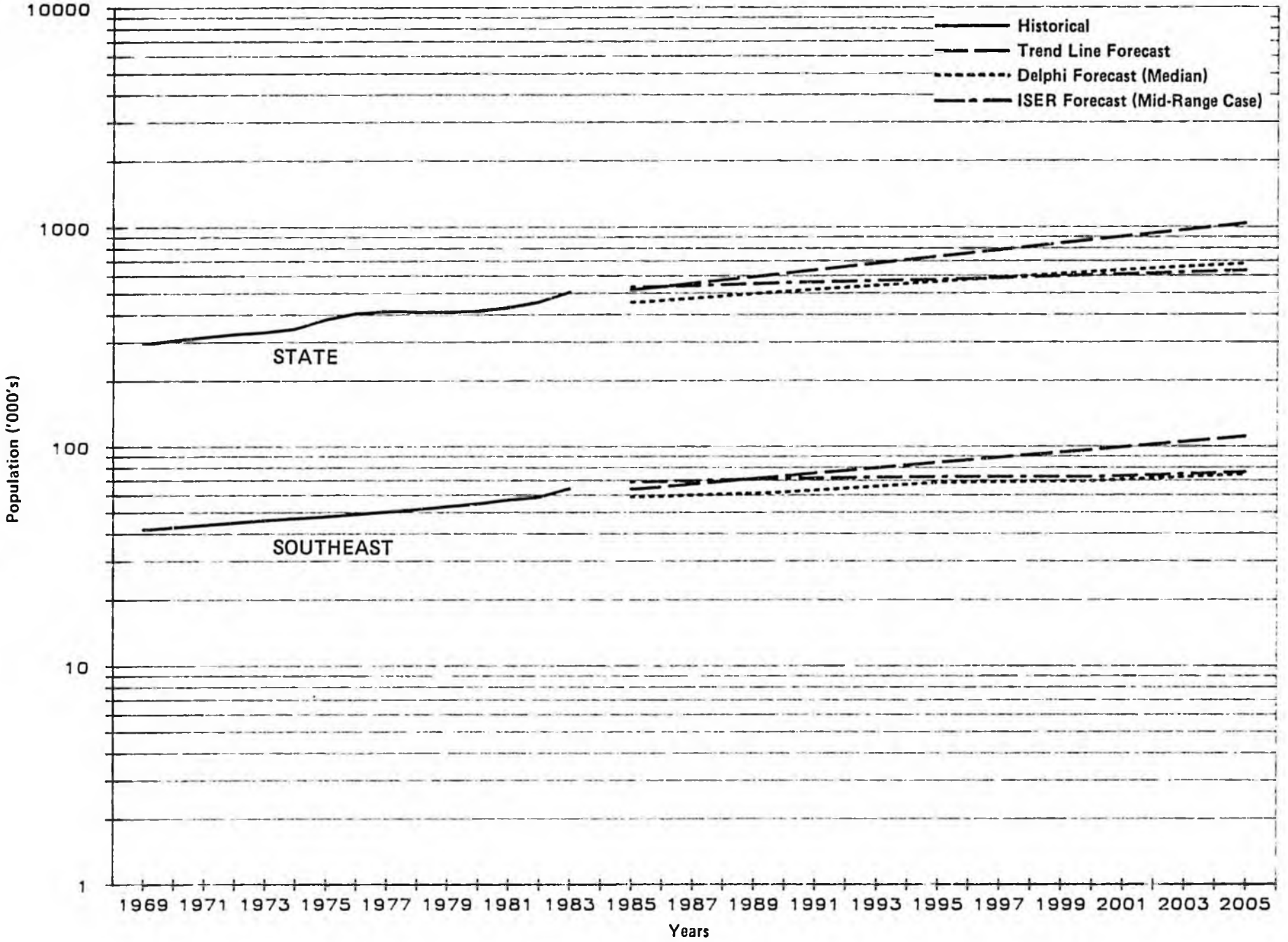
The intervening years have seen a marked decline, for example, in the resource markets on which a substantial portion of the Alaskan economy is based. Falling oil prices have placed downward pressure on government revenues, while poor markets for forest products and minerals have led to curtailment or deferral of projects which were originally planned for the early 1980s. These factors have led to an increasing reliance on the tourist market, which has remained strong in spite of generally poor economic conditions.

Within the region, shifts in population and income have altered the demand pattern for transportation services. In addition, system changes made as a result of the 1980 Plan have provided added information regarding the interactions between demand and services and have highlighted new areas of service shortfalls.

These factors have combined to create a new context in terms of transportation demand within the Region. At the same time, some significant changes have occurred in the supply side of the equation as new transportation technologies and new types of service have evolved as practical options.

As a result, there is a clear need to re-evaluate the transportation planning framework in terms of:

Figure 1
ALASKA POPULATION FORECASTS



- expected changes in the demand for service;
- the base or existing transportation system; and
- the technological changes which may be available for future integration into the transportation network of the Region.

2.2 - Population and Tourism Growth

The key factors contributing to changing demand for transportation services in Southeast Alaska are the growth in regional population and the growth in tourist traffic into the area. In a survey carried out in 1983, almost 60% of the air travelers and 40% of the Marine Highway users were Alaska residents. In addition, on the Marine Highway, almost 50% of the travelers (and over 70% of summer travelers) were tourists. These two markets, resident and tourist, clearly account for the major portion of transportation demand in the Region, and the future growth in these markets will play a key role in defining the need for transportation services.

In the past, population growth in the Southeast Alaska region has generally remained fairly stable and relatively strong. Since the late 1960s, the population of the Region has grown at a fairly consistent rate of 2.5% to 3.0% per year, somewhat lower than the State average of 3.5% but without the marked swings seen in statewide population trends.

In the late seventies it was expected that, provided the State capital was not moved from Juneau, the long-term population growth rate could be maintained at around 2.8%, with the Region's population increasing to over 100 000 persons by the year 2000. More recent forecasts, however, have been more pessimistic (see Figure 1, opposite). In part because of the Region's dependence on State government employment and the expected need to reduce State spending, these forecasts have generally predicted a decline in the long-term annual growth rate. A Delphi forecast prepared in 1983 projected regional population growth of less than 2.5% per year to 1990, declining to below 2% from 1990 to 2000 and less than 1.5% thereafter. The Alaska

Institute for Social and Economic Research, using the detailed State Economic Model, has projected even lower growth rates for Southeast population ranging from a low of less than 0.5% per year in their pessimistic case, up to an average of less than 1% in their optimistic scenario.

In light of these forecasts and the generally weak long-term prospects for the Region, it was decided, for planning purposes, to project that regional population could maintain its long-term growth rate (2.8%) through to the end of the 1980s but that growth thereafter was likely to decline and stabilize at a rate of 1% per year. Total regional population was forecast to reach 73 900 persons by 1990, and 85 800 by 2005.

The second key market for transportation services is tourist traffic. Relatively little data are available on the growth in this market, but indications are that visitor volumes have grown at an average annual rate of 4.5% in recent years. The long-term prospects for this market are strong as increasing proportions of the population find themselves with the leisure time and financial means to indulge their desire for travel.

It is too early to tell whether Alaska can sustain its share of this growing market, just as it is difficult to predict the portion of these visitors who will make use of State-operated transportation services (airports, roads and the Marine Highway). For planning purposes, however, it was assumed that tourist demand for transportation services into and within the Region would continue to grow at 4.5% per year to 1990 and would taper off to 2.5% per year thereafter.

2.3 - Existing Transportation System

The transportation system currently in place in Southeast Alaska has also changed somewhat since the introduction of the 1980 Transportation Plan. The existing network consists of three key components--the aviation, the marine and the road systems.

2.3.1 - Aviation System

Air traffic demands in Southeast Alaska are met by a range of carriers from intra- and inter-regional jet airlines through to small float-plane operators.

Two air carriers provide jet service to Southeast Alaska: Western Airlines and Alaska Airlines. Western flies a Seattle, Juneau and Anchorage route year-round with Boeing 727 aircraft and also provides a summer service into Ketchikan from Seattle. Alaska Airlines, the major large carrier in Southeast Alaska, provides service with Boeing 737/727 aircraft. It serves Yakutat, Juneau, Sitka, Petersburg, Wrangell and Ketchikan with at least two jet aircraft flights per day year-round, and serves Gustavus with one jet flight a day in the summer and with small aircraft service in the winter. During the summer of 1985, Juneau had nine Alaska Airlines flights a day scheduled, while Ketchikan and Sitka each had seven scheduled flights per day. All of the flights originate or terminate in Seattle, Anchorage or Fairbanks. With a total population of some 53 500 in 1983 for all the communities being served with jet aircraft, it can reasonably be argued that this airline service is excellent for the size of the communities and traffic demand.

The jet carriers also provide a substantial freight capability to and from the region carrying high-value perishable cargos as well as mail. On some flights, as much as half of the passenger bay is turned over to cargo while in other cases whole aircraft will be chartered to move full loads of fresh fish.

Commuter air service of the type that is common in the lower 48 States (that is twin-engined aircraft, usually turbo-props, carrying between 18 and 44 passengers) does not exist in Southeast Alaska. This is chiefly attributable to the high level of jet aircraft service provided to all the major communities in the Region and the lack of additional communities with sufficient traffic to justify intermediate sized aircraft.

Apart from jet services, there are a number of scheduled air taxi operations in the Southeast Region offering a wide range of services and service

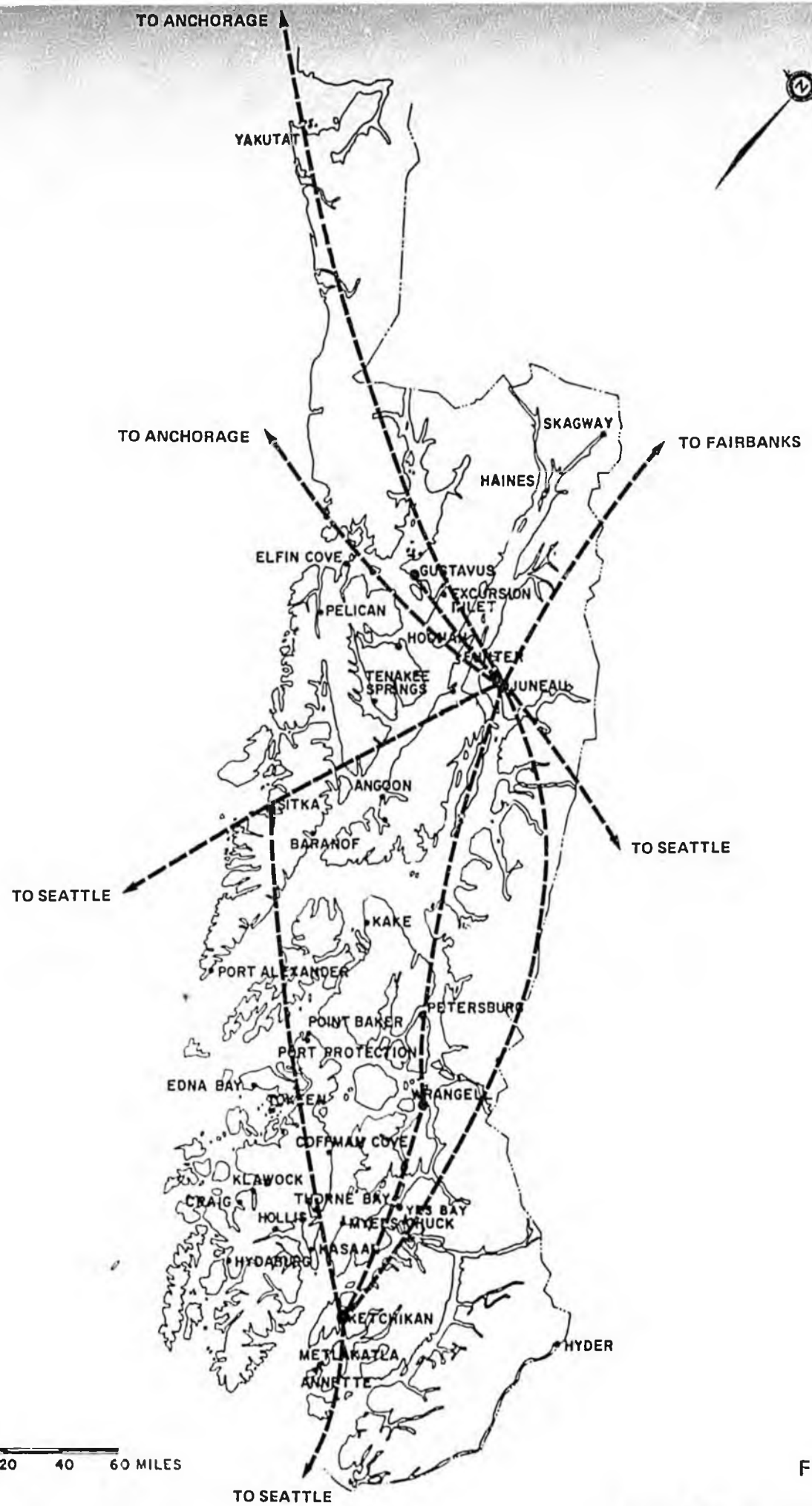


Figure 2

MAIN LINE JET SERVICE

frequencies into various communities. Operators are based in Juneau, Ketchikan, Petersburg, Wrangell, Sitka, Haines, Skagway, Yakutat, Klawock, Metlakatla and Gustavus, and generally provide a minimum of daily service to outlying communities carrying passengers, small freight and mail. Typically they provide service with float-equipped aircraft in the southern Panhandle, and wheel-equipped aircraft in the northern Panhandle. A summary of current (1985) jet and feeder services is provided in Figures 2, 3, and 4.

Air service operations in the region are supported by a network of some 140 airports, seaplane bases and heliports. Eight of the airports can presently accommodate jet aircraft although the Annette Island airport does not presently have scheduled jet aircraft flights. There are an additional 24 airstrips in the area that vary in size from a 1000-foot gravel beach at Pyramid Harbour to the Klawock runway, soon to be extended to 5000 feet.

Runways at the airports served by jet aircraft vary between 6003 by 150 feet at Wrangell to 8456 by 150 feet at Juneau. The runways place some limitations on the payload or fuel that an aircraft can carry but with the short stage lengths of most flights, the effect of this limitation is not unduly severe.

Of the airports that receive regularly scheduled jet aircraft flights, only Ketchikan International and Yakutat have full Instrument Landing Systems (ILS). The others have localizers without the glideslope (with the exception of Gustavus which has a VOR and an NDB approach). The main reason for the lack of full ILS facilities is terrain-induced distortion. The very high frequency transmissions tend to distort the direction of transmission and give false and unreliable readings to aircraft instruments; the glideslope portion of the ILS is particularly prone to this distortion.

Enroute low altitude airways over Southeast Alaska (below 18 000 feet) satisfy most I.F.R. requirements for aircraft operating at 10 000 feet or higher, with VORTAC transmitters located at Annette Island, Sitka, Sister's Island (near Juneau) and Yakutat while Level Island has a VOR/DME. For the purpose of civil aviation all five locations have Very High Frequency Omni Directional Radio Ranges (VOR) combined with Distance Measuring Equipment

Figure 3

WHEELED, SCHEDULED FEEDER AIR SERVICES

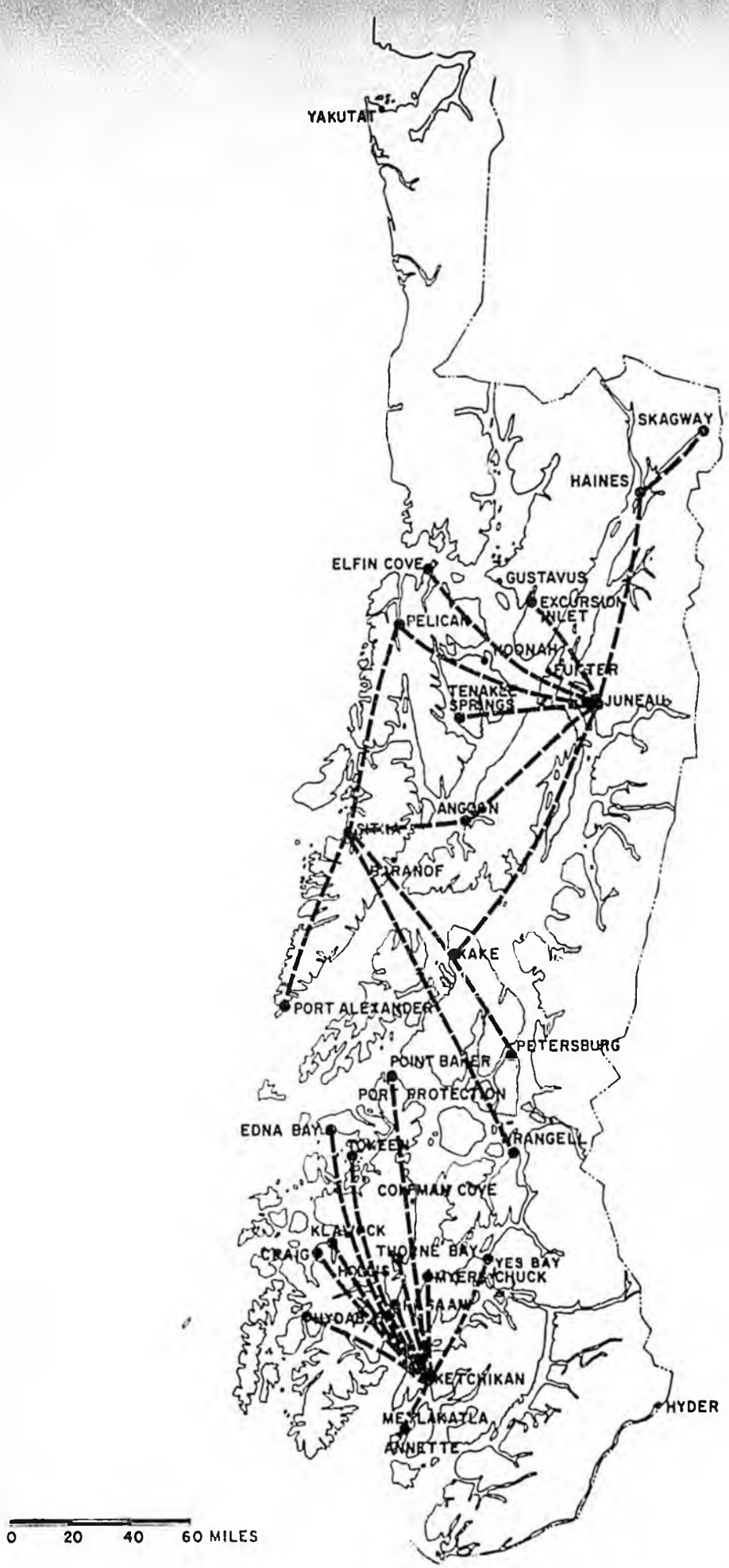


Figure 4

WATER-BASED, SCHEDULED FEEDER AIR SERVICES

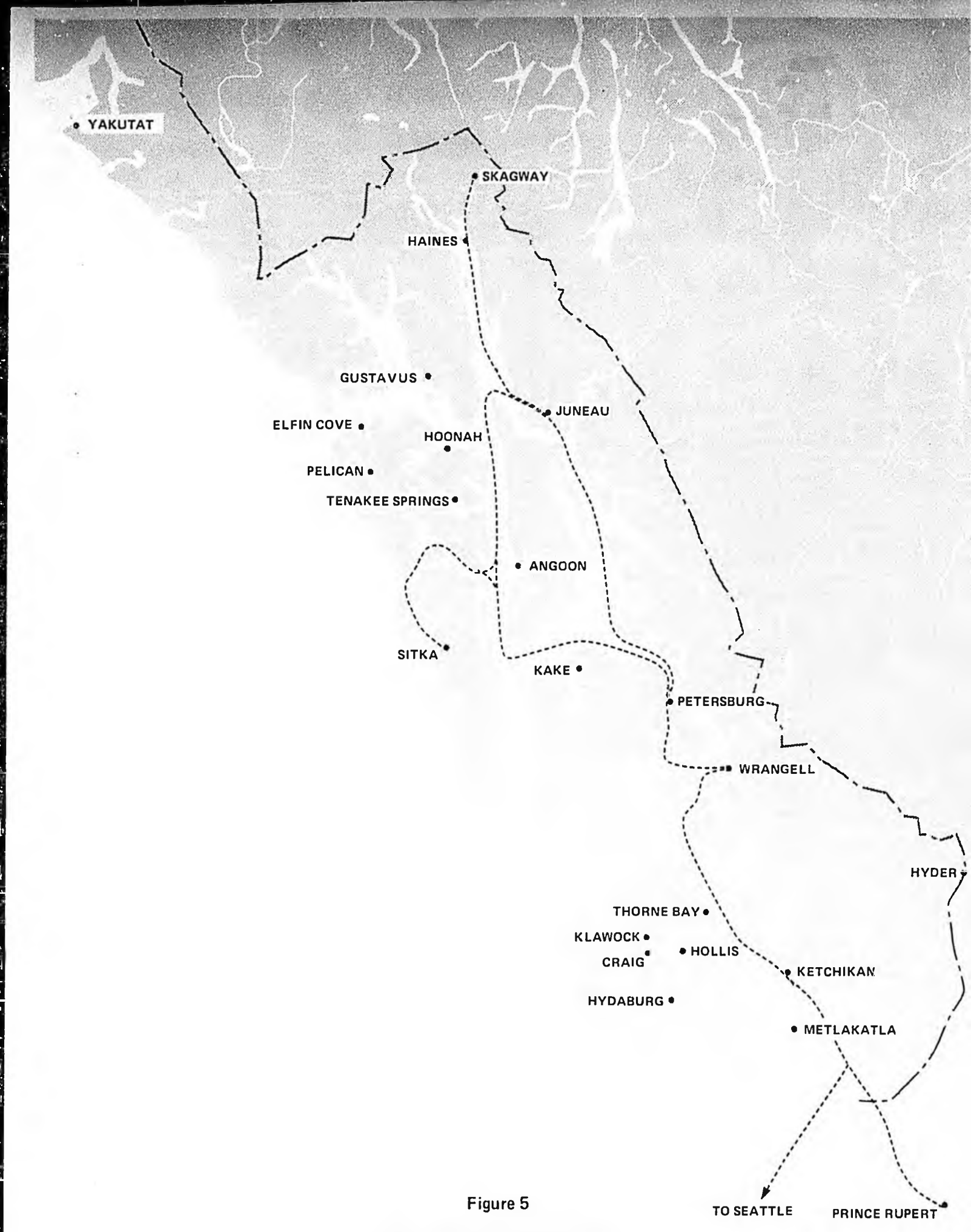


Figure 5

MAINLINE FERRY ROUTES

(DME). VORTAC indicates a combined VOR and Ultra High Frequency Tactical Air Navigation Aid (TACAN) which is used almost exclusively by military aircraft. It is, however, necessary to have line of sight to the transmitting stations to be able to use these facilities. The mountainous terrain of Southeast Alaska does not lend itself to good low altitude electronic navigation reception of these enroute VHF signals. Low frequency nondirectional beacons (NDB) are also used by aircraft for enroute navigation and nonprecision airport approaches. Although much less precise, the NDB allows aircraft with Automatic Direction Finding (ADF) radio to navigate on these signals even when it is impossible to maintain line of sight. NDB's are maintained as aircraft and marine navigation aids while any broadcast band commercial radio transmitter can be and often is used as an unofficial aircraft navigation aid by low flying aircraft.

2.3.2 - Marine System

The main component of the marine transportation system in Southeast Alaska is the Alaska Marine Highway ferry system. This operation provides surface links for passengers and vehicles both to, from and within the Southeast Region.

Seven vessels operate in the Southeast area. The four mainline vessels, the Columbia, Matanuska, Malaspina and Taku, operate between the southern road systems at Prince Rupert and Seattle and the northern road connections out of Haines and Skagway, providing a link for the through movement of traffic as well as carrying passengers and vehicles to and from the region and internally between a number of ports. All mainline vessels offer overnight accommodation for long-distance passengers.

During the 1985 peak season, one of these vessels, the Columbia, operated a weekly service between Seattle and Skagway. The other three vessels offered twice-weekly service out of Prince Rupert, making one three-day trip to Skagway via Clarence Straits and Stephens Passage, and one four-day trip travelling via Chatham Strait, and calling at Sitka (see Figure 5, opposite). During the 1986 season, both the Columbia and Matanuska will serve Seattle, leaving two vessels on the Prince Rupert routes. Vehicle capacities on the mainline vessels, adjusted for an average mix of small and

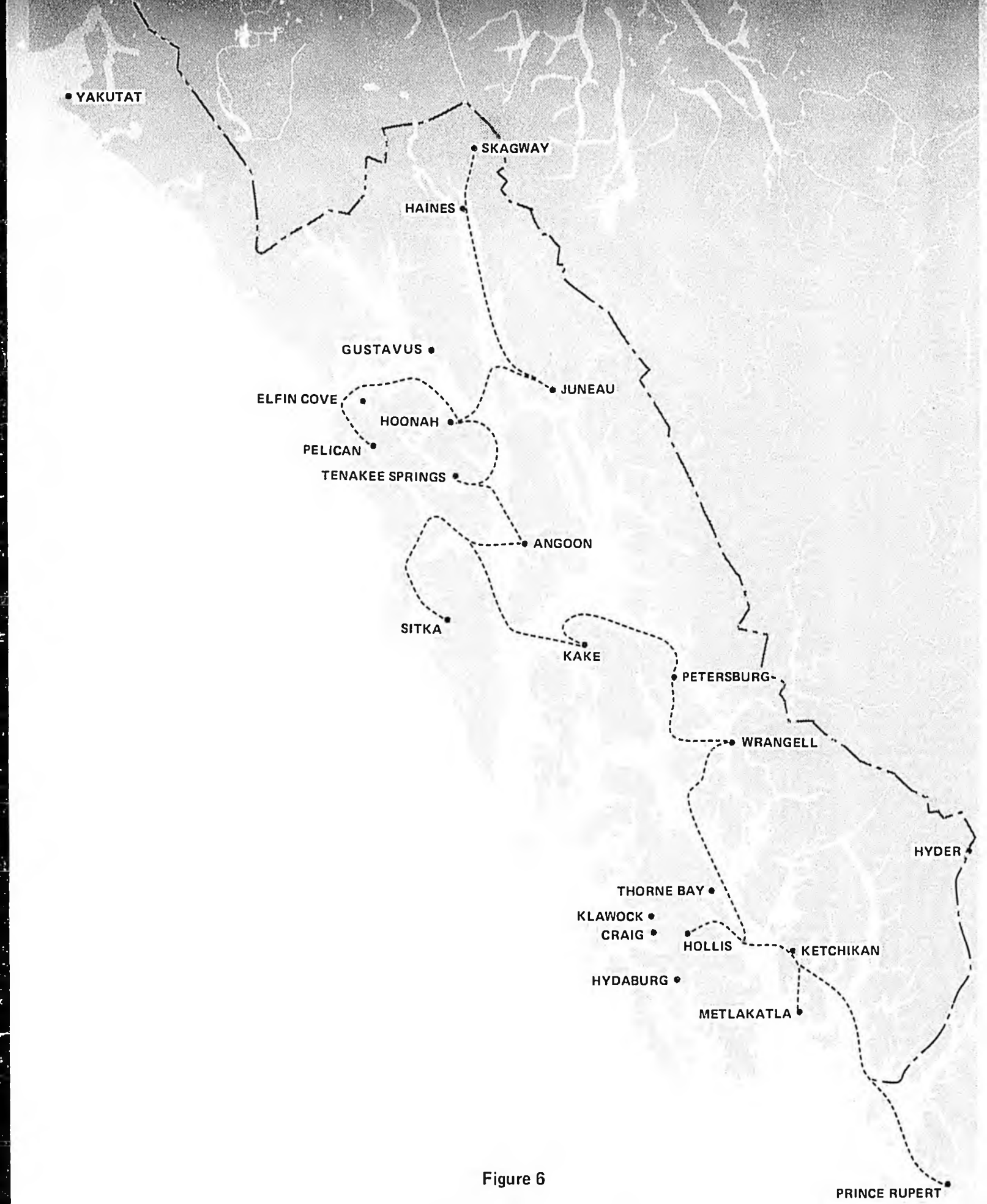


Figure 6

FEEDER FERRY ROUTES

large vehicles, range from 90 (for the Taku) to 155 (for the Columbia) while passenger capacities range from 500 to 750.

The three remaining vessels, the Aurora, LeConte and Chilkat, provide mainly internal feeder services carrying passengers and vehicles between the smaller communities and the mainline ports. The smaller of these, the Chilkat, operates between Ketchikan and Metlakatla and occasionally to Prince of Wales Island. The Aurora and LeConte, with 40-vehicle, 250-passenger capacity, provide connections between Prince of Wales Island and the Prince Rupert-Ketchikan-Petersburg corridor, and between communities in the Juneau-Sitka-Petersburg triangle (including Hoonah, Pelican, Tenakee Springs, Angoon and Kake) (see Figure 6, opposite). In 1986, the Aurora will provide service to Hyder once a week during the May to September period. The Hyder service will, however, be evaluated by the Alaska Marine Highway System to determine the level of service in the future.

In addition to serving passenger and vehicle traffic, the Marine Highway System acts as an important link for the movement of freight, carrying significant numbers of vans into and through the Region and between the various communities. This service supplements the activities of several tug-and-barge operators who also carry substantial volumes of freight, generally from Seattle, and distribute it to the Region's communities. The Marine Highway and the tug-and-barge operators together handle the majority of the general cargo type freight which supplies the needs of Southeast residents. In addition, the tug-and-barge companies carry a large portion of the Region's fish and seafood product (frozen and canned) to Seattle for further distribution. Finally, a number of ocean-going vessels provide freight capacity for the Region's exports of lumber and forest products.

The Region has a range of port facilities to serve the Marine Highway vessels. Seven communities have ferry terminals capable of handling the mainline vessels (Ketchikan, Wrangell, Petersburg, Sitka, Juneau, Haines and Skagway), while others can accommodate only the Aurora/LeConte class vessels (Hoonah, Tenakee Springs, Angoon, Pelican, Kake, and Hollis/Clark Bay). Two ports are also presently designed to handle the Chilkat (Hollis and Metlakatla) although renovations at Metlakatla will shortly allow the Aurora

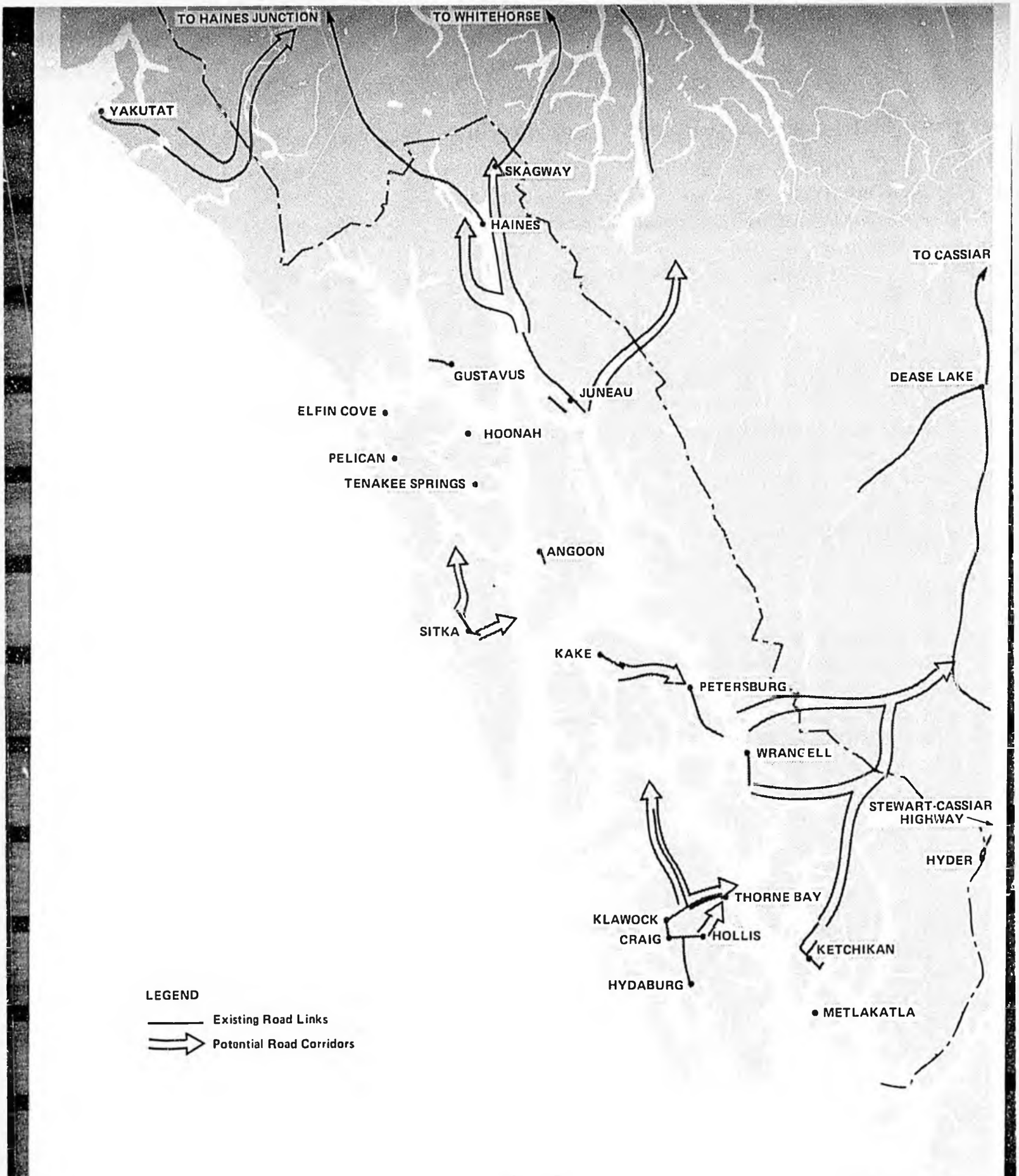


Figure 7

EXISTING ROAD SYSTEM AND ROAD CORRIDORS

to provide service but prohibit service by Chilkat. In addition, terminal facilities are planned at Hyder and Elfin Cove to allow ferry operations into those communities.

Terminal and port facilities for other marine movements (tug-and-barge and other freight operations) are, with few exceptions, provided by private industry. The level of facilities varies widely from terminals in the larger centers which are capable of handling containerized cargo to break-bulk, manual loading/unloading operations at smaller ports.

2.3.3 - Road System

The road system in Southeast Alaska is sharply constrained by the geography of the Region. Steep coastlines, multiple fjords and generally mountainous terrain make roads a costly option to construct and maintain. While there are some potential road corridors within the area, only a limited number have been developed (see Figure 7, opposite).

Access to the continental road system is provided at three points in the Region: Haines and Skagway in the north and Hyder in the south. Residents in other communities must use the Marine Highway to connect either with these roads or with the road system out of Prince Rupert or Seattle.

Within the Region, a substantial network of roads is operated and maintained to provide access between adjacent communities and links to nearby recreation areas. In addition, the US Forest Service has developed an extensive road network which, while not meeting State standards, provides some travel opportunity as well as a foundation for future road development. In general, however, with the exception of Prince of Wales Island communities, links between major towns within the Region are provided by air and by ferry.

TABLE 2.1

HIGH SPEED CRAFT
TYPES EVALUATED

		Passenger and Vehicle	Cost	Seakeeping	Comfort	Susceptibility to Strikes	Speed to Load	Comments
Air Supported	SRN4 MK2/3	yes	very high	moderate	fair	nil	fair	
	API-88	no	low	poor	good	nil	fair	
	Hovermarine	no	medium	poor-mod.	good	some	good	
	Bell Halter	yes	medium	mod.-good	fair	some	good	
Foil Supported	Jetfoil	no	high	mod.-good	excellent	high	poor	Production discontinued.
	Hydrofoil	no	medium	poor-mod.	fair	high	poor	
Displacement	Monohull	yes	high	moderate	fair	low	fair	
	Catamaran	yes	low-med.	mod.-good	fair-good	low-fair	fair	
	SWATH	yes	low-high	mod.-good	excellent	low-fair	good	Small Water Plane Area Twin Hull
Planing and other		no	low-med.	poor-mod.	poor-fair	low-fair	poor	

Types Excluded from Further Analysis - Reasons:

SRN4 Mk2/3 Excluded because of cost - approximately $40 to $50 million built in Britain, lack of licensing for US construction.

Monohull Excluded partly because of cost - $14 to $15 million built in Britain and high power requirements and thus fuel cost for its speed.

SWATH Excluded because of experimental nature and relatively high power requirements. Southeast Alaska waters are not rough enough sufficienty frequently to justify such a vessel.

2.4 - Projected Developments in Technology

In terms of new opportunities for the provision of transportation services, the consultants reviewed current and likely future technological developments in air, marine and road transportation that might impact Southeast Alaska. The detailed review is contained in the technology evaluation, but is summarized below.

2.4.1 - Air

No major technological developments were foreseen that would affect air transportation within Southeast Alaska. Although prop-fan aircraft are expected to come into service before the end of the century, they would not change the basic way in which air service would be provided. New developments in navigation aids, such as microwave landing systems, would make jet air travel to major airports more reliable and safer, while increasing navigation beacons and making changes in the VHF network would enhance the safety and reliability of small aircraft operations. However, technology-based changes in air travel within the region were viewed as evolutionary rather than revolutionary.

2.4.2 - Marine

Two main areas of technology development in the marine environment were expected to potentially have impacts on Southeast Alaska transportation: the possible introduction of high-speed craft to provide rapid surface transport between communities, and improvements to existing vessels to improve performance and efficiency.

A variety of high-speed craft were reviewed in terms of their potential for use in Southeast Alaska, including air supported, foil supported, and conventional displacement vessels. The assessment concentrated on existing vessels with a known operating history. However, new designs could offer potential and should be considered at the appropriate point in the design process. Table 2.1, opposite, lists the vessels evaluated and highlights

TABLE 2.2

HIGH-SPEED CRAFT

	Craft Evaluated		
Type	30m Incat	1300D Westamarin	BH 350 B
Characteristics	Catamaran	Catamaran	S.E.S.
Passengers	90	340	180 or 280
Vehicles - automobiles - trucks	14	30	41 or 27
Length ft	98	130.25	160
Breadth ft	36.75	41.25	41
Draft ft	7.68	5.58	7.5
Payload	not known	not known	not known
Power (bhp)	4200	5500	13210
Maximum speed	28 kn	25 kn	50 kn
Speed SS3	25 kn(28mph)	22 kn (25mph)	40kn (46mph)
Price	$3.0 million	$5.0 million	$12.0 million
Built in USA	Yes	No	Yes
License for USA	Yes	Yes	

	Craft Excluded			
Type	Vosper High Speed	SWATH	Air Cushion Vehicles SRN4/MK2	SRN4/MK3
Characteristics	Ferry	(Seagull)		
Passengers	700	384	282	416
Vehicles - automobiles trucks	none	none	36	50
Length ft	204	117.8	130.2	185
Breadth ft	33.5	56.1	78	82
Draft ft	10.5	10.3	-n/a-	-n/a-
Payload (tons)	96	not known	78	114
Power (bhp)	12000	8100	13600	15200
Maximum speed	25 kn	25 kn	60 kn	65 kn
Speed SS3	24 kn	(24 kn)	32 kn	45 kn
Price	$14 to $15 million	$8 to $10 million	$40 million	$50 million
Built in USA	No	No	No	No
License for USA	Yes	Yes	No	No

the findings with regard to a number of criteria. Table 2.2, opposite, outlines in detail some of the physical and operating specifications of these craft.

Two types of high-speed craft were chosen as representative of the type of vessels which could be appropriate for use in Southeast Alaska. The first was a catamaran hull, approximately 100-feet long, which would carry 10 to 15 vehicles and 80 to 100 passengers at speeds of up to 30 miles per hour (see Figure 8, overleaf). The second vessel type was a larger Surface Effect Ship (SES) capable of carrying approximately 40 vehicles and 200 passengers at speeds of up to 46 miles per hour (see Figure 9). The SES-type ferry would be capable of year-round operation in Southeast Alaska waters. The smaller catamaran type vessel would definitely be capable of summer and shoulder season operation. However, its performance during winter conditions, except on sheltered routes, is as yet unknown.

For purposes of evaluation, it was assumed that the existing docks and shore facilities could be used for high-speed craft without major modification. If this is not the case, funding for shore facilities would be required.

High-speed craft should not be looked on as total replacements for existing vessels. While they would enable better utilization of present vessels to be achieved during the summer and, if required, shoulder seasons, like all high-performance vessels, the high-speed ferries have limitations relative to payload and axle-loadings. For example, automobiles, campers, coaches, and lightly-loaded trucks and vans could be carried on the small high-speed catamaran, but not heavy vans such as refrigerated trailers with a full load of frozen fish. The larger vessel by comparison could carry heavy trailers, but the number would be limited by payload considerations. For this reason, at least some service by conventional vessels would likely be required on routes served by high-speed ferries.

The second area of marine technology development relates to improvements in the existing AMH vessels to improve their performance and reduce operating costs. Examples of such developments include:

Figure 8

HIGH SPEED CATAMARAN

Figure 9

110-ft SES HIGH-SPEED CRAFT

- hull redesign;
- improvements in propulsion and machinery;
- course-keeping and routing techniques;
- advanced machinery automation;
- improvement in hull surfaces;
- different grades of fuel; and
- adjustments to operating speed.

2.4.3 - Road

No technological developments were foreseen in the road sector that would change the way in which freight and resources are moved or in which tourists and residents would travel. It is expected that freight vehicles moving on the continental road system will increase in length, height, width and weight, making it more difficult for the existing ships to accommodate trucks and vans. In the future, certain road routes may be designated special log haul routes to support the timber industry. Overall, however, the freight business to Southeast Alaska, being a small specialized one, would likely not be impacted to any great extent by such changes for the foreseeable future.

2.5 - Alternative Marine Operating Options

While technological developments offer one possible source of change in transportation services, another source of change would involve continued use of conventional equipment to provide service but under a different operating environment. One option of this type in the marine area would involve increased reliance on private as opposed to State-operated services. A second operating option would involve the acquisition of a foreign flag vessel.

2.5.1 - Other Service Suppliers

The foreign flag liner operator has long been a part of the Alaskan cruise market. These operators brought in well over 100 000 tourists at the last

count and are expected to continue to bring in a significant number of visitors. A new factor in the market place, however, is the foreign flag ferry operator (who carries vehicles) working in competition with the Marine Highway for point to point travel. It is likely that such operators will increase their activity in the future from either Vancouver or Prince Rupert.

A further new development is that US flag operators are seriously considering building or converting vessels to serve the US cruise market and Alaska is identified by them as a prime destination. The vehicle carrying potential for such vessels is seen as an essential feature, with the result that there is a high probability the Marine Highway will see direct competition in Seattle before the mid-1990s.

Although this competition may skim off tourists from the Marine Highway and possibly reduce revenues, projected total departures from Seattle and Prince Rupert indicate that AMH vessels would still be operating close to capacity during the peak season. Thus the presence of private operators would serve as an effective complement to Marine Highway services. In addition, private operators may relieve the AMHS of the need to acquire additional mainline vessels in the 1990s, saving the State of Alaska several million dollars in fleet expansion costs.

2.5.2 - Acquisition of Foreign Flag Vessels

A second new service option for the Region would be for the Marine Highway to acquire and operate a foreign-built ferry. Should a new mainline vessel be necessary, a foreign flag vessel could provide the required increase in capacity at a cost well below that of a new US-built vessel.

The Marine Highway has had experience with foreign flag vessels with the M/V 'Wickersham'. The experience was not altogether favorable because it was intended to use the vessel in the Seattle/Southeast Alaska trade which required a waiver from the Jones Act. Such waivers are only given for

purposes of national defense, and thus the 'Wickersham' was not acceptable on an ongoing basis.

However, the possibility of the AMH using a foreign flag vessel entirely within the requirements of US maritime legislation is feasible. Such a vessel could operate from Vancouver or Prince Rupert and carry tourists or residents from port of embarkation to port of disembarkation. The only restriction would be that the ship could not carry passengers between ports in Southeast Alaska. Such a vessel operating out of Vancouver or Prince Rupert could materially increase AMH capacity and release existing vessels to operate on those routes that require a US flag ship (i.e., US to US links).

This is essentially the service that Sundance Cruises is providing between Vancouver, BC and Skagway, AK with the M/V 'Stardancer'. The AMH would prefer that private operators continue to provide such service where possible since they can generally operate at lower costs due to their greater flexibility in crewing and their options to utilize the vessels in other areas during the off season.

3 - REGIONAL TRANSPORTATION ALTERNATIVES

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3.1 - General

Development of the updated transportation plan was based in large measure upon a process whereby a wide range of transportation options were defined for the Region and were then evaluated in terms of:

- compatibility with goals of the regional transportation system, and
- effectiveness in terms of both the service provided and the level of costs incurred.

These alternatives covered the provision of transportation service by both air and surface (marine and road) modes for the movement of cargo, passengers and vehicles.

In defining the alternatives, recognition was given to the expressed concerns and desires of the communities and also to the perceived requirements, limitations and opportunities associated with growth, development and new technology. As a result, the options developed for evaluation encompassed not only capital improvements (acquisition of new vessels, road and facilities construction) but also changes to the operating systems with a view to improving either the service provided, the system capacity and/or the ongoing operating costs.

3.2 - Aviation System Alternatives

In terms of long range transportation planning for the aviation sector, a number of issues have arisen in recent years which required analysis in terms of defining the direction of facilities planning. These included:

- the probable ongoing impacts of airline deregulation and, related to this;

- the possible removal of Essential Air Services (EAS) subsidies for Yakutat, Gustavus, Petersburg and Wrangell, and the consequent impact on air services;

- potential development of a commuter airline service in the region;

- future requirements for runway rather than float plane facilities.

3.2.1 - Deregulation and Subsidies

The long-term effects of air service deregulation in Southeast Alaska are likely to be complex and, in many cases, unsatisfactory, as competition and profit pressures lead to a concentration of services on some routes and a decline in services on others.

For the Lower 48, deregulation of the airline industry has meant more carriers providing more flights at lower fares between large cities that are good traffic generators, often at the expense of reduced or discontinued service to smaller communities. Competition has increased on the heavily traveled routes, causing downward pressure on airline profits, and forcing them to cut back on service into smaller communities.

In addition, the relationship between airlines and government has changed somewhat under deregulation. The protection which government once provided to the carriers has been withdrawn, and as a result, government agencies have more difficulty influencing airline policies. Thus, government recommendations for service beyond those that are market justified will be very difficult to encourage without direct subsidies.

It was recognized at the time of legislation that deregulation of the airline industry would force the discontinuation of services into many smaller communities that relied heavily on air travel. An Essential Air Services Subsidy was therefore developed with a ten-year sunset clause to ease the transition to deregulation. Four communities in Southeast Alaska currently receive jet service under the EAS subsidy program: Yakutat, Gustavus, Wrangell and Petersburg. All communities except Gustavus receive

at least seven round trip flights per week year-round with aircraft having seating capacity in excess of 60 seats. Gustavus receives this level of service during the summer, but during off-peak periods, air services may be reduced to two flights per week with smaller aircraft.

The US Department of Transportation has selected Alaska Airlines to provide essential air service to these Southeast communities from October 1, 1985 through December 31, 1986 at which time the Essential Air Services subsidy is scheduled to expire.

While jet aircraft may not be the least-cost (lowest subsidy) method of providing service to these communities, it offers an extremely high quality of service and a good level of air freight capacity. The chief drawback is a lower service frequency than might be offered by smaller commuter aircraft. However, the availability of daily service without transfer to Seattle and Anchorage and the adequate freight capacity affords offsetting benefits.

The future of these services, however, has been a point of uncertainty throughout the planning exercise and is still in a state of transition. Whether the subsidies will be allowed to expire as scheduled, and whether jet service will continue with or without financial support, are both questions to which no confirmed answers are as yet available. Thus, from the planning perspective, the only definitive recommendation which can be made is that, if the EAS subsidies are allowed to expire, the Department of Transportation should closely monitor the impact on services into Southeast communities.

3.2.2 - Development of Commuter Airline Service

Although the quality of jet services in the Region has been very good, the possible future viability of a regional commuter air service for the Southeast remains an ongoing point of interest. An analysis was therefore carried out with regard to the conditions under which such an operation might prove viable.

TABLE 3.1

AIRCRAFT PRODUCTIVITY EVALUATION

Aircraft Type	Piper Navajo	Twin Otter DHC-6-300	Beech 1900	Shorts 360	HS 748
Hours per year per Aircraft	2,000	2,000	2,000	2,000	2,000
Number of Aircraft	2.5	2.5	2.5	2.5	2.5
Maximum Passenger Capacity	9	20	19	36	48
Load Factor	60%	60%	60%	60%	60%
Average Ground Speed (80% of Long Range Cruise)	138	133	200	162	215
Revenue Passenger Miles per year (million)	3.7	8.0	11.4	17.5	31.0

To assess this viability, five different aircraft types were examined. It was assumed that at least three aircraft would be necessary to provide an economic fleet and that each aircraft would fly approximately 2000 hr/yr with an average of one-half aircraft tied up for maintenance. Break-even operations, based on the experience of other carriers, were assumed to require a 60% load factor.

Table 3.1, opposite, shows the assessment of the required number of revenue passenger-miles of traffic which would be required for viable operation with various commuter aircraft types. Required annual passenger-miles range from 3.7 million with a fleet of Piper Navajos to 31.0 million with a fleet of HS748s.

With the ongoing provision of jet service into the major communities, it was assumed that the commuter service could only compete in areas not served by jet flights. Of these areas, those with the greatest traffic potential (together with estimated passenger-miles of traffic) are shown below.

Major Traffic Sectors -
Southeast Alaska - Non-Jet

Sector	Annual No. of Passengers	Distance	Annual Revenue Passenger-Miles
Haines-Juneau	9 500	75	412 500
Skagway-Juneau	5 000	95	475 000
Hoonah-Juneau	10 580	45	472 500
Kake-Petersburg	1 400	35	49 000
Craig-Ketchikan	6 500	60	390 000
Klawock-Ketchikan	5 800	60	348 000
Metlakatla-Ketchikan	14 900	20	298 000
TOTAL			2 745 000

These figures suggest that even with the smallest aircraft and 100% of the above air traffic markets, a commuter air service would be unlikely to prove viable at present traffic levels. Since the commuter service would also have to compete with air-taxi operators on these routes, it was concluded that a commuter service was unlikely to materialize until such time as a reduction in jet service and/or a significant growth in demand provided a traffic base sufficient to financially support its operation.

3.2.3 - Float Versus Airstrip Development

The evolution of air services in Southeast Alaska has been to start with float equipped aircraft, advance to amphibious aircraft, further advance to wheeled aircraft, and then to have larger and faster aircraft provide the air service. The prime reason for the evolution is improved safety, service and reliability, and reduced costs.

Float equipped operations offer a number of advantages in Southeast Alaska and have provided a vital transportation link. Since most communities are located on shorelines, float-equipped aircraft can land in close proximity. In addition, float planes are able to alight, in acceptable water conditions, if VFR conditions deteriorate during a flight - an important consideration when operating in the fast-moving weather systems common in the area.

On the other hand, float equipped aircraft are expensive to purchase, maintain and operate. Floats are costly to install and reduce the payload and speed of the aircraft, while corrosion from salt water operations leads to increased maintenance and overhaul expense.

An analysis was therefore carried out to assess whether there was an economic justification for promoting wheel based operations (by development of additional airstrips) rather than continuing to develop seaplane facilities.

While it is impossible to generalize about the cost of seaplane docks and runway facilities, some approximate order-of-magnitude numbers were

developed. Based on relative capital and operating costs the additional cost of a runway operation as opposed to a float facility would be in the order of $350,000 per year. In order to financially justify runway development, users would have to realize savings equivalent to this amount. Since annual passenger volumes into the larger seaplane communities average in the order of 1500 to 3500 passengers, it is clear such financial savings are unlikely to be achieved. It was therefore concluded that runway development cannot be justified on the basis of economics but must rather be justified on the grounds of service, safety, convenience and other nonfinancial factors.

3.3 - Surface System Alternatives - Corridors

3.3.1 - General

The definition of alternatives for the provision of surface transportation services was based on the premise that road and marine highway options should be viewed as complementary parts of an integrated system rather than evaluated as separate services. Since options regarding road construction in many areas materially affect the pattern of marine highway operations and conversely, changes in marine highway services influence the viability of many road options, the two modes were evaluated jointly as part of the 'surface transportation system'.

In reviewing the various options which were available in terms of providing surface transportation services, it became apparent that many of the options represented alternative means of dealing with problems in a single subsection of the overall region and, to some extent, could be segregated from the balance of the system for evaluation purposes. Rather than dealing with each of these options in a 'total region' context, it was decided to carry out a pre-evaluation process whereby service options within a subregion or 'corridor' were compared with one another in order to identify the preferred alternatives for meeting transportation needs in that area.

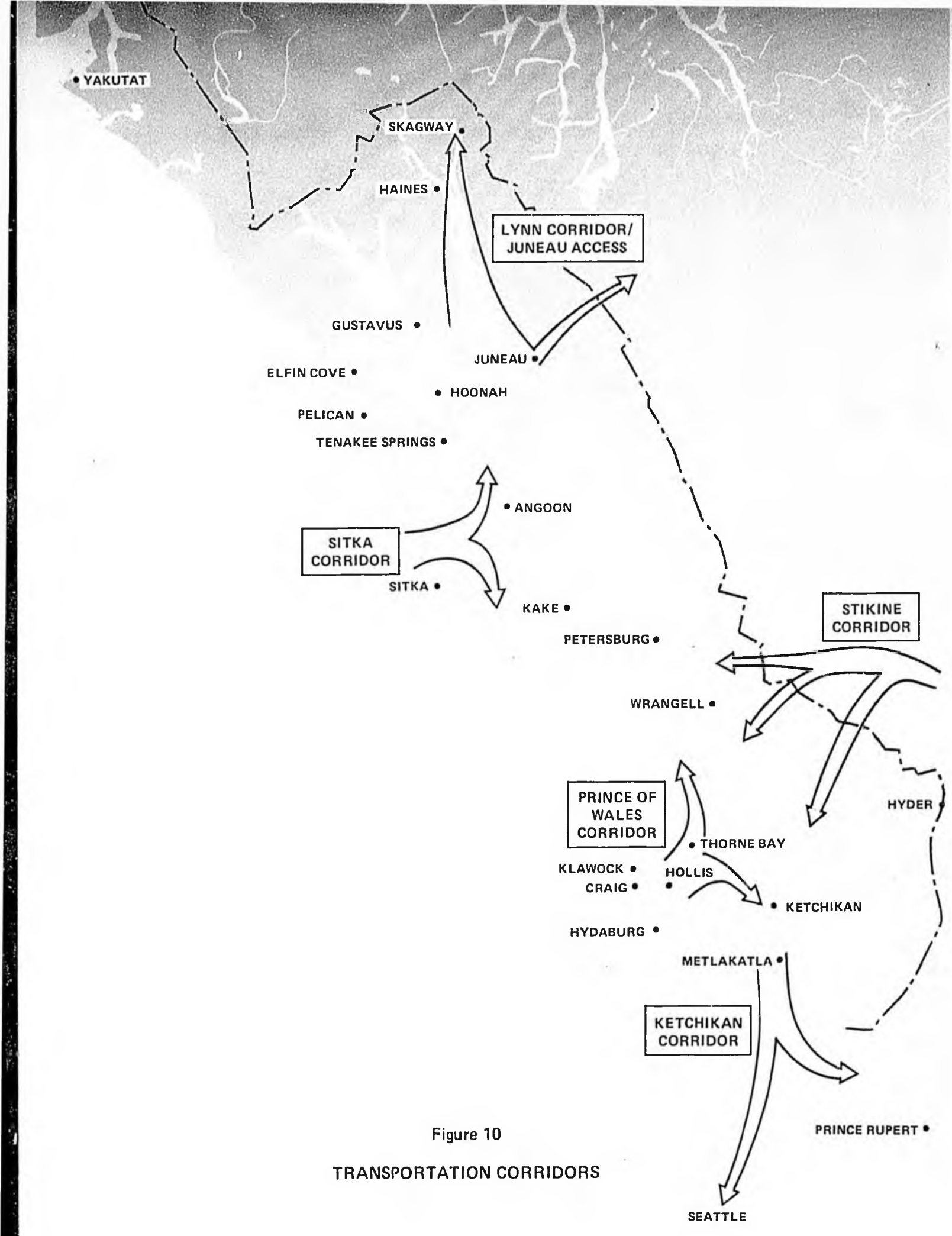


Figure 10

TRANSPORTATION CORRIDORS

Through this pre-evaluation process, a wide range of options was screened down to a somewhat more limited number of preferred alternatives which were then assessed in terms of their desirability within the context of the total regional surface system.

Five key corridors or subregions were identified for separate consideration as part of this prescreening process (see Figure 10, opposite). These were:

- the Juneau Access corridor;
- the Ketchikan-Southern Terminus corridor;
- the Stikine corridor;
- the Sitka Access corridor; and
- the Prince of Wales Island Access system.

A general description of the alternatives evaluated within each of these subregions is outlined in the following sections.

3.3.2 - Juneau Access Corridor Options

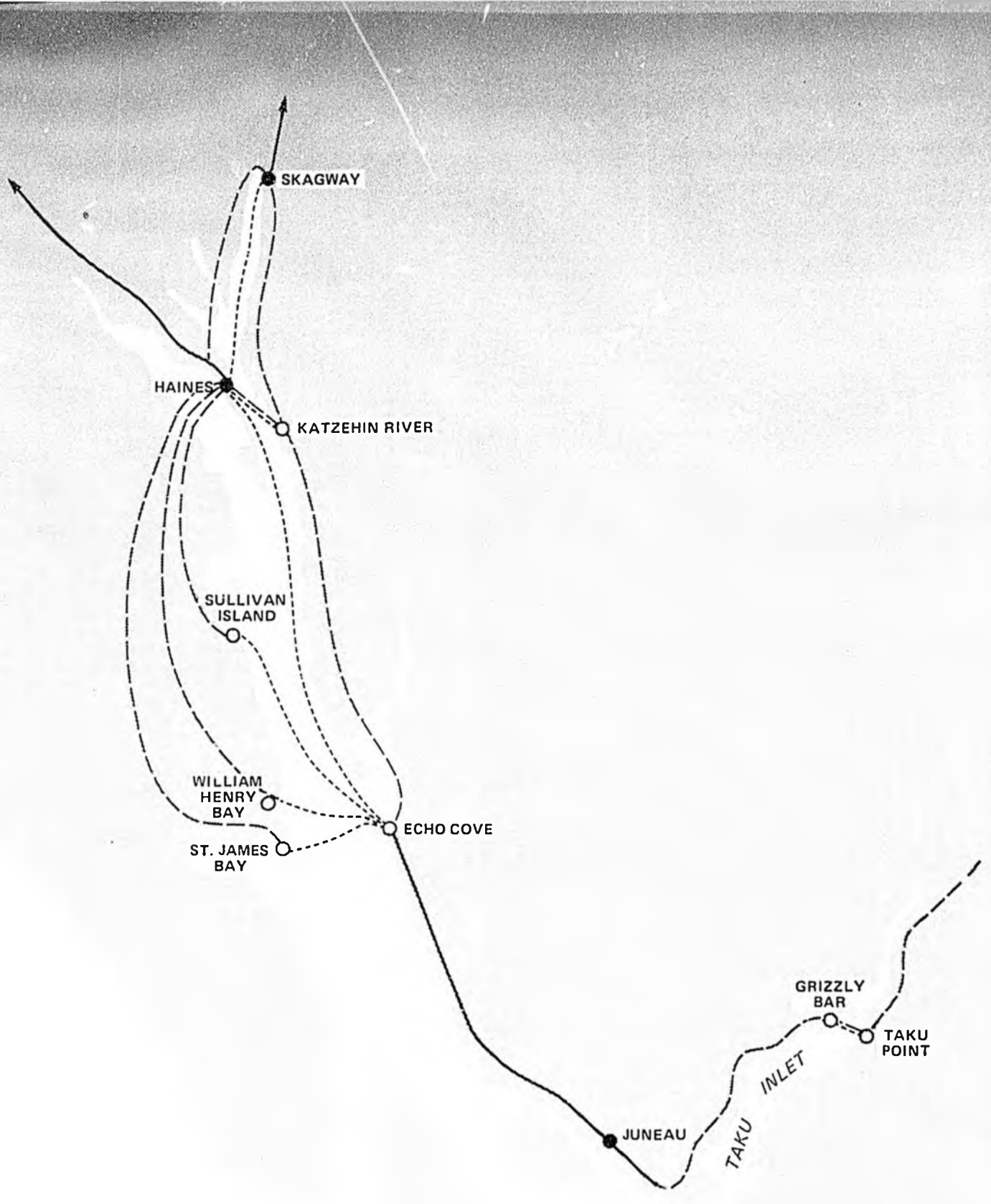
In total, eleven alternatives were evaluated for the provision of surface transportation services between Juneau and the northern roads systems either at Haines and Skagway or through northern BC.

Nine of these alternatives involved providing connections to Juneau via the Lynn Canal through Haines and Skagway (see Figure 11 overleaf). These included:

1. Continue the existing mainline and feeder ferry service.

2. Extend the road up the east side of the canal from Echo Cove to Skagway, connecting with Haines via a bridge across the Chilkoot Inlet. Discontinue ferry service north of Juneau.

3. Extend the east-side road from Echo Cove to Skagway, and construct a road down the west side of the canal between Skagway and Haines. Discontinue ferry service north of Juneau.



LEGEND

———— Existing Roads

— — — Potential Road Links

-------- Potential Ferry Links

NOTE:

Road links as shown do not necessarily represent proposed alignments.

Figure 11

JUNEAU ACCESS CORRIDOR

4. Construct a road up the west side of the Lynn Canal from St. James Bay through Haines to Skagway. Provide a shuttle ferry service between Echo Cove (and the road to Juneau) and St. James Bay (17 miles).

5. Construct a road on the west side of the canal between William Henry Bay and Haines. Provide a shuttle ferry service between Echo Cove and William Henry Bay (14 miles) and between Haines and Skagway (15 miles).

6. Construct a road on the west side of the canal between Sullivan Island and Haines. Provide shuttle ferry service between Echo Cove and Sullivan Island (30 miles) and between Haines and Skagway (15 miles).

7. Extend the east side road from Echo Cove to the Katzehin River. Provide a shuttle ferry service from the Katzehin River to Haines (6 miles) and from Haines to Skagway (15 miles).

8. Extend the east side road from Echo Cove to Skagway. Provide a shuttle ferry service from the Katzehin River to Haines (6 miles).

9. Provide high-speed ferry service from Echo Cove to Haines and Skagway operating three round trips per day during the peak season.

The remaining two Juneau access options would provide Juneau residents with access to the existing road system via a route up the Taku Valley into northern British Columbia. These involved:

10. Extend the Thane Road up the west side of Taku Inlet to Grizzly Bar. Bridge to the east side and continue to the Canadian border.

11. Follow the same routing but connect the west and east banks via a shuttle ferry.

The main capital and annual operating costs associated with these options are given in Table 3.2, overleaf.

TABLE 3.2

JUNEAU ACCESS CORRIDOR OPTIONS - COST CHARACTERISTICS

	New Capital Requirements						Average Annual Operating Costs[3]		
	Roads[1]		Vessels		Terminals	Total	Vessels & Terminals	Roads	Total
	Mi	$M		$M	$M	$M	$M	$M	$M
Existing System	-	-	-	-	-	-	$7.4	-	$7.4
East-Road/Bridge	76	$440.0	-	-	-	$440.0	-	$2.1	2.1
East-Road/Road	109	365.0	-	-	-	365.0	-	2.5	2.5
West-St. James Bay	95	231.5	2	$7.0	$8.5	247.0	4.5	1.9	6.4
West-William Henry Bay	45	119.0	4	14.0	11.0	144.0	8.9	1.1	10.0
West Sullivan	21	61.5	4	14.0	8.5	84.0	8.9	0.9	9.8
			5	17.5		87.5	11.1		12.0
East to Katzehin	52	204.0	4	14.0	6.0	224.0	8.9	1.6	10.5
East-Road/Shuttle	70	264.0	2	4.0	6.0	274.0	3.2	1.9	5.1
High-Speed Ferry	-	2.0	2	24.0	5.0	31.0	9.0	0.6	9.6
			3	36.0		43.0	13.2		13.8
Taku - Bridge	56[2]	202.5	-	-	-	202.5	7.4	1.2	8.6
Taku - Shuttle	55[2]	141.0	1	2.0	2.0	145.0	9.0	1.1	10.1

1) Costs are based on construction standards necessary to qualify for Federal-aid to highways funding

2) To Canadian border only.

3) Excludes capital amortization.

Each of these options was evaluated in terms of total financial costs to the State government, Marine Highway and the users; in terms of ability to serve existing traffic and generate new demands; and in terms of user service and travel time. Comparing the benefits generated under the various options with the costs incurred, it was decided that the best options overall were:

- continue existing ferry service (Option 1);
- extend the east-side road to Skagway and provide a shuttle ferry service between Haines and the Katzehin River (Option 8); and
- provide a high-speed ferry service from Echo Cove to Haines and Skagway (Option 9).

These concepts were therefore retained for reassessment within the context of the entire regional transportation system.

3.3.3 - Ketchikan/Southern Terminus Corridor Options

The prescreening process within the Ketchikan/Southern Terminus corridor (see Figure 12 overleaf) focused on a combination of vessel scheduling and vessel acquisition alternatives. The options evaluated were as follows:

1. Continue existing service with existing fleet.
2. Continue existing schedule, adding a new mainline vessel on the Seattle route as soon as possible.
3. Shuttle the Columbia between Seattle and Ketchikan twice weekly during the peak summer season.
4. Operate the Columbia out of Port Hardy during the peak season.
5. Operate all mainline services out of Prince Rupert.

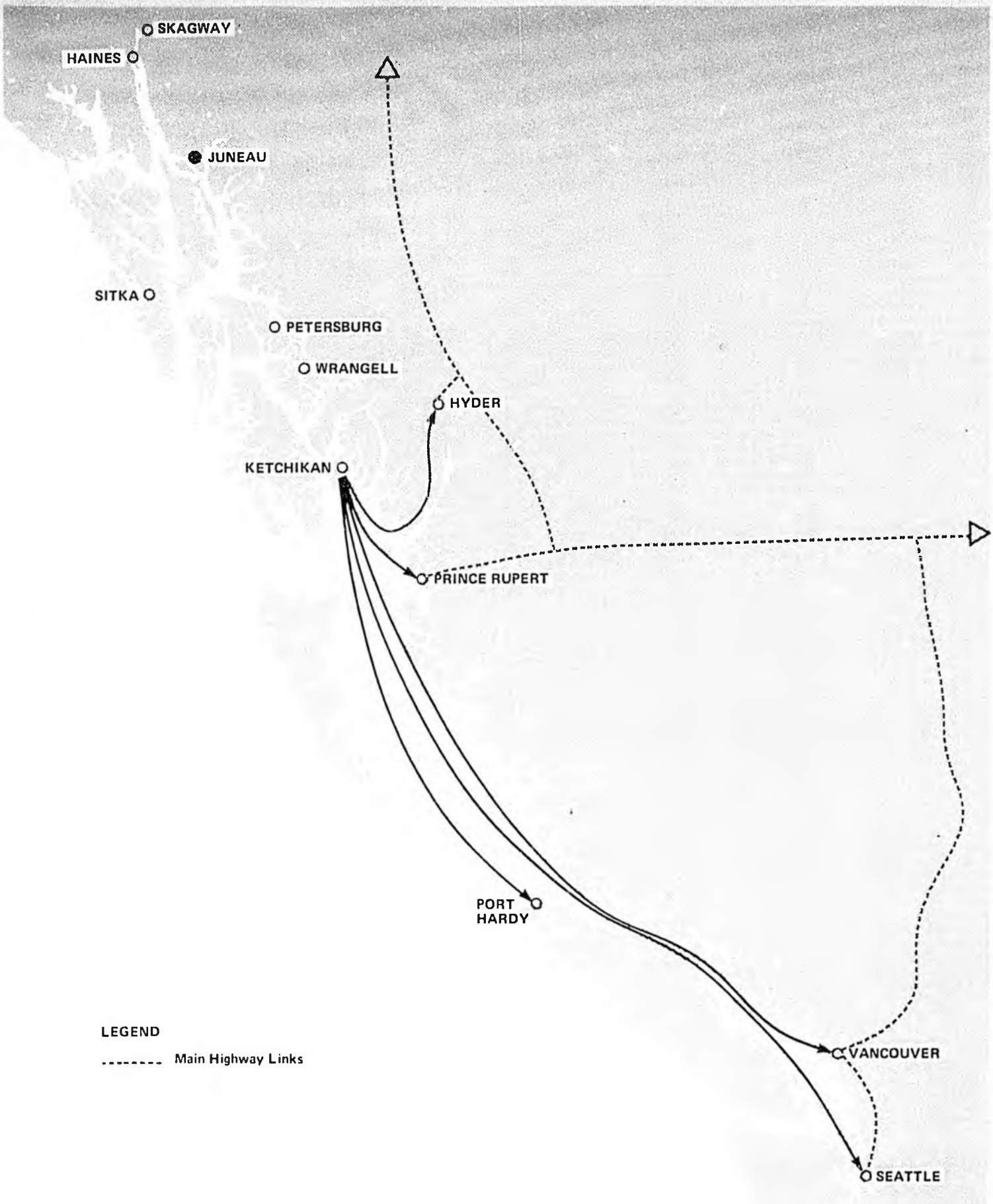


Figure 12

KETCHIKAN CORRIDOR OPTIONS

6. Operate all mainline services out of Hyder.

7. Shuttle the Columbia between Seattle and Ketchikan. Supplement mainline service with the Aurora and LeConte.

8. Acquire a foreign flag vessel to serve traffic between the Lower 48 and Southeast communities. (Note: under existing marine law this vessel could not carry traffic from one US port to another but could free up space on the existing US flag ferries.)

9. Operate all mainline services out of Prince Rupert during the summer peak season only.

Table 3.3 overleaf summarizes these options in terms of annual costs and ability to satisfy projected demand between the Southeast Region and the Seattle and Prince Rupert areas.

Again a detailed analysis was carried out with regard to the financial and service impacts of each of these options and it was decided that four alternatives warranted further evaluation in the context of the regional system. These were:

- add a mainline vessel(s) to serve growing demand (Option 2);

- shuttle the Columbia between Seattle and Ketchikan, supplementing mainline service with the Aurora and LeConte (Option 7);

- acquire a foreign flag vessel to operate out of Vancouver (Option 8);

- operate all peak season mainline services out of Prince Rupert (Option 9).

While these four options represent specific operational alternatives, they may also be regarded as representing a range of philosophies in terms of meeting the growing demand to and from the southern terminus. The first and third options suggest that demand should be met with new vessels (although

TABLE 3.3

KETCHIKAN CORRIDOR OPTIONS

	New Mainline Vessels Added In:	Net AMH Deficit[1] Mainline Service ($ Millions)	Unserved Demand[2] Passengers	Unserved Demand[2] Vehicles
Existing System	-	$291.0	225,000	16,000
Add New Vessels	1990 1993	413.7	31,000	-
Columbia Shuttle	1991 2001	359.2	-	-
Port Hardy Summer Terminus	2000	330.8	350,000	-
Prince Rupert Terminus	2003	352.6	530,000	-
Hyder Terminus	2003	357.7	1,200,000	-
Columbia Shuttle: Aurora, LeConte to Mainline Routes	1993	294.9	-	-
Foreign Flag Vessel	1986 2000	325.3	-	-
Prince Rupert Summer Terminus	2003	313.9	350,000	-

1) Discounted total over 20-year planning period.

2) Total over 20 years.

the foreign flag vessel represents a more economical option in terms of capital), while the second and fourth focus on maximizing use of existing vessels to serve (in the case of the Columbia shuttle) or partially serve (in the case of Prince Rupert turnaround) the Seattle demand. As such they provide an indication of the tradeoffs involved in attempting to balance internal service, tourist service and financial revenues and costs.

3.3.4 - Stikine Corridor Options

The assessment of surface alternatives within the Stikine Corridor (see Figure 13 overleaf) had a twofold focus: first, the provision of surface links between mid-region communities and the continental road system and secondly, the use of these links as either an adjunct to or substitute for Marine Highway links to Prince Rupert and Seattle. Such surface links would provide routing for the movement of passengers and vehicles to and from the Region as well as a means of access to potential resource developments in both Alaska and northern British Columbia.

In terms of intra-regional links, seven alternative concepts were evaluated.

1. Wrangell Road (Pass) Option - Construct a road from Wrangell to the Canadian border with a highway pass to the West Fork of the Katete River.

2. Wrangell Road (Tunnel) Option - Construct a road as in Option 1 but build a tunnel to the West Fork of the Katete River.

3. Wrangell Road/Shuttle Ferry Option - Construct a road as in Option 1. In addition, operate a shuttle ferry between Wrangell and Blind Slough to provide internal Wrangell/Petersburg service and to link Petersburg with the new road system.

4. Petersburg Road Option - Construct a road from Petersburg (end of the Mitkof Highway) to the border along the south bank of the Stikine.

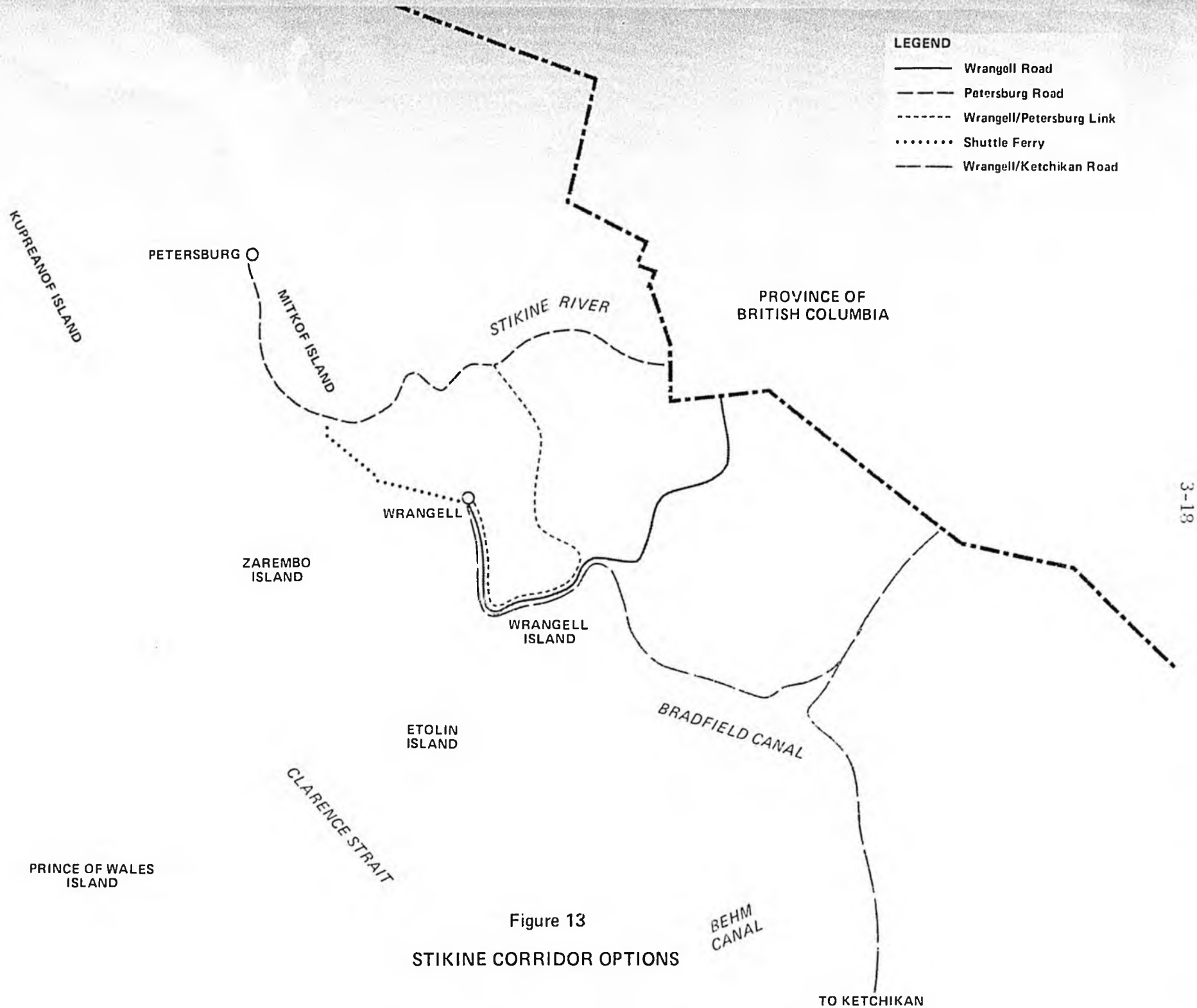


Figure 13

STIKINE CORRIDOR OPTIONS

5. Petersburg Road/Shuttle Ferry Option - Construct a road as in Option 4. Operate a shuttle ferry between Wrangell and Blind Slough to provide internal Wrangell/Petersburg service and to link Wrangell to the new road system.

6. Wrangell/Petersburg Road Option - Construct a road as in Option 4. In addition, construct a road from Wrangell, connecting it to the new Petersburg road at the mouth of Andrew's Creek.

7. Wrangell/Bradfield Road Option - Construct a road from Wrangell to the Canadian border via the Bradfield Canal and the North Fork of the Bradfield River. Provide a connecting link to Ketchikan.

Table 3.4, overleaf, summarizes the capital and operating costs associated with these options.

Each of the above intra-corridor options were evaluated under two alternative scenarios for Marine Highway operations. In the first, or 'mainline' scenario it was assumed that the Marine Highway would maintain its existing schedule of operations to Seattle and Prince Rupert and that the Stikine road would act as a surface alternative for overflow vehicle demand out of these southern ports. In the second, or 'loop' scenario it was assumed that the Marine Highway vessels would operate within the Southeast region only and that the Stikine road would substitute for existing ferry service to Seattle and Prince Rupert.

Again all options were evaluated in terms of financial impacts on users, the State government and the Marine Highway; in terms of ability to meet demand; and in terms of the level of service provided to tourist and resident traffic. The results of this assessment indicated that the preferred corridor options were:

- construct a road from Wrangell to the Canadian border and provide shuttle ferry service from Wrangell to Blind Slough (Option 3); and

TABLE 3.4

STIKINE CORRIDOR OPTIONS

	Additional Capital Costs				Annual Operating Costs[2]		
	Road[1]		Vessels + Terminals	Total	Road	Ferry	Total
	Mi	$M	$M	$M	$M	$M	$M
Wrangell Road/Pass	49	$157.0	-	$157.0	$1.5	-	$1.5
Wrangell Road/Tunnel	48	183.0	-	183.0	2.2	-	2.2
Wrangell Road/Petersburg Shuttle[3]	49	159.0	$4.7	163.7	1.6	$0.6	2.2
Petersburg Road	34	120.0	-	120.0	0.9	-	0.9
Petersburg Road/Wrangell Shuttle	34	120.0	4.7	124.7	0.9	0.6	1.5
Wrangell/Petersburg Road	77	190.0	-	190.0	2.0	-	2.0
Wrangell/Bradfield Road	176	373.0	2.2	375.2	3.2	1.0	4.2

1) Costs are based on construction standards necessary to qualify for Federal-aid to highways funding.

2) Excludes capital amortization.

3) Includes upgrading of Mitkof Highway.

- construct a road from Petersburg to the Canadian border and provide a Wrangell-Blind Slough shuttle ferry connection (Option 5).

Furthermore it was found that, in all instances, continuation of the existing mainline ferry service as an adjunct to the road system was preferable to the 'loop' ferry service scenario in terms of both financial impacts and user service levels.

3.3.5 - Sitka Corridor Options

The fourth subregion which was preassessed at the corridor level was the Sitka area, (see Figure 14 overleaf), with particular reference to the most effective way of incorporating Sitka into the surface transportation system. While a wide range of marine/road schemes were available to serve Sitka traffic, only five were considered to provide a level of service which was either comparable to, or better than the current situation. These options were:

1. Continue existing mainline and feeder ferry service.

2. Construct a road from Sitka to Baranof and operate mainline and feeder vessels out of Warm Springs Bay.

3. Construct a road to Rodman Bay and operate mainline and feeder services out of a terminal there.

4. Provide a direct high-speed catamaran-type service (14 vehicle, 90 passengers capacity) between Sitka-Juneau and/or Sitka-Petersburg. Continue feeder service with the LeConte.

5. Provide high-speed SES-type ferry service (40 vehicles, 180 passengers capacity) between Sitka-Juneau and/or Sitka-Petersburg, calling at intermediate communities along the way.

Annual capital and operating costs associated with each of these options are shown in Table 3.5 overleaf.

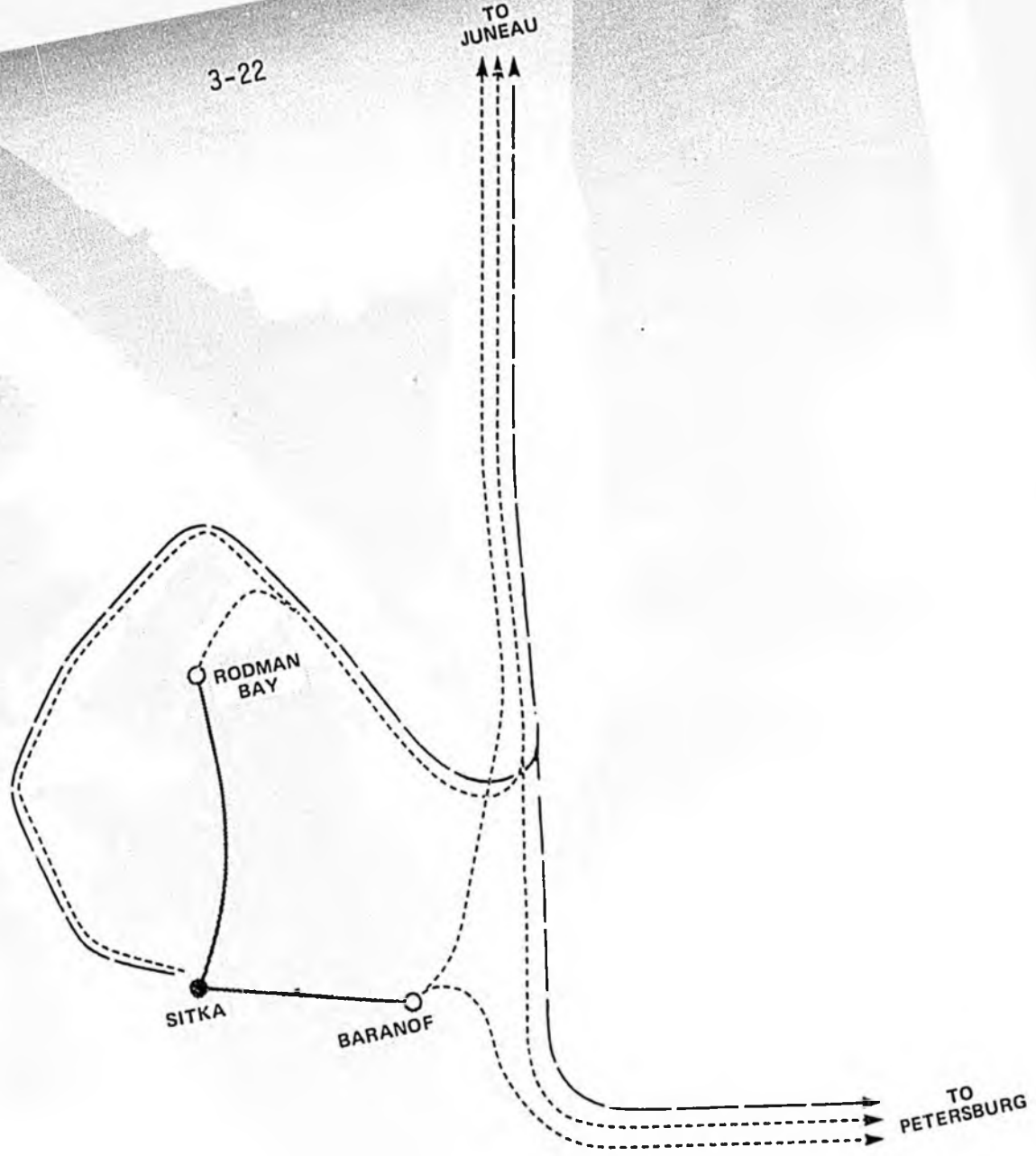


Figure 14

SITKA ACCESS OPTIONS

TABLE 3.5

SITKA CORRIDOR OPTIONS

	Additional Capital Costs					Annual Operating Costs[3]		
	Road [1]		Terminals + Ferries [2]		Total	Road	Ferries	Total
	Mi	$M	No.	$M	$M	$M	$M	$M
Existing Service	-	-	-	-	-	-	$5.2	$5.2
Road to Baranof	26	$176.5	1 (T)	$5.0	$181.5	$1.3	1.7	3.0
Road to Rodman Bay	46	155.0	1 (T)	5.0	160.0	0.6	2.1	2.7
Small High-Speed Ferry	-	-	1 (F)	3.0	3.0	-	2.9	2.9
			2 (F)	6.0	6.0	-	4.8	4.8
Large High-Speed Ferry	-	-	1 (F)	12.0	12.0	-	4.1	4.1
			2 (F)	24.0	24.0	-	8.2	8.2

1) Costs are based on construction standards necessary to qualify for Federal-aid to highways funding.

2) Excludes probable need for new mainline vessels elsewhere in system.

3) Excludes capital amortization.

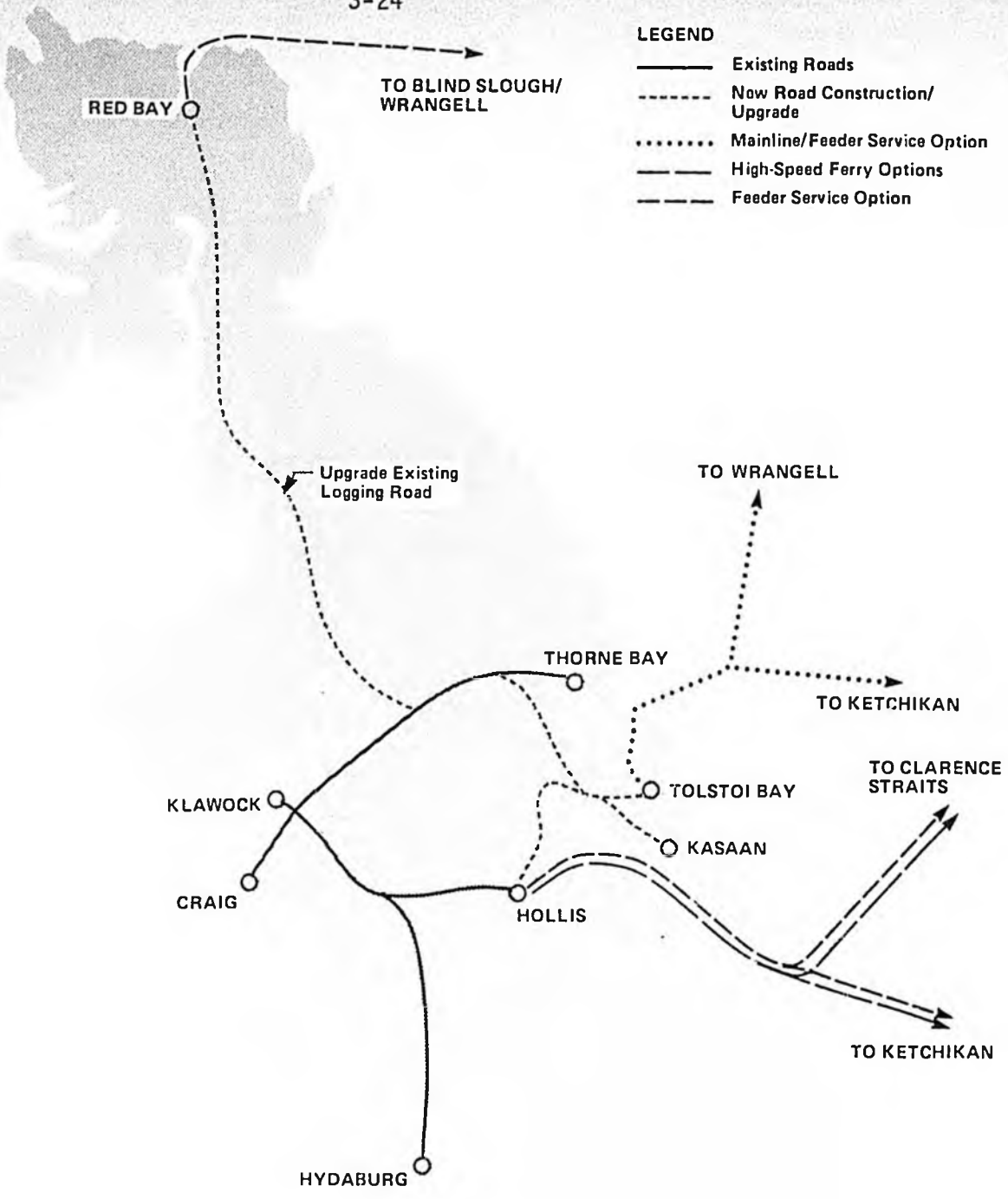


Figure 15

PRINCE OF WALES ACCESS OPTIONS

In terms of evaluation, it was found that the Sitka options could not be meaningfully assessed on a corridor basis alone. The added sailing distance into Sitka combined with the tide delays through Sergius Narrows affect not only Sitka passengers but also the frequency of service and the travel time throughout the mainline and feeder systems. It was therefore decided to carry all Sitka option concepts forward for evaluation in the context of the total system.

3.3.6 - Prince of Wales Access Options

The final subregional assessment study focused on the issue of surface access to and from Prince of Wales Island (see Figure 15 opposite). As with the other corridors, a number of service options were considered. Apart from the option of continuing service in the present manner, these alternatives included the following:

1. Develop a new ferry terminal at Tolstoi Bay. Provide road connections to Thorne Bay and/or Hollis and/or Kasaan. Provide ferry service with the Aurora and/or the mainline vessels.

2. Develop an alternative ferry terminal at the north end of the Island in Red Bay. Upgrade the road connections between Red Bay and the Klawock-Thorne Bay road. Continue limited service with the Aurora from Clark Bay to Ketchikan and provide a new feeder service from Red Bay to Blind Slough and Wrangell.

3. Provide a high-speed catamaran-type ferry shuttle service between Clark Bay and Ketchikan in lieu of the existing feeder service.

4. Provide a high-speed catamaran-type ferry service between Clark Bay, Ketchikan, Metlakatla and other Clarence Straits communities, supplemented by a modified feeder ferry service between Clark Bay and Ketchikan.

The capital and annual operating costs for each of these are shown in Table 3.6, overleaf.

TABLE 3.6

PRINCE OF WALES OPTIONS

	Additional Capital Costs					Additional Annual Operating Costs[2]		
	Roads[1]		Terminals & Ferries		Total	Roads	Terminals & Ferries	Total
	Mi	$M	No.	$M	$M	$M	$M	$M
Tolstoi Bay:								
- Hollis Road	15.9	$21.8	1 (T)	$5.0	$26.8	$0.24	$0.05	$0.29
- Thorne Bay Road[3]	16.9	13.3	1 (T)	5.0	18.3	0.25	0.05	0.30
- Kasaan Connection[4]	6.2	6.1	-	-	6.1	0.09	-	0.09
Red Bay	52.6	63.0	2 (T) 1 (F)	7.0 1.2	71.2	0.80	1.10	1.90
High-Speed Ferries	-	-	1 (F)	3.0	3.0	-	1.75	1.75[5]

1) Costs are based on construction standards necessary to qualify for Federal-aid to highways funding.

2) Does not include cost of existing ferry services. Excludes capital amortization.

3) Includes upgrade of 5.4 miles of existing Kiawock-Thorne Bay Road.

4) Only includes segment from Lindman Lake to Kasaan.

5) Based on year-round operation. Summer operation only would reduce costs to $0.75 - 0.90 million per year.

As with the Sitka corridor, it was felt that the Prince of Wales service options could best be evaluated within the context of the total system. Accordingly all four concepts were carried forward for evaluation as system alternatives. For system purposes, the Tolstoi Bay option was assumed to include both mainline and feeder ferry service and was assumed to be linked to the existing road system via Thorne Bay. With the upgrading of the road from Klawock to Thorne Bay, a connection via Thorne Bay could prove as attractive as one via Hollis to residents of Craig, Klawock and Hydaburg.

3.4 - Surface System Alternatives - Regional

3.4.1 - General

The objective in the corridor or subregional assessment was to narrow down the number of options for providing essentially similar services within a particular area, where the choice of one option over another was unlikely to cause repercussions elsewhere in the region. Where it was felt, however, that different corridor options might create different impacts throughout the regional system, representative examples of these different corridor concepts were retained for further analysis.

Having defined the schemes which best represented solutions to corridor problems, attention was turned to the total regional surface transportation system. At the regional level, the key issue was to develop a balance between the demand for services by Alaska residents in different parts of the region, the need for services to support the Region's tourism, fisheries, mining and timber industries, and the need to allocate State funds in a judicious and beneficial manner. Since these three concerns are not always compatible with one another, the focus of the assessment was to determine the tradeoffs involved as emphasis was directed towards meeting one or more of these concerns at the possible expense of the others.

A wide range of system alternatives were therefore defined in order to allow a detailed analysis of the interactions between competing goals and hence to

deduce those system components which offered the most effective balance in terms of meeting the demands for better transportation service in a cost-effective manner.

To ensure that system alternatives were realistic and to ensure that all impacts were taken into account, regional transportation options were specified in considerable detail. This included:

- specifying peak and off-peak schedules for existing and proposed new vessels;
- developing preliminary specifications for new vessels and obtaining builder estimates for construction and operating costs;
- defining alignments for new roads and developing preliminary engineering-level costs;
- defining and costing new terminal facilities where applicable; and
- projecting passenger and vehicle demand over each link in the system and generating user costs for vehicle operations and/or ferry fares on each route.

In addition, a computer model was developed which calculated for each year of the 20-year planning period:

- the capacity of the system and the portion of demand which could be met;
- the capital and operating costs of the marine/road system;
- the user costs for road and ferry travel; and
- the user travel time between all points in the system including delays related to frequency of service and requirements for transfer.

3.4.2 - Short-Term System Options

The objective of the updated transportation plan was to provide guidelines for the transportation system over a 20-year time period. There is, however, a division between changes that can be accomplished (and are required) in a short time period and changes that can be accomplished (and may be necessary) over a longer time frame. Major capacity additions, for example, in the form of constructing new roads or new mainline vessels may require several years to accomplish, while schedule changes or the introduction of 'off-the-shelf' vessels can be introduced in the near future. For this reason, separate surface system alternatives were defined with one set aimed at the short-term and the other at the long-term planning horizon.

Short-term alternatives were defined to meet several criteria:

- they could be easily implemented (with a 1 to 3-year period);
- they would improve the system's ability to meet demand through the late-1980s or early-1990s; and
- they were sufficiently flexible that they would not preclude any longer-term options.

On the basis of these criteria, seven options were defined for the short-term provision of surface transportation services.

1. No change - continue existing (1985) ferry service.
2. Matanuska to Seattle - operate both the Columbia and Matanuska out of Seattle during the peak.
3. Prince Rupert Terminus - operate all mainline vessels out of Prince Rupert during the peak season.

TABLE 3.7

SHORT-TERM SYSTEM ALTERNATIVES - SUMMARY OF IMPACTS

Option	Net Cost to State ($ Millions)	Passengers not Served (Percent of Peak Demand)			Impacts[1]		
		Seattle	Prince Rupert	Internal	State Cost Savings[1] ($ Millions)	User Cost Savings[2] [3] ($ Millions)	User Time Savings[2] (Million Hrs.)
Existing System	$454.4	37.7%	0.4%	-	-	-	-
Matanuska to Seattle	428.7	10.6	12.7	-	$25.7	$1.4	3.9
Prince Rupert Terminus	503.9	57.1	-	-	(49.5)	(2.0)	0.6
Columbia Shuttle	427.1	6.3	3.3	-	27.3	4.3	(3.3)
Foreign Flag Vessel	482.6	1.5	-	-	(28.2)	5.8	3.5
High-Speed Catamarans	457.1	3.0	9.7	-	(2.7)	3.8	9.2
High-Speed SES Ferries	471.1	3.0	3.1	-	(17.3)	5.0	10.7

1) As compared with continuing existing (1985) service; all figures are discounted 20-year totals.

2) Brackets denote cost or time increases rather than savings.

3) Includes costs for failure to meet demand.

4. Columbia shuttle - operate the Columbia twice weekly between Seattle and Ketchikan during the summer peak.

5. Foreign flag vessel - acquire a foreign flag vessel to operate out of Vancouver during the peak season.

6. High-Speed Catamarans - acquire one or more medium-range, medium-capacity (14 vehicles, 90 passengers) catamaran-type ferries to provide intra-regional service (a fleet of four was evaluated). Focus mainline service on the Seattle routes.

7. High-Speed Surface-Effect Ferries - acquire one or more longer-range, higher-capacity (40 vehicles, 180 passengers) SES-type vessels to provide intra-regional service (a fleet of two vessels was evaluated). Focus mainline vessels on the Seattle route.

These seven scenarios were reviewed in terms of financial impacts on users, the State, and the Marine Highway, in terms of the extent to which they could meet projected passenger and vehicle demand and in terms of the level of service offered to users with respect to service frequency and total travel time. A comparison was carried out between the benefits accruing to the users (from the viewpoint of cost, service and/or travel time) and the net costs incurred by the State and Marine Highway in providing the service. All costs and benefits were measured against the option of continuing the existing schedule. Table 3.7 opposite summarizes the highlights of the findings. All figures represent a system-wide total over 20 years. Financial costs are discounted to reflect their value in terms of current dollars in order to provide a consistent basis for comparing among alternatives.

The analysis raises several interesting points. For example, the two options of operating the Matanuska to Seattle and of shuttling the Columbia to Ketchikan would both generate cost savings to the State as a result of lower Marine Highway deficits. In addition, both would generate user cost savings as a result of reducing the costs associated with unmet demand. The Columbia shuttle, however, would generate high penalties in terms of total

travel time since passengers traveling north of Ketchikan (approximately 75% of Seattle demand) would have to disembark at Ketchikan and wait until they could be accommodated on a vessel out of Prince Rupert.

The other short-term options would all result in higher costs to the State either because they would result in higher Marine Highway operating deficits (Prince Rupert terminus) or because they would require investment in new vessels which could not be fully recovered out of revenues. In the case of high-speed catamaran-type ferry service, these costs would be offset by the user savings associated with the increased ability to meet demand. In the other instances, however, it would have to be presumed that user time savings were sufficiently attractive to offset the net financial losses associated with the service option.

Overall, the most attractive short-term option from the viewpoints of service, travel time and government cost would appear to be routing the Matanuska to Seattle during the summer peak. The chief drawback of this option is that withdrawing the Matanuska from Prince Rupert would quickly lead to capacity problems both at Prince Rupert (where two trips per week are lost) and in the Ketchikan-Petersburg corridor (where service is reduced by one trip per week). Part of this capacity shortfall could be covered by operating the Aurora more frequently out of Prince Rupert but this would create a gap in service to Prince of Wales Island. It was therefore proposed that two high-speed catamaran-type ferries be acquired and put into service in the Ketchikan/Hollis/Petersburg region as a means of freeing the Aurora to operate more frequently out of Prince Rupert, providing improved service to residents of Prince of Wales Island, and providing additional capacity on the Ketchikan-Petersburg corridor.

It was felt that the proposed short-term plan offered an effective balance between the demands of residents, the needs of tourists and other industry sectors, and the requirement to use government funds in a responsible manner. The plan offers tourists and residents a second weekly vessel to and from Seattle and offsets the lost internal services by drawing the Aurora into partial mainline service and enhancing feeder services with high-speed catamarans. While this increases the Marine Highway's capital

and operating costs, part of this increase is offset by the greater earning power of the Matanuska and Aurora on their revised routes and by the revenue-generating potential of the high-speed vessels.

At the same time, the proposed plan offers flexibility in the long term in that it involves a relatively small ($6 million) investment in new equipment which could, if circumstances change, be put to use elsewhere in the system.

3.4.3 - Long-Term System Options

The definition and assessment of long-term surface system alternatives involved a changed perspective in terms of both the demands to be met and the range of options available to provide service. While traffic demand is expected to continue to increase in the future, it is possible, in the long term, to envision major changes in the transportation system through the acquisition of additional mainline vessels, the development of new road links, the purchase of high-capacity, high-speed ferries, and the phased introduction of more substantial schedule changes.

As in the short-term, however, the key concern was to establish a balance between the goals of serving resident demand, accommodating the needs of the tourism and other industry sectors, and allocating government funds in a judicious and beneficial manner. A range of long-term alternatives was therefore specified not only in terms of operating characteristics but in terms of the level of investment in new capacity in order to meet demand.

The issue of investing to meet demand was of particular concern since it was recognized that new investment in mainline vessel capacity would primarily serve peak season tourist demand out of Seattle. During the off-peak season these vessels would not be required. It was therefore decided to investigate a range of investment options in order to determine the savings and impacts associated with providing alternate levels of peak season capacity.

Two investment scenarios were therefore analyzed:

- acquire sufficient vessels to meet peak season demand out of both Seattle and Prince Rupert; and

- acquire new mainline vessels only when combined vehicle demands out of Seattle and Prince Rupert exceed combined vessel capacity. This implies acceptance of the concept that passengers with vehicles will be willing to transfer from Seattle to Prince Rupert if ferry capacity is available.

In addition, for sensitivity testing, selected scenarios were evaluated whereby no new mainline vessels were acquired and demand in excess of capacity was presumed to be lost.

Alternatives for surface system operations were defined in terms of a series of 'Focuses' where each focus involved emphasizing a particular concept in terms of regional service and evaluating its impact throughout the system from the viewpoints of cost and service effectiveness.

Five key 'focus' areas were developed.

1. Mainline Service Focus - This option involved continuing the philosophy of the June 1980 Plan whereby the existing mainline and feeder route structures were maintained and additional capacity was provided by the acquisition of new mainline vessels.

2. Lynn Canal Focus - This option emphasized changes within the Lynn Canal corridor, analyzing their impacts on both Lynn service and on service throughout the region. Two Lynn service options were evaluated:

   - an east-side road from Juneau to Skagway with a shuttle ferry from Haines to the Katzehin River;

   - two high-speed SES-type shuttle ferries from Echo Cove to Haines and Skagway.

In both cases, northbound mainline ferry service was assumed to terminate at Juneau.

3. Sitka Focus - This option focused on changing the way in which the Sitka community was incorporated into the surface system. Three service options were assessed:

   - construct a road from Sitka to Baranof and operate mainline and feeder services out of Warm Springs Bay;

   - construct a road from Sitka to Rodman Bay and provide mainline and feeder ferry services out of a Rodman Bay terminal;

   - provide high-speed SES-type ferry service on the Sitka-Juneau and Sitka-Petersburg links. Terminate mainline service into Sitka.

4. Prince of Wales Island Focus - This option emphasized alternative means of providing service to communities on Prince of Wales Island. Four specific options were evaluated:

   - Relocate the Clark Bay terminal to Tolstoi Bay, and provide mainline and partial feeder service through the new terminal. Connect Tolstoi Bay to the Island communities by extending the road from Thorne Bay to Tolstoi Bay. (Other road connections could be made to Hollis and Kasaan.)

   - Develop a new terminal at Red Bay on the north end of the Island, connected by road to the existing Klawock-Thorne Bay highway. Provide ferry service from Red Bay to Blind Slough and Wrangell, and from Hollis to Ketchikan.

   - Acquire a high-speed catamaran-type ferry to provide twice-daily shuttle service between Hollis and Ketchikan. Transfer the Aurora to other routes.

TABLE 3.8

LONG-TERM SYSTEM OPTIONS - MEET DEMAND SCENARIOS

	Net Cost to State ($ Millions)	Impacts[1] Government Cost Savings[2] ($ Millions)	User Cost Savings[2] ($ Millions)	User Time Savings[2] (Million Hrs.)	Comments
Mainline Service Focus	$583.9	-	-	-	-
Lynn Focus:					
- road	772.9	$(189.0)	$73.6	15.3	Includes benefits to 3 million induced passengers.
- high-speed ferry	619.2	(35.3)	9.1	5.8	Includes benefits to 0.5 million induced passengers.
Sitka Focus:					
- Baranof	642.7	(58.8)	(1.2)	(0.2)	-
- Rodman Bay	626.6	(42.7)	(2.4)	(0.6)	-
- high-speed ferry	600.4	(16.5)	0.1	4.0	Includes benefits to 25,000 induced passengers.
Prince of Wales Focus:					
- Tolstoi Bay	574.0	9.9	(0.2)	0.9	-
- Red Bay	618.2	(34.3)	(0.1)	0.6	-
- high-speed shuttle	570.4	13.5	0.4	2.4	-
- high-speed loop	571.0	12.9	0.4	0.7	-
Stikine Focus:					
- Wrangell Road	640.5	(56.6)	3.5	(1.9)	(Involves an increase in unserved demand; added
- Petersburg Road	607.2	(23.3)	3.1	(1.9)	(capacity provided only when demand cut of
- Wrangell/Ketchikan Road	778.1	(194.2)	[3]	[3]	(YPR/Stikine exceeds capacity.

1) As compared with Mainline Service Focus (June 1980 Plan); all figures are discounted 20-year totals.

2) Brackets denote cost or time increases rather than savings.

3) Major changes in service patterns make comparison based on existing demand invalid.

- Acquire a high-speed catamaran-type ferry to provide service in the Hollis-Ketchikan-Clarence Straits region. Supplement Hollis-Ketchikan service with alternate-day service by the Aurora.

5. Stikine Corridor Focus - This option emphasized development of a mid-region road access to supplement mainline ferry service. The two preferred corridor options were evaluated in the systems context, and a third option--constructing a road from Ketchikan to the Canadian border with a connecting link to Wrangell--was also included.

   The three Stikine options therefore involved:

   - Construct a road from Wrangell to the Canadian border. Provide shuttle ferry service between Wrangell and Petersburg via Blind Slough.

   - Construct a road from Petersburg to the Canadian border. Provide shuttle ferry service between Wrangell and Petersburg via Blind Slough.

   - Construct a road from Ketchikan to the Canadian border with a connecting link to Wrangell. Operate ferry services south of Ketchikan/Hollis and north of Wrangell.

It should be noted at the outset that definition of these focus areas was not meant to suggest that all service improvements should be focused in a single region. Rather the intent was to determine the relative system-wide impacts associated with these various improvements and select those which offered the greatest benefits relative to their costs.

As mentioned earlier, these scenarios were assessed under a range of alternative investment levels in terms of meeting projected Seattle/Prince Rupert demand. Tables 3.8 opposite and 3.9 overleaf summarize the general findings first for scenarios which would meet the full level of demand and secondly, for scenarios which would meet only combined demand out of the southern termini.

TABLE 3.9

LONG-TERM SYSTEM OPTIONS - REDUCED INVESTMENT SCENARIOS

Option	Net Cost to State ($ Millions)	Seattle Peak Passenger Demand		Impacts[1]		
		Not served (%)	Served by Diversion (%)	Government Cost Savings[2] ($ Millions)	User Cost Savings[2] ($ Millions)	User Time Savings[2] (Million hours)
Mainline Service Focus	$583.9	1.8%	2.0%	-	-	-
Lynn Focus:						
- road	702.7	4.5	12.4	$(118.6)	$73.1	10.2
- high-speed ferry	530.9	1.9	11.9	53.0	9.1	(0.2)
Sitka Focus:						
- Baranof	569.7	13.1	4.8	14.2	(3.6)	(0.2)
- Rodman Bay	554.4	13.1	4.8	29.5	(4.8)	(3.5)
- high-speed ferry	511.6	1.9	10.4	72.3	-	0.7
Prince of Wales Focus:						
- Tolstoi Bay	492.0	6.7	6.1	91.9	(1.1)	(2.7)
- Red Bay	536.1	6.7	6.1	47.8	(1.0)	(1.2)
- high-speed shuttle	484.6	3.3	3.4	99.3	(0.2)	(0.4)
- high-speed loop	485.2	3.3	3.4	98.7	(0.2)	(2.0)
Stikine Focus:						
- Wrangell Road	640.5	8.0	10.4	(56.6)	3.5	(1.9)
- Petersberg Road	607.2	8.0	10.4	(23.3)	3.1	(1.9)

[1] As compared with the Mainline Service Focus (June 1980 Plan); all figures are discounted 20-year totals.

[2] Brackets denote increases in cost or time rather than savings.

Examination of the findings indicates first that if demand is to be met throughout the system, the least costly methods from the government perspective involve changes in service to Prince of Wales Island. The Tolstoi Bay and high-speed catamaran options both offer government cost savings as compared with the Mainline Service Focus and cause only minor (and generally beneficial) impacts in user costs and travel time.

The second table, (Table 3.9) which compares the 'reduced investment' scenarios, also highlights some significant findings. For example, it would appear that by viewing combined Seattle/Prince Rupert vehicle demand as a single market and accepting transfer of vehicles from one departure port to the other, substantial cost savings can be realized relative to the Mainline Service Option with very little reduction in either the total passengers served or the quality of service provided. In the Lynn and Sitka high-speed ferry options in particular, mainline schedules can be rearranged such that the system continues to meet virtually all of the Seattle passenger demand, yet no new mainline vessels would be required until the late-1990s. The Prince of Wales Focus options also succeed in meeting a substantial portion of the Seattle demand. In these cases, however, a new mainline vessel would be required by the early-1990s.

Overall, the Sitka shuttle appears to offer the most attractive features in terms of meeting demand at a low level of new investment while generating the same benefits in terms of user cost and travel time as those achieved under the more costly Mainline Service Option. The Sitka Shuttle option is closely followed by high-speed Lynn service which generates lower system savings in terms of government costs but, by operating out of Echo Cove, offers cost savings to existing and induced Lynn traffic.

Also attractive are the Tolstoi Bay terminal and Prince of Wales high-speed ferry options. In the long-term, however, these options by themselves require a fairly early decision on new mainline capacity in order to meet demand and involve some negative impacts in terms of user cost and user travel time.

After detailed consideration of the implications of these findings, it was recommended that a 'combination' scenario should form the long range plan for surface transportation in the region. Specifically it was suggested that:

- the features of the short-term plan be carried over into the long term with the Matanuska operating out of Seattle and two high-speed catamaran-type ferries operating in the Prince of Wales-Ketchikan-Clarence Straits region;

- that two larger high-speed SES-type ferries be purchased for peak season operations. One would provide daily round trip service between Sitka and Juneau with stops at Angoon, Tenakee Springs and Hoonah. The second would provide twice daily round trip service between Juneau/Auke Bay, Haines and Skagway;

- that the Matanuska operate on an 'open jaw' or alternating terminus route, sailing first from Seattle, through the region and terminating at Prince Rupert, then sailing back through the region and terminating in Seattle. On this route the Matanuska would serve Sitka en route from and en route to Seattle (a total of three times in two weeks) but would not serve the Lynn Canal;

- that the Columbia operate on a similar 'open jaw' route, but serving the Lynn Canal rather than Sitka, and that the Malaspina and Taku operate on mainline routes between Prince Rupert and Haines/Skagway;

- that the LeConte continue to provide feeder service for passengers and heavy vehicles in the Sitka-Petersburg and Sitka-Juneau corridors;

- that the Aurora be used in the Prince Rupert - Juneau corridor, also providing heavy freight service to Prince of Wales Island.

- that to offset the failure to provide full service out of Seattle, private operators be encouraged to provide vehicle capacity between Seattle and the Southeast Region.

4 - TRANSPORTATION PLAN

4 - TRANSPORTATION PLAN

The analysis described in the preceding sections was drawn together to generate an updated transportation plan for Southeast Alaska. The goals, objectives, policies and features of this plan are stated in the following sections.

4.1 - Goals

As stated previously, the goal of the transportation plan is to provide a means of serving the transportation demands of Alaskan residents, and to provide the transportation services necessary to support the regional economy, while recognizing that these aims must be accomplished in a fiscally responsible manner.

4.2 - Objectives

Since these goals often involve conflicting pressures, the objective in defining the plan was to find a balance between service levels and cost where service level objectives included:

- providing capacity to meet demand;
- maximizing service frequency;
- minimizing travel time;
- minimizing travel cost;

and cost objectives included:

- minimizing capital expenditures;
- minimizing system operating deficits.

In all cases, an associated objective was to minimize adverse social, economic and environmental impacts within the Region.

4.3 - Policies

As part of meeting the goals and objectives, certain policies were proposed with regard to the provision of transportation services. These were as follows.

- Ensure that all residents of Southeast Alaska have access to at least a minimum transportation service.

- Encourage the provision of transportation in the Region by private operators where they are able to provide an adequate and competitive service.

- Define potential transportation/utility corridors and encourage the US Forest Service and mining interests to construct future resource road development within these corridors where practical.

- Avoid duplication of transportation services by the State except in the interest of public safety or service reliability requirements.

- Avoid duplication of public and private transportation operations.

- Promote the concepts that different modes will offer a natural competitive advantage in different regions and encourage development of modes best suited to the community's specific needs.

- Provide opportunity for effective public participation in transportation decisions.

4.4 - Aviation System Plan

Short-Term (1986-1990)

- Complete runway extensions at the airports in Kake, Hoonah and Klawock.

- Upgrade and/or expand seaplane facilities at Angoon, Pelican, Tenakee Springs, Thorne Bay, Whale Pass, Craig and Metlakatla.

- Introduce improved navigation aids:

  - relocate VHF transmitters where necessary to provide improved line-of-sight reception;

  - introduce microwave landing systems (MLS) at airports served by jet aircraft and also at Klawock airport;

  - provide nondirectional radio beacons (NDB) at all airports which have scheduled air services;

  - as funds permit, introduce runway lighting at regional airports to permit night-time VFR operations and improve safety in poor weather conditions;

- Review and develop a policy on the provision of emergency landing strips.

Long-Term (1991-2005)

- Support development of float plane facilities in regional communities as service and demand require.

- If current community opposition is withdrawn at Angoon, Pelican and Tenakee Springs, support development of new airports in these communities as part of a wheel-based regional airport system.

- Ensure that clearance is available at both existing and new airports to permit ultimate extension of runways to 4000 feet in order to accommodate larger commuter aircraft.

4.5 - Marine Highway System Plan

Short-Term (1986-1990)

- Operate the Matanuska and Columbia out of Seattle in the peak season.
- Increase Aurora service in the Prince Rupert-Petersburg corridor.
- Subject to analysis by the Alaska Marine Highway System as to the most appropriate design/configuration, acquire two medium-capacity, mid-range, high-speed ferries to supplement peak service in the Ketchikan-Hollis-Clarence Straits regions.

Long-Term (1991-2005)

- Subject to Marine Highway analysis as to the most appropriate design/configuration, acquire two larger high-speed ferries to provide peak season service in the Sitka-Juneau and Juneau-Lynn corridors.
- Operate the Matanuska on an 'open jaw' route between Seattle, Sitka, Juneau and Prince Rupert, bypassing the Lynn Canal but calling at the other mainline ports.
- Operate the Columbia on an 'open jaw' route between Seattle, Juneau, the Lynn Canal and Prince Rupert, bypassing Sitka but calling at the other mainline ports.
- Operate the Malaspina and Taku between Prince Rupert and Haines/Skagway calling at Ketchikan, Wrangell, Petersburg and Juneau.

- Operate the Aurora in the Prince Rupert-Juneau corridor providing at least weekly service to Hollis and Hyder.

- Operate the LeConte in the Juneau-Sitka-Petersburg corridors providing service to Pelican, Hoonah, Tenakee Springs, Angoon and Kake.

- Operate the two smaller high-speed ferries in the Ketchikan-Prince of Wales-Metlakatla corridor.

- Provide ferry service to Gustavus when supported by the community.

- Review the continuing role of high-speed ferries in the Southeast Marine Highway System and evaluate the need for additional high-speed vessels and routes.

- As traffic demand develops, review the possible need for a new mainline vessel to operate out of Seattle by the late 1990s.

- In the interim, encourage private operators to provide additional vehicle carrying capacity between Seattle and the Southeast Region to meet the needs of tourist and resident travelers.

4.6 - Road System Plan

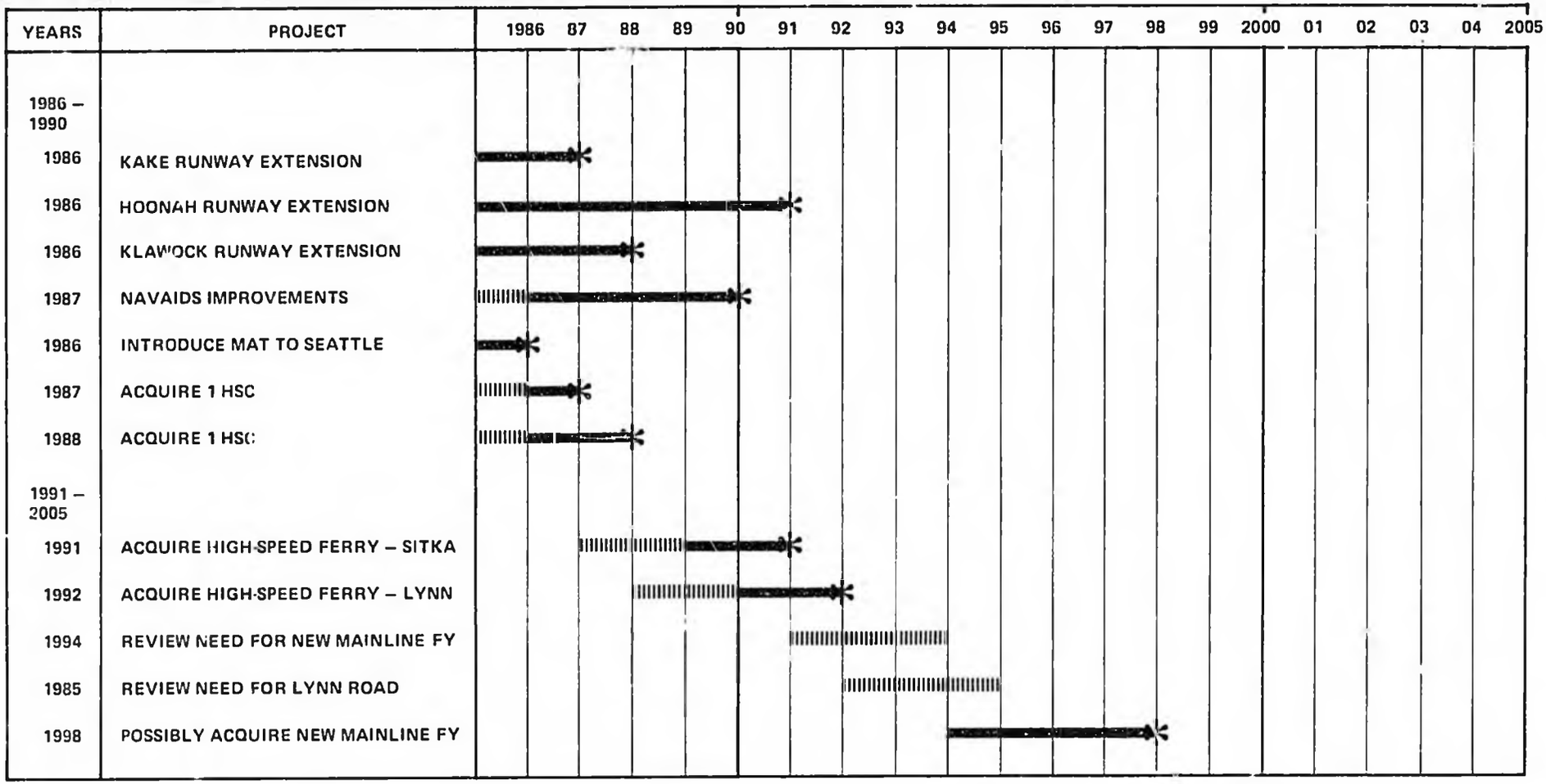
Short-Term (1986-1990)

- Continue upgrading and maintenance of existing road links in the region.

- Ensure that communities are provided with surface access routes to air and marine terminals.

Long-Term (1991-2005)

- Current projections for population growth and economic development suggest that inter-community links will continue to be best served by Marine Highway and air transportation.



LEGEND

Plan

Implement

Initiate Service

Figure 16

TIME FRAME FOR KEY PROJECTS

- Monitor demand on the Lynn Canal route to ascertain when developments warrant reassessment of a Juneau-Haines-Skagway road link.

- Re-evaluate road corridors and transportation technology developments on a periodic basis.

4.7 - Ongoing Planning Process

- Continue an ongoing regional planning process to maintain a data base, to evaluate changes in transportation demands, and to periodically update the Regional Transportation Plan.

- Encourage ongoing development of management information systems to provide reliable, up-to-date data on transportation facilities and modal operations.

- Assign priority to the development of:

  - marine highway traffic data including passenger origin/destination patterns and vehicle characteristics;

  - air traffic data for jet, commuter and air-taxi operations;

  - inventory of aviation facilities;

  - assignable cost data for public transportation services.

- Maintain historical records of changes in transportation patterns in response to the introduction of new services.

APPENDIX A

LIST OF KEY BACKGROUND REPORTS

APPENDIX A

LIST OF KEY BACKGROUND REPORTS

Southeast Alaska Transportation Plan Reports

1. Technology Evaluation, Acres International Corporation, June 1985.
2. Evaluation of Corridor Alternatives - Juneau Access (Lynn/Taku Corridors), Acres International Corporation, March 1986.
3. Evaluation of Corridor Alternatives - Ketchikan/Southern Terminus Corridor, Acres International Corporation, March 1986.
4. Evaluation of Corridor Alternatives - Sitka Access, Acres International Corporation, March 1986.
5. Evaluation of Corridor Alternatives - Stikine Corridor, Acres International Corporation, March 1986.
6. Evaluation of Corridor Alternatives - Prince of Wales Island Access, Acres International Corporation, March 1986.
7. Service to Isolated Communities, Acres International Corporation, April 1986.
8. Evaluation of Air System Alternatives, Acres International Corporation, March 1986.
9. Evaluation of Surface System Alternatives, Acres International Corporation, April 1986.
10. Data Quality, Sensitivities and Reliability of Results, Acres International Corporation, April 1986.
11. Southeast Alaska Transportation Plan, Draft, Acres International Corporation, April 1986.
12. Record of Community Response, Acres International Corporation, June 1986.

Other Reports

1. Southeastern Alaska Transportation Plan, Alaska Department of Transportation and Public Facilities, June 1980.

2. Report and Recommendations of the Alaska Marine Highway Task Force, Alaska Marine Highway Task Force, April 1984.

3. 1982 Southeast Region Transportation Workshops, Public Record, Alaska Department of Transportation and Public Facilities, April 1982.

4. Annual Traffic Volume Report, Alaska Marine Highways System, 1977 - 1984.

5. A Delphi Forecast of Alaska's Development to the Year 2000 & Beyond, Alaska Department of Commerce & Economic Development, June 1983.

6. Reconnaissance Study, Stikine Highway Access, Alaska Department of Transportation and Public Facilities, November 1984.

7. Alaska Planning Information, Alaska Department of Labor, February 1985.

8. Southeastern Alaska Transportation User Survey, Tippetts-Abbett-McCarthy-Stratton, P.C., March 1983.

9. Alaska Population Overview, 1982, Alaska Department of Labor, 1983.

10. Final Report, Southeastern Alaska Transportation Study, Wilbur Smith and Associates, December 1979.

11. Tongass Land Management Plan, Evaluation Report, U.S. Department of Agriculture, Forest Services Division, November 1984.

12. Alaska Traveler Survey and Visitor Industry Analysis, Alaska Department of Commerce & Economic Development, Division of Tourism, August 1984.

SOUTHEAST ALASKA TRANSPORTATION PLAN

STATE OF ALASKA
Department of Transportation and
Public Facilities
Southeast Alaska Transportation
Plan
Post Office Box 31000
Juneau, Alaska 99802

Andrew Hughes, State Project Manager

Printed by the Employment and Training Center of Alaska

COMMITTEE MEETING:

WORK SESSION

AK. MARINE HIGHWAY (FILE 2)

1-29-87

Southeast Alaska Transportation Plan

Evaluation of Surface System Alternatives

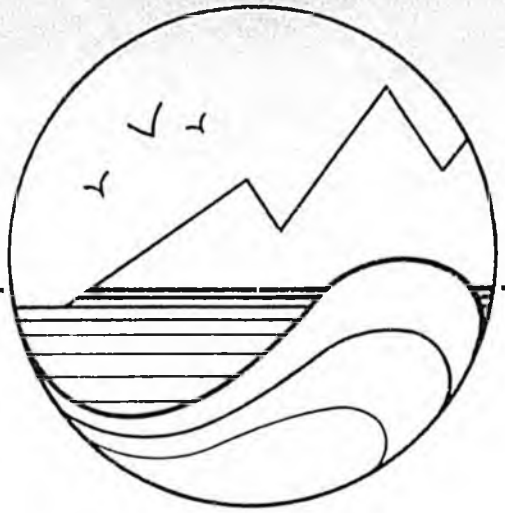
Prepared by

Acres International Corporation

for

Alaska Department of Transportation and Public Facilities

April 1986



Southeast Alaska Transportation Plan

Evaluation of Surface System Alternatives

Prepared by

Acres International Corporation

for

Alaska Department of Transportation and Public Facilities

April 1986

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EVALUATION OF SURFACE SYSTEM ALTERNATIVES

1 - INTRODUCTION

1.1 - General

As part of developing an updated Transportation Plan for the Southeast Alaska Region, a detailed assessment was carried out with regard to the surface transportation systems which could be implemented in the Region in order to provide improved access to, from and within Southeast Alaska.

The key concept in this assessment was the idea that surface transportation in the Region must be viewed as an integrated 'system.' This 'system' concept implied that the provision of transportation services in specific areas was inextricably linked to a total regional network of services and that changes in one area would frequently impact on services elsewhere. Thus transportation services had to be assessed in a total regional context with a view to maximizing total benefits rather than optimizing services into particular subregions, or communities.

1.2 - Corridor Studies

Notwithstanding the preceding comments, there were certain subregions within Southeast Alaska where a range of surface transportation alternatives were available which were sufficiently similar in terms of regional impact that they could be prescreened in a more limited context, either on the simple basis of capital cost or on the basis of corridor impacts.

As a result, a number of subregional or 'corridor' studies were carried out as a preface to the regional systems evaluations with a view to narrowing down the number of options requiring assessment in the total systems context. Five 'corridors' were reviewed at this level: the Juneau Access (Taku/Lynn) corridor, the Ketchikan-Southern Terminus corridor, the Stikine corridor, the Sitka Access corridor, and the Prince of Wales Island Access

corridor. The surface transportation alternatives evaluated for each of these corridors and the findings and recommendations arising from the evaluations are described in a series of separate documents entitled

. "Evaluation of Corridor Alternatives - Juneau Access (Lynn/Taku Corridors)"

. "Evaluation of Corridor Alternatives - Ketchikan - Southern Terminus - Corridor"

. "Evaluation of Corridor Alternatives - Stikine Corridor"

. "Evaluation of Corridor Alternatives - Sitka Access"

. "Evaluation of Corridor Alternatives - Prince of Wales Island Access."

1.3 - Scope of Analysis

The Southeast Alaska Region was designated to include all Alaska territory south of Icy Bay (see Figure 1). All issues of surface access to, from and within this area were included in the scope of analysis.

Surface transportation was deemed to include both land-based and marine-based modes. Frequently these two modes acted as complements to one another (with roads providing access to ferry terminals) but in some cases a land-based route could serve as an alternative to marine services.

1.4 - Report Format

The remainder of this report is divided into five sections. Section 2 lays out the background to the review of system alternatives, describing the existing surface transportation system and outlining the assumptions with regard to future needs and opportunities, and Section 3 describes the process used to evaluate the alternative system options. Section 4 outlines