

ALASKA LEGISLATURE COMMITTEE FILES 1997-1998 8672

9395 HOUSE RESOURCES

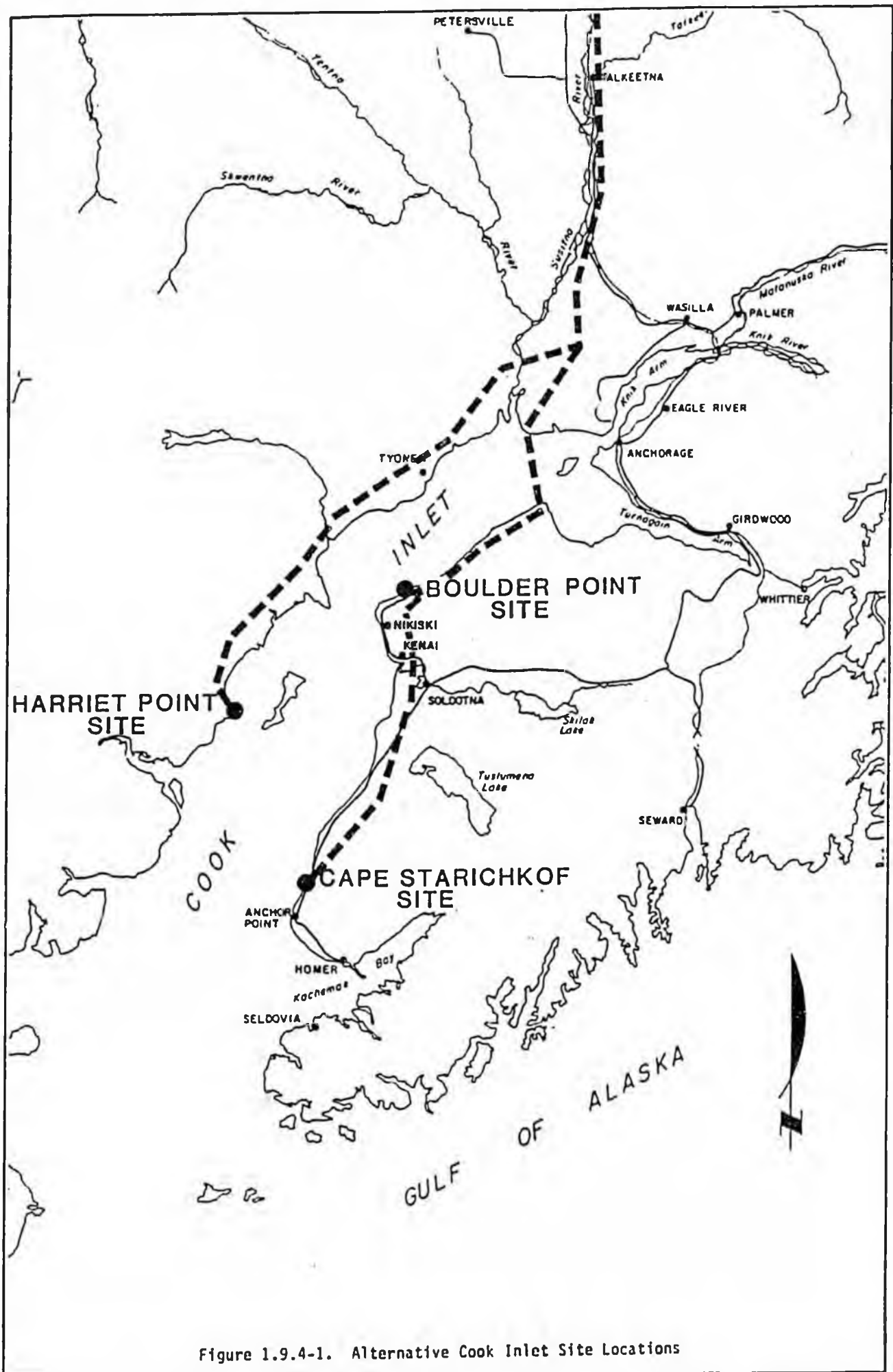


Figure 1.9.4-1. Alternative Cook Inlet Site Locations

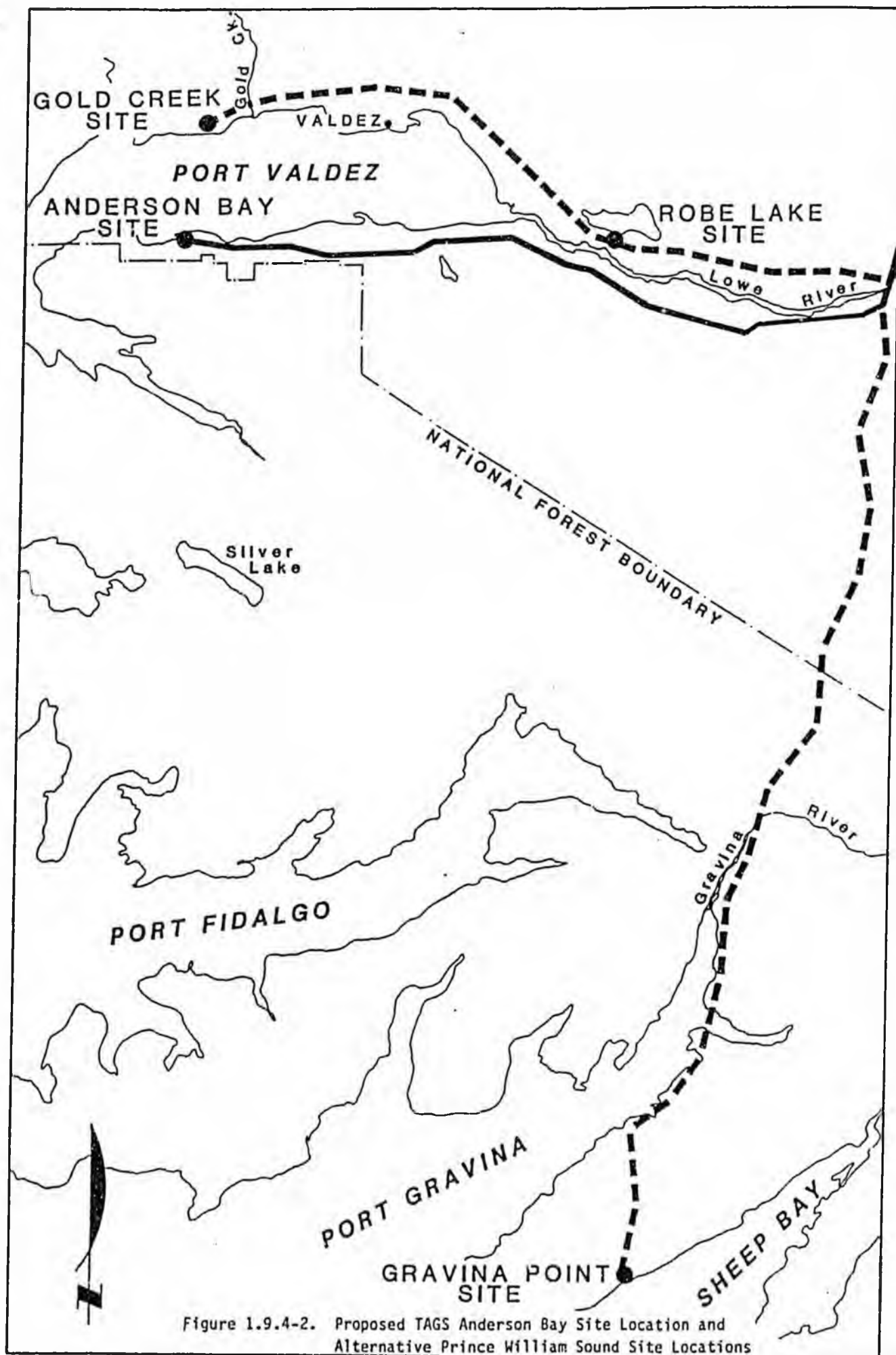


Figure 1.9.4-2. Proposed TAGS Anderson Bay Site Location and Alternative Prince William Sound Site Locations

Figure 1.9.4-3 Criteria Evaluation Matrix for Proposed TAGS Project and Alternative Locations

	Prince William Sound				Cook Inlet		
	Proposed Project to:	Alternatives			Alternatives		
	Anderson Bay	Gravina	Gold Creek	Robe Lake	Boulder Point	Cape Starichkof	Harriet Point
Pipeline Criteria							
- Minimize length of pipeline	○	⊗	○	○	○	⊗	⊗
- Maximize use of existing infrastructure	○	⊗	○	○	⊗	⊗	⊗
- Maximize use of proven construction techniques	○	⊗	⊗	○	⊗	⊗	⊗
- Maximize opportunity for parallel construction techniques	○	⊗	○	○	⊗	⊗	⊗
- Avoid areas of potential geohazards	⊗	⊗	⊗	⊗	⊗	⊗	⊗
- Minimize potential conflicts with sensitive environments	○	⊗	○	○	⊗	⊗	⊗
- Maximize compatibility with current and planned land use	○	⊗	○	○	⊗	⊗	⊗
- Minimize the number of water crossings	○	⊗	○	○	○	○	⊗
- Avoid permitting delays	○	⊗	○	○	●	●	●
- Minimize potential threat to national security	○	⊗	○	○	⊗	⊗	⊗
- Maximize availability of gas to Alaska consumers	⊗	⊗	⊗	⊗	○	○	○
LNG Plant Criteria							
- Adequacy of available land	○	○	○	●	⊗	⊗	○
- Avoid areas with poor foundation characteristics	○	○	○	○	⊗	⊗	⊗
- Avoid areas with faults	⊗	⊗	⊗	○	⊗	⊗	⊗
- Avoid sites potentially exposed to seismic sea waves	○	○	○	○	○	○	○
- Minimize length of pipeline to marine terminal	○	○	○	●	⊗	⊗	⊗
- Maximize use of existing community infrastructure	⊗	●	⊗	⊗	○	○	⊗
- Avoid sensitive environmental habitat	⊗	⊗	⊗	⊗	⊗	⊗	⊗
- Public safety considerations	○	○	⊗	●	⊗	○	○
- Maximize value added industrial opportunities	⊗	●	⊗	⊗	○	○	○
- Minimize site preparation requirements	⊗	⊗	⊗	⊗	○	○	○
Marine Terminal Criteria							
- Minimize exposure to extreme oceanographic conditions	○	○	○	○	⊗	⊗	⊗
- Minimize distance from shore to 60' MLLW depth	○	○	○	⊗	⊗	⊗	⊗
- Maximize suitability of tanker maneuvering and anchorage area	○	○	○	⊗	⊗	⊗	⊗
- Minimize potential hazards to navigation	○	⊗	○	⊗	⊗	⊗	⊗
- Minimize potential problems related to soils and geohazards	○	○	⊗	⊗	○	○	○
- Minimize threat to national security	⊗	⊗	⊗	⊗	⊗	⊗	⊗

○ Favorable
 ⊗ Moderately Favorable
 ⊗ Unfavorable
 ● Highly Unfavorable

SECTION 1.0 INTRODUCTION

1.9.4.3 Gravina

For the pipeline from Livengood to the site, Gravina was rated as unfavorable for use of proven technology, geohazards, land-use compatibility, and permitting. All of these factors were related to the segment of the route from Keystone Canyon through the Chugach Mountains, including 15 miles of routing through the Chugach National Forest. Though operation of a marine terminal at the site had no serious drawbacks for the LNG facility, Gravina was considered to be highly unfavorable with respect to infrastructure for construction and operation of the facility and potential benefits that might be derived from secondary developments in the vicinity of the plant. The Gravina site has numerous distinct disadvantages compared to the proposed Anderson Bay site and was eliminated from consideration.

1.9.4.4 Gold Creek

The Gold Creek site rated as favorable or moderately favorable for nearly all evaluation criteria. The final segment of the pipeline alignment, near Robe Lake and around the outskirts of the city, was not as favorable as that of the proposed project. The last 3 miles along the west shore of Port Valdez would be in steep side hills, which would result in difficult construction, movement of large volumes of material, and a broad visual scar along the mountainside. The LNG plant site would require extensive excavation and would pose the added problem of disposing of a large volume of spoil from the site. Use of the Gold Creek site would negatively affect potential expansion of the city and recreational use of the Gold Creek area and would require major site work and spoil disposal. Although the rating of the Gold Creek site was similar to the proposed Anderson Bay site, *it has more difficult access to the site and site preparation was not as favorable as the proposed TAGS project and was eliminated from further consideration.*

1.9.4.5 Robe Lake

Although the Robe Lake alternative would result in the shortest pipeline among

Prince William Sound alternative, consideration of the LNG site and the associated marine terminal facility immediately highlight the major concerns with this alternative. Land that would be needed for the LNG facility is in the midst of residential and recreational use areas. Major site work would be required, resulting in impacts on aesthetics, interference with recreational use, and even removal of the parcel of land available for residences or recreation. *Although the safety record for LNG plants is excellent, should a catastrophic accident or spill occur, this site would be the worst among the TAGS alternatives in terms of potential impact to public safety. Further, the distance from the LNG plant site to the shoreline and the distance from shore to water deep enough for tanker maneuvering and berthing combine to require a 5-mile cryogenic loading pipeline from the plant to the LNG tanker loading area. The engineering and cost of such a line would make it nearly unfeasible. The location of the berthing and maneuvering area within the harbor has disadvantages with respect to navigational safety, and the submarine soils in this region of the harbor are not favorable for development. Overall, the Robe Lake site should be eliminated from consideration.*

1.9.5 Summary

Neither of the Cook Inlet alternatives to Cape Starichkof nor Harriet Point offers engineering, environmental, cost, or safety advantages over location of a facility at Boulder Point. The cost, time, and additional impacted area associated with the Cape Starichkof and Harriet Point sites make them less desirable options and therefore eliminated from further consideration.

Of the three alternatives considered for the Prince William Sound region, Gold Creek is the only one that appears comparable to *but not better than* the proposed Anderson Bay site. However, due to the extensive earthwork required for the LNG plant site and the associated spoil disposal requirements, the difficult pipeline constructability for the last 3 miles to the site, and the greater negative impacts on city of Valdez recreational use and potential future expansion, this alternative

CONTENTS (Contd)

- 1/ Other than Appendix I (supplemental), L (supplemental), N, and O, all others would be identical to those included in the DEIS and are not reproduced again in the FEIS. They are hereby incorporated by reference. Appendix I (supplemental), L (supplemental), N, and O are included in this document.
- 2/ On June 6, 1988, the Northwest Alaskan Pipeline Company issued a press release about a future potential for modification to the ANGTS project as described in Appendix B of the DEIS. These prospective modifications are summarized as follows: 1) make greater use of snow/ice construction in Alaska where possible; 2) shorten the overall construction schedule by greater use of winter construction; 3) revise the mix of previously approved construction methodology; 4) increase the flow of natural gas throughout from 2.1 BCFD to 2.3 BCFD; 5) decrease pipe diameter in the Alaska segment from 48 inches to 42 inches; 6) increase operating pressure from 1,260 psig to 2,160 psig; 7) reduce the number of compressor stations; 8) reduce the number of other related facilities. On June 8, 1988, a representative of Northwest Alaska Pipeline Company indicated there were no firm plans at this time as to when remobilization of ANGTS would start or when the modifications would be submitted for Federal review/approval. Although detailed technical information is not yet available on the potential June 6, 1988 ANGTS modifications, the overall cumulative effects described in this FEIS are based upon the assumption that ANGTS will be constructed. The FEIS appears to still represent a reasonable estimate of cumulative effects; if anything, the overall thrust of the prospective ANGTS modifications would cause a lesser degree of total cumulative effect.
- 3/ Appendix D has been deleted at the request of EPA since there is substantial uncertainty on the process and design of a gas conditioning facility at Prudhoe Bay needed to provide LNG quality natural gas to TAGS. Prior NEPA evaluations and an expired PSD analysis may not be transferrable or may not be appropriate for TAGS (EPA 1988a).

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TRANS-ALASKA GAS SYSTEM DRAFT ENVIRONMENTAL IMPACT STATEMENT

Prudhoe Bay



TRANS-ALASKA
GAS SYSTEM

Fairbanks

Anchorage

Valdez

CANADA
ALASKA

U.S. DEPARTMENT OF INTERIOR
BUREAU OF LAND MANAGEMENT



U.S. ARMY CORPS OF ENGINEERS
ALASKA DISTRICT



SEPTEMBER 1987

A P P E N D I X C

EVALUATION OF ALTERNATIVE PIPELINE
ROUTES AND LNG PLANT/MARINE
TERMINAL LOCATIONS TO THE TRANS-ALASKA
GAS SYSTEM PROPOSAL FOR SOUTHCENTRAL ALASKA

EVALUATION OF ALTERNATIVE PIPELINE ROUTES AND
LNG PLANT/MARINE TERMINAL LOCATIONS TO THE
TRANS-ALASKA GAS SYSTEM PROPOSAL FOR SOUTHCENTRAL ALASKA

I Introduction

The following evaluation of alternatives was conducted during the preparation of this Draft Environmental Impact Statement to evaluate the range of project alternatives within the southcentral area of Alaska, namely the Cook Inlet and Prince William Sound areas. It includes several route options to tidewater to supply the export market. Transport of Prudhoe Bay natural gas to Lower 48 markets has been addressed in previous proposed projects and will not be addressed here. Information on other optional proposals to transport Prudhoe Bay natural gas to the domestic markets is presented in EIS's published for three projects: Alaskan Arctic Pipeline Company proposal (BLM 1976), El Paso Alaska Company proposal (FPC 1976a), and Northwest Alaskan Pipeline Company (formerly ALCAN) proposal (FPC 1976b). This study assumes that the authorized but unconstructed Alaska Natural Gas Transportation System (ANGTS) project will be built, and this does not constitute an alternative to the proposed TAGS project.

This DEIS presents information on a broad range of alternatives to the proposed project, to describe the process through which alternatives were evaluated, and to present the conclusions of the evaluation. The discussion of these initial alternatives to implement the proposed project includes:

- Comparison of environmental and engineering of feasible combined routes and sites to the proposed TAGS project that were evaluated but eliminated from further consideration
- II Regional Overview of Alternatives Considered
- A. Introduction
- The feasibility of an alternative to the basic economic and physical requirements of the project must be evaluated in the context of existing environmental, social, and safety objectives. The basic physical requirements are that a pipeline from Prudhoe Bay to a coastal port be constructable and that the coastal location be suitable for construction and operation of the LNG plant and marine terminal. Finally, the plan must provide for safe and economic transportation of LNG with minimum downtime.
- The coastal region of Alaska was subdivided into three general regions-- western, southcentral, and southeastern. The northernmost coastal areas were not considered due to the well-documented extreme climatic conditions and sea ice that covers the entire area with the opening of nearshore leads only during summer season, normally not more than eight to 12 weeks.
- General criteria were used for this initial screening to evaluate characteristics of alternative regional pipeline routes and coastal regions. The general criterion was that the system had to be capable of transporting natural gas from Prudhoe Bay to tidewater year-round for export to markets in Asian Pacific Rim markets.
- Consideration of alternative transportation modes and systems
 - Consideration of statewide alternative pipeline routes and coastal terminal sites
 - Evaluation of specific alternative regional pipeline routes and sites for LNG facilities/terminals

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Alternatives in previous EIS's, including TAPS and the ANGST (El Paso, Northwest Alaskan, and Alaskan Arctic proposals) were reviewed. Those studies evaluated various Alaska pipeline routes and terminus sites, including Norton Sound, Bristol Bay, Cook Inlet, Prince William Sound, Yakutat Bay, and Lynn Canal/Chatham Strait.

B. General Criteria

The following list of general criteria focuses primarily on the ability of tidewater ports to support a year-round marine export operation and the feasibility of constructing and operating a pipeline to ports in that region.

- Continuous operation of marine terminal
- Ability of the marine terminal facility to operate on a year-round basis. Natural gas flow through the pipeline would be continuous and storage capacity would be limited.
- Minimize length of pipeline - The length of the pipeline generally determines the amount of environmental disturbance, compressor stations, and energy use for the system. A longer route would be justifiable to avoid sensitive areas.
- Maximize the use of existing utility/transportation corridors - Restricts the environmental disturbances to areas previously affected by a linear project. A new utility corridor would open an undisturbed area to other development with environmental impacts beyond that associated with a single project. More information is available on existing corridors, which would facilitate planning and mitigation of specific impacts.
- Maximize use of existing infrastructure
- Locate project facilities to maximize use of existing roadways, workpads, construction camps, material sites, airports, and other facilities. This reduces impact on new areas and reduces the requirements for foundation materials.
- Avoidance of environmentally sensitive areas - Generally avoid sensitive environmental areas such as conservation system units, state and local parks, state refuges, wetlands, roadless areas, and areas having high subsistence value.
- Avoid permitting delays - Avoid areas that would require a lengthy approval process or schedule delays, such as in conservation system units.

C. Evaluation of Statewide Route Options

1. Introduction

The following subsections present the major reasons for elimination of these regional pipeline routes to tidewater.

These criteria and the evaluations conducted by the FPC in the FEIS (1976a) for the El Paso project (pp. II-376 through II-449) and the DOI in the FEIS (1976) for the Alaskan Arctic project (Alternative Volume pp. 623 to 684) are adopted by reference and were used to evaluate the

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routes to various coastal regions as summarized in Figure 11-1.

2. Western Alaska

Norton Sound

- Heavily massed sea-ice conditions from October through July which would prevent reliable year-round operations.
- Major ice floes, sea ice, and fog during remainder of year would affect safety of tanker operations.
- Adverse impact to subsistence and the Native way of life.
- Significant disturbance to previously unaffected areas, including the Kobuk Valley National Park, Cape Krusenstern National Monument, Chukchi-Imuruk National Wildlife Reserve, Koyukuk National Wildlife Refuge, and the Selawik National Wildlife Refuge. The route would also traverse the Gates of the Arctic National Park and Preserve.
- Minimal use of existing utility/transportation corridors or existing infrastructure.

Bristol Bay

- Seasonally very heavy weather which could delay tanker traffic through the Aleutian chain.
- Length of the pipeline would be approximately 150 miles longer with three additional compressor stations.
- Significant disturbance to major unimproved areas on the southern

portion of the route, including the crossing of Denali and Lake Clark national parks and preserves.

- Minimal use of existing utility/transportation corridor or existing infrastructure for the approximately 300 miles of route.

3. Southeastern Alaska

Lynn Canal/Chatham Strait

- Route would add an additional 210 miles of pipeline and three to four additional compressor stations.
- Route would traverse more than 200 miles in the Yukon Territory in Canada crossing the Kluane National Park and affecting the Kluane Territorial Game Sanctuary.
- The route through Canada would require an international treaty.
- Pipeline would cross the Tetlin National Wildlife Refuge.
- LNG tanker would be mixed into an area of confined navigation and increasing tourism and commercial vessel traffic.

Yakutat Bay

- Route would add approximately 200 miles of pipeline and three to four additional compressor stations.
- Route would traverse more than 200 miles in the Yukon Territory crossing the Kluane National Park and affecting the Kluane Territorial Game Sanctuary.

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Figure II-1 Summary of Criteria Evaluation for
Statewide Route Options

	Western Alaska		Southcentral			
	Norton Sound	Bristol Bay	Cook Inlet	Prince William Sound	Yakutat Bay	Lynn Canal/Chatham Strait
Continuous Operation of a Marine Terminal	●	⊗	○	○	⊗	○
Minimize Length of Pipeline	○	●	○	○	●	●
Maximize Use of Existing Utility/Transportation Corridor	●	●	○	○	●	○
Maximize Use of Existing Infrastructure	●	●	○	○	⊗	○
Avoidance of Environmentally Sensitive Area	●	●	⊗	○	●	●
Avoid Permitting Delays	●	●	●	○	●	●

○ = Favorable
⊗ = Moderately Favorable
⊙ = Unfavorable
● = Highly Unfavorable

- Pipeline would cross Tetlin National Wildlife Refuge.
- Significant disturbance of Tongass National Forest and the Wrangell-Saint Elias National Park and Preserve.

- Constructability concerns for the crossing of the Saint Elias Mountains.
- Minimal use of existing utility/transportation or existing infrastructure for the final 100 miles of alignment.

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3. Southcentral Alaska

Initial screening for general criteria (Section 1.9.3.2) as well as evaluations of both the El Paso Alaska Project (FPC 1976a) and Alaskan Arctic Project (BLM 1976) determined that there were several feasible pipeline routes to southcentral Alaska, including Prince William Sound and Cook Inlet, that warranted further consideration.

4. Summary

Based on evaluation criteria of feasibility of constructing and operating a pipeline and of suitability of tidewater ports for year-round operation of a marine terminal, alternatives outside western and southeastern Alaska were eliminated. Only routes to southcentral Alaska warranted further consideration.

III Evaluation of Alternatives to the Proposed Project

A. Introduction

This section addresses regional pipeline route alternatives to Cook Inlet and alternative LNG sites in both the Prince William Sound and Cook Inlet areas. In the Cook Inlet region three alternatives were identified for LNG plant and marine terminal sites: Harriet Point, Boulder Point, and Cape Starichkof (Figure III-1).

The proposed project's LNG plant site and marine terminal are located at Anderson Bay in Port Valdez. Two sites at Port Valdez (Gold Creek and Robe Lake) and one in eastern Prince William Sound (Gravina) were considered as alternatives to Anderson Bay

(Figure III-2). During the scoping process, a fourth, known as the ALPETCO site, was identified but was subsequently removed from consideration because the site has been leased for development of a petroleum refinery.

Additional LNG plant sites and marine terminal locations were evaluated for both Prince William Sound and Cook Inlet in the FEIS for the El Paso project (FPC 1976a) in the discussion of "Alternatives to the Proposed Action" (pp. II-376 to II-520) and in the EIS for the Western LNG Project (FERC 1978) in the discussion of "Alternatives to the Proposed Action" (pp. 233 to 296). Several sites were determined to be acceptable for a smaller project with fewer LNG tanker calls per year. They were eliminated as unacceptable for the proposed TAGS project because it requires almost daily LNG tanker calls.

Two extensive environmental studies have been conducted through the area of the Cook Inlet alternative alignments--the Anchorage-Fairbanks Transmission Intertie, Environment Assessment Report (1982) and the studies related to the Susitna Basin Hydroelectric Project (1984).

B. Alternative Pipeline Route and LNG Facility Sites

1. Alternative Cook Inlet Regional Pipeline Route

Both the proposed TAGS pipeline alignment and the alternative Cook Inlet regional route are the same for the first 395 miles, from Prudhoe Bay to the vicinity of Livengood. Therefore, the comparative

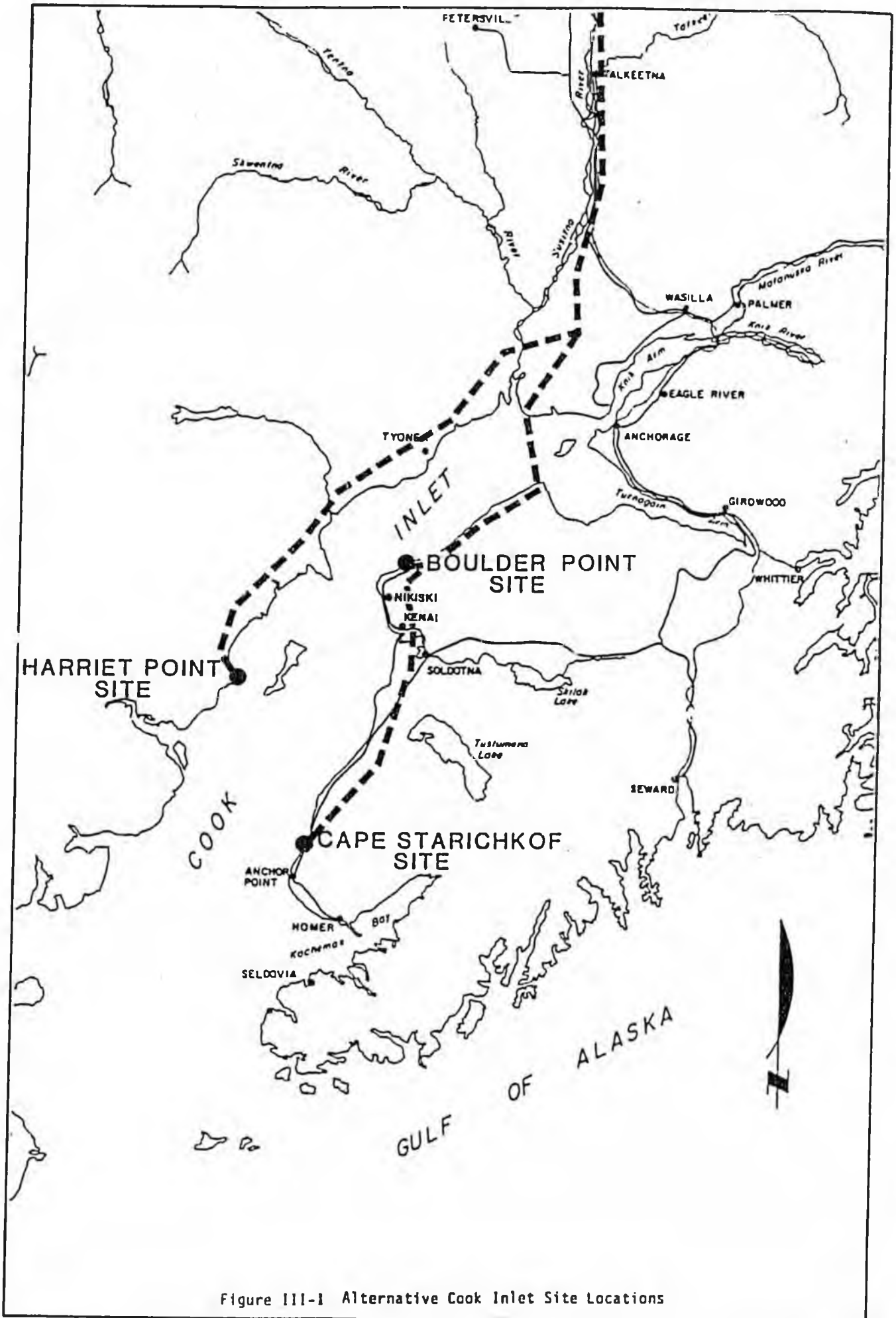


Figure III-1 Alternative Cook Inlet Site Locations

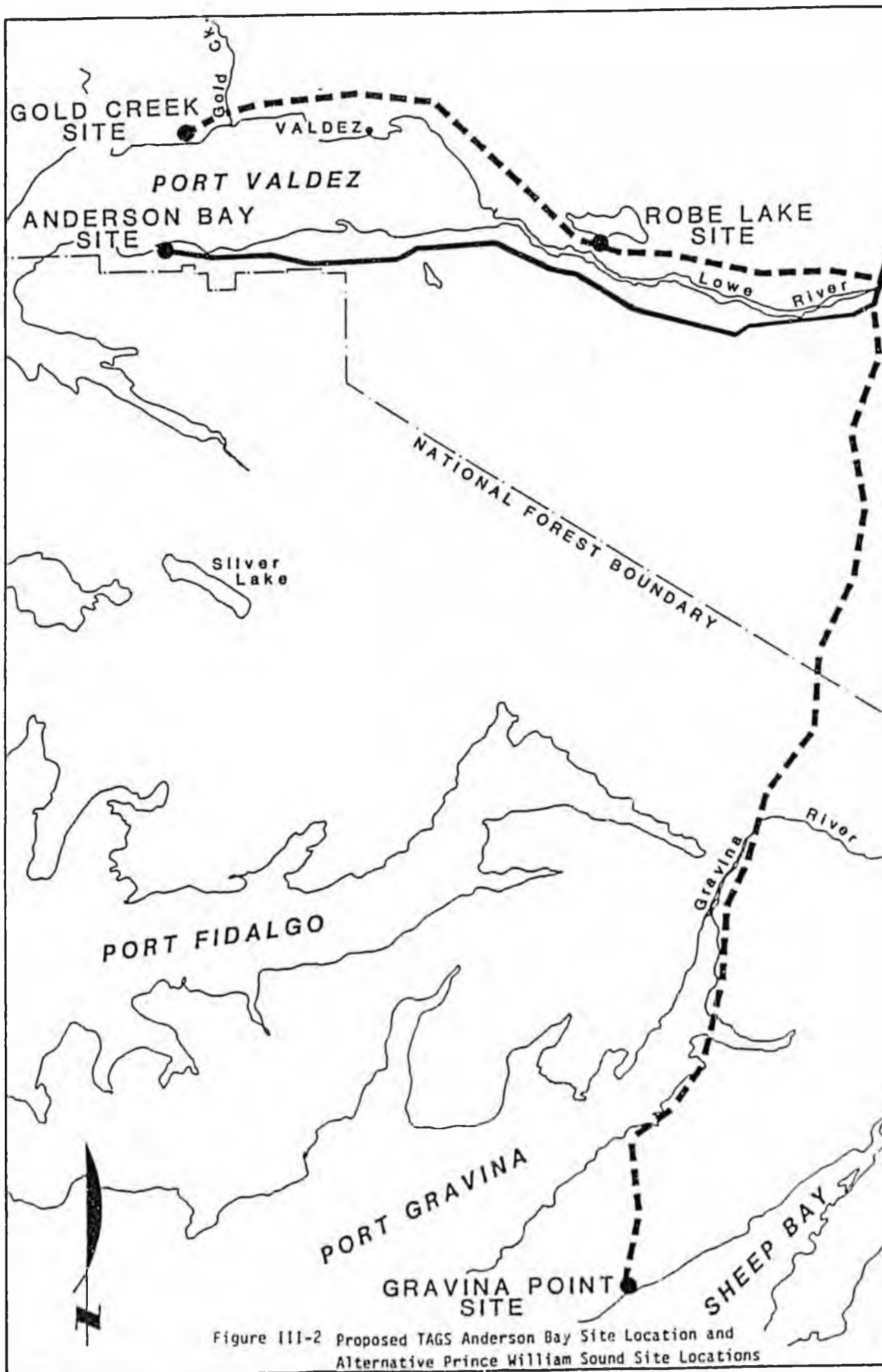


Figure III-2 Proposed TAGS Anderson Bay Site Location and Alternative Prince William Sound Site Locations

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discussion in this alternative section considers only the differences from Livengood to Prince William Sound and Cook Inlet as shown in Alignment Map 3 at the end of the document.

From Livengood the alternative Cook Inlet regional pipeline route would diverge from the proposed pipeline route. It proceeds southward, following along the eastern margin of Minto Flats before crossing the Minto Fault. The route continues southward through Nenana with an elevated crossing at the Tanana River. From Nenana the route follows the Alaska Railroad, with an elevated crossing of the Nenana River near Lialo. The route then generally follows the Parks Highway to a point just south of Healy, where it parallels the Alaska Railroad for several miles before again joining the Parks Highway, traversing a portion of the Denali National Park and Preserve and using two elevated crossings of the Nenana River.

The route continues south, paralleling the highway just inside the park boundary before leaving the park near McKinley Village. As the route proceeds south, it again crosses the Nenana River with an elevated crossing. It passes through Cantwell and Summit and enters into Broad pass. In this area the route crosses the McKinley strand of the Denali Fault system, also thought to be active.

Several route options to avoid Denali National Park and Preserve were evaluated and discarded because of engineering constraints due to the very rough terrain and potentially severe environmental impacts.

In the Nenana River Valley between Healy and McKinley Village, a pipeline route would involve crossing Denali National Park and Preserve along the existing cleared right-of-way for the Parks Highway. This route is feasible and constructable without long-term operation or maintenance difficulties. An optional route to avoid Denali National Park and Preserve along the east side of the Nenana River was given preliminary evaluation and dropped because

of substantial environmental concern and difficult pipeline construction, operation and maintenance issues. Another option along the existing Anchorage-Fairbanks Intertie powerline also was evaluated. This option completely avoids the immediate area of Denali National Park and Preserve, but involves an area where the intertie was constructed by helicopter because of numerous deep ravines on steep slopes and because of environmental concerns associated with Denali National Park and Preserve. Construction, operation and maintenance of a pipeline in this area requires all weather access, which in turn creates significant environmental concerns. Accordingly, this intertie option was dropped from further consideration.

Once through Broad Pass the route traverses the upper Chulitna River valley, requiring an aerial crossing at Hurricane Gulch as it continues to follow the Parks Highway through Denali State Park and into the Susitna River valley south of Talkeetna. Following the highway south, this pipeline route crosses the Susitna River near Sunshine and Montana creeks in an elevated mode. Between Kashwitna and Willow the pipeline route departs the highway right-of-way, proceeding south around Nancy Lake State Recreation area toward Flat Horn Lake near the mouth of the Susitna River and the Susitna Flats State Game Refuge.

Two alternate routes could be followed from this point. The first proceeds west to Harriet Point along the western side of Cook Inlet. The second goes due south with a submarine pipeline crossing of the Cook Inlet and along the western shore of the Kenai Peninsula to Boulder Point or Cape Starfchkof.

C. LNG Sites for the Cook Inlet Pipeline Alternative

1. Harriet Point

To reach Harriet Point the alternative pipeline route extends from the north side

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of Cook Inlet and proceed southwesterly, crossing the Susitna River through the Susitna Flats State Game Refuge and following a more southerly course along the Beluga Power Plant transmission line and across the Beluga River. The route along the northwest shore of Cook Inlet lies primarily in an extensive coastal plain that borders a low-lying, marshy coastline, extending south to Harriet Point. Extensive muddy tidal flats of impermeable fine-grained sediments are found along the coast (ESL 1980a).

The Harriet Point site is located on the west side of Cook Inlet approximately 60 miles south of the village of Tyonek, as shown in Figure III-1. The closest development is an oil pipeline terminal and marine port facility at Drift River, 15 miles north. There is no nearby community development. The site proximity to Mount Saint Augustine and Mount Redoubt volcanoes and poor access constrain development of any kind in the area.

Harriet Point is surrounded by Cook Inlet. Relief generally is low, but some grading would be required. Soils are reported to be suitable for development. Bedrock is probably more than several hundred feet deep, mantled with glacial till, outwash, and alluvial silt (OIW 1975). Site terrain and topography would allow the LNG plant to be located near the marine terminal. There are no active faults nearby.

Distance from shore to the 60-foot isobath would be more than 4,500 feet. Coastal bluffs border the point. Muddy tidal flats of impermeable, fine-grained sediments are found along the shorelines. A number of rock promontories along the northeast side of Harriet Point and some shoaling exist in the inlet between the Point and Kalgin Island.

Tanker maneuverability would probably be impeded by currents and inherently poor tanker berth configurations possible at this site. Anchorage would be available (OIW 1975). The port site might offer some

natural protection. Wave, tide, and current conditions are acceptable, though tidal currents are quite strong. The velocity of the current between Harriet Point and Kalgin Island during a large tidal exchange has been estimated at more than 8 knots. Tsunamis also are a possibility (DOI 1972).

Ice and icing conditions are not well defined. Generally, prevailing winds force ice to the west side of Cook Inlet. Ice conditions at Drift River are reportedly more hazardous than at Nikiski. During 1972 pack ice from 6 to 18 inches thick extended south of Harriet Point as far as Chiskik Island (OIW 1975). Fog can also hamper marine operations.

2. Boulder Point

The Boulder Point alternative pipeline route would require a 15-mile Cook Inlet crossing to Point Possession on the Kenai Peninsula. From the Point Possession area the pipeline would parallel an existing gasoline pipeline right-of-way southwesterly for about 50 miles along the coast, terminating at Boulder Point just north of Nikiski, one of the Cook Inlet sites previously considered for location of the LNG plant and marine terminal, as shown in Figure III-1. This route avoids the Kenai National Moose Refuge but traverses the Susitna Flats State Wildlife Refuge for about 16 miles and the Captain Cook State Recreation Area for about 1.5 miles.

The Boulder Point site is located on the east side of Cook Inlet on the Kenai Peninsula approximately 17 road miles north of the city of Kenai and 6 miles north of an existing petroleum, petrochemical, refining, and LNG industrial complex at Nikiski. Boulder Point is located northeast of East Forelands, a designated reserve for navigational purposes.

Commercial and residential development is not common, particularly near the site. Good infrastructure is in place for supporting construction and operations, but land availability could be a problem.

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Possible conflicts with nearby shipping and docking operations at Nikiski might exist (DOI 1976).

The north Kenai Road passes within 1.5 miles of the Boulder Point site, ending at Captain Cook State Recreation Area. The Nikishka airstrip is approximately 1.5 miles inland from Boulder Point; a regional airport at Kenai approximately 14 air miles south.

Boulder Point has fair proximity to deep water, coastal bluffs are of moderate height, and the shoreline is stable. It is the northernmost feasible industrial site with deepwater marine access on the east side of Cook Inlet and the closest site to Anchorage (ESL 1980b).

Soils are suitable for development (loess over glacial outwash), and terrain above the cliffs is gently sloping to hilly (SCS 1962). Bedrock foundation may be lacking. Faults, volcanoes, and glacial floods should not be a problem. The water table is low, and liquefaction potential is low (OIW 1975; SCS 1962).

Site terrain and topography would allow construction of the LNG plant a safe distance from the marine terminal. Distance from the 60-foot isobath to shore is approximately 4,000 feet. Earlier studies (OIW 1975) indicated acceptable anchoring depths less than 200 feet and an adequate maneuvering area (2,000 feet minimum). Navigational aids are present, and the state requires a licensed coastal pilot for vessels moving up Cook Inlet above Kachemak Bay.

A number of prominent rock outcrops occur along the shoreline of Boulder Point, particularly on the north side. NOAA National Ocean Survey charts warn of numerous uncharted and dangerous submerged boulders in the eastern portion of Cook Inlet. Some shoaling also exists along the east side of the Inlet. Projected dangers from tsunamis are minimal due primarily to low predicted wave height, historical resistance of central Cook Inlet to earthquake-caused tsunamis, and existence of

the Alaska Regional Tsunami Warning System (OIW 1975).

Floating ice and icing conditions can be severe problems in this area, and extreme tidal exchanges are generally strong (BLM 1976; OIW 1975). Ice in Cook Inlet would be an inherent winter hazard, requiring ice strengthening of LNG tankers, advance scheduling, and two berths. Six out of 13 accidents recorded in Cook Inlet during a four-year study period (1971-1974) were due to ice. The ice problem is most severe in the upper inlet, particularly north of the forelands, a constriction shown in Figure III-1. LNG shipments to/from the existing Nikiski facility have been delayed due to ice or strong winds, though only for short periods of time (OIW 1975). Increased LNG tanker traffic due to the TAGS project might, however, increase the incidence of such delays.

3. Cape Starichkof

Cape Starichkof is located approximately 64 miles south of Boulder Point. The route from near Boulder Point proceeds southwest with two crossings of the Kenai National Wildlife Refuge. It then continues almost due south, again crossing a portion of the Kenai National Wildlife Refuge and the Kenai River Management Area.

The Cape Starichkof site is located 13 miles south of Ninilchik, 25 miles northwest of Homer, and 7.5 miles north of Anchor Point, as shown in Figure III-1.

The primary industry in this part of Cook Inlet is fishing. Substantial residential development has occurred in the immediate area, and both developed and undeveloped recreational lands are in the vicinity. A communication tower is just east of the proposed site. The Sterling Highway would run either adjacent to or through the LNG plant site on the east; a school land patent borders the plant site. An airstrip is located at Anchor Point, and a controlled airport is located in Homer.

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Some industrial and commercial infrastructure would be available at Anchor Point and Homer (OIW 1975).

Location of terminal facilities would be in an area where there is the potential to affect a substantial portion of the salmon migrating along the eastern shore of Cook Inlet.

Cape Starichkof is the only location between Kenai and Homer with nearshore deep water and suitable uplands for industrial development and beach access. To the north and south of the cape, two upland sites have been identified and designated for marine-related industry (ESL 1980b); however, neither of these is appropriate for the LNG plant site. The most suitable site lies in an area with high recreational use and spectacular views of Cook Inlet with a backdrop of snowy mountains.

Sufficient land at suitable elevations would be available, though there might be some jurisdictional constraints. Much of the site is nearly level, though some grading would be required with consideration for surrounding wetlands. Soil may be marginal for foundations (ESL 1980c). Soil borings taken 1 mile south and 5 miles north of the site showed silt in the top 3 to 5 feet overlying 40 to 50 feet of dense gravelly material. Subbituminous coal seams may occur below 50 feet. The water table is high, around 10 feet below ground surface (OIW 1975). Drainage is usually good. Surface waters are generally confined to streams and marshes; a few shallow lakes are present.

Geologic hazards are few. There are no nearby faults or glaciers. Coastal bluffs, generally less than 300 feet high, are found along the shoreline, and they are susceptible to landslides and slumps (USGS

1976; OIW 1975; FERC 1978). Volcanic activity in lower Cook Inlet could disrupt facility operation. Liquefaction potential is not well defined. Gravelly soil is not typically susceptible to liquefaction, but the high water table may affect this susceptibility (OIW 1975). Cape Starichkof subsided 0.5 feet during the 1964 earthquake.

Moorage and anchorage areas would be sufficient for the marine terminal. Tidal currents and wave heights are reported to be relatively moderate compared to those near the Boulder Point site farther north. Average currents at Cape Starichkof are 2.3 knots during floodtide; maximum is 3.5 knots. Maximum wave heights of 10 to 12 feet generally occur several times a year (FERC 1978). Swells occur but apparently result in few navigation problems. Tsunami risk is somewhat greater than at Boulder Point but still considered moderate. LNG plant facilities would be located above the historical high-flood water mark (OIW 1975).

Distance from the 60-foot isobath to shore is approximately 4,200 feet (FERC 1978). Although bathymetry might be adequate for navigation and offshore anchoring (60- to 200-foot depth), significant longshore drift and shoaling are found in the area. Extensive dredging would be required to remove local shallow shoal areas (OIW 1975; DOI 1976; ESL 1980c).

Large-scale mobile bedforms are reported along the bottom of lower Cook Inlet off the coast of Cape Starichkof. Migration of bedforms can affect offshore structures and navigation (NOAA 1979).

The marine terminal would not be exposed to the ice and icing conditions present above the East Forelands owing to its location in lower Cook Inlet. Cape Starichkof is generally ice free, though

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pack ice has developed as far south as Anchor Point in severe winters (OIW 1975).

D. Alternative LNG Sites in Prince William Sound

1. Gold Creek Site

To reach the Gold Creek site the pipeline would be routed to deviate from the proposed alignment and pass just northeast of the city of Valdez, as shown in Figure III-2. The Gold Creek site lies on the northwest shore of Port Valdez, approximately 4.5 miles west of the city of Valdez, 2 miles east of Shoup Bay, and 4.5 miles across Port Valdez from the TAPS oil terminal. The Valdez airport lies about 8 miles east of the site.

The site is comprised of a bedrock ridge and a bench mantled with glacial till. Above elevations of 500 feet, slopes are extremely steep. Sufficient space could be developed for an LNG plant by excavation of terraces in the hillside and grading the bedrock ridge. Most of the site lies between the 300- and 500-foot elevation.

Drainage varies from good to poor. An unnamed stream cuts through the site in an east-west direction. Another part of the area is flat and marshy. There are no known active faults in the vicinity.

The eastern face of the site is bound by a steep rocky shoreline. To the south the coastline is less steep and has a coarse, rocky substrate. In the vicinity of the marine terminal the 60-foot isobath lies approximately 500 feet offshore. Navigation charts do not show any rock hazards along the shoreline. Offshore anchorage is available, and there is ample area for maneuvering vessels.

General wind, wave, tide, and current data were not specifically extracted for this site, though detailed data are available from several sources. Seiche run-up during the 1964 earthquake was 124 feet near Gold Creek.

2. Robe Lake Site

The Robe Lake site is located along the south shore of the lake, approximately 6.5 miles southeast of Valdez, 4 miles southeast of the Valdez airport, and 4.5 miles east of the TAPS terminal as shown in Figure III-2. The site is bound on the south by the Richardson Highway.

The area is comprised of an east-west bedrock ridge mantled with till. An LNG plant would be developed on the site by excavating and grading the ridgetop. This would reduce the ridge from a natural elevation of 400 feet to approximately 200 feet. Bedrock foundations would be available for critical LNG plant facilities.

All Prince William Sound and Cook Inlet sites are in a Uniform Building Code Zone 4 seismic (High-Seismic Zone) area. Recent (postglaciation in bedrock) displacement has not been observed or documented anywhere in the Valdez area, even though many lineaments and old inactive faults exist. Five areas on or adjacent to the site have been identified as avalanche zones; four areas have potential for mass wasting (Valdez CDD 1986).

Robe Lake is a valuable local resource used for recreational boating, swimming, fishing, and hunting. It is also used as a floatplane base. Several homes are scattered around the lake; a 150-home subdivision is just to the west. A state land disposal for residential use is located on the east side of the lake.

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The LNG loading lines would leave the site along a westerly route, cut south across the Lowe River floodplain, and continue west to the marine terminal site near Solomon Gulch Creek. The total length of the LNG loading line route would be approximately 5 miles.

3. Gravina Site

To reach the Gravina site the pipeline route would deviate from the proposed TAGS pipeline route just south of Keystone Canyon through a 2.1-mile tunnel from Browns Creek to Dead Creek and then follow Dead Creek along the Gravina shoreline. A marine crossing at Beartrap Bay and Comfort Cove would be necessary prior to reaching the Gravina site near Sheep Bay, as shown in Figure III-2. The total length of this route would be approximately 807 miles. The route traverses rugged, heavily glaciated ridges of the Chugach Mountains.

The majority of this route and the LNG facility site are within the Chugach National Forest. There is little road access. The FPC's El Paso EIS (1976a) and the USFS' Chugach National Forest EIS (1984) are incorporated by reference for a description of natural resources along the pipeline corridor to Gravina.

The Gravina site is located on the southeastern shore of Gravina Peninsula approximately 35 miles south of Valdez, 14 miles northwest of Cordova, and 4 miles northeast of Gravina Point. There is no nearby community development or infrastructure.

The closest communities are Cordova and Valdez, both accessible to the site only by air or sea. Cordova is primarily a fishing community with limited industrial and commercial support and access is by air or sea. Valdez is also an important fishing

and recreation community that has been industrialized to some extent by the TAPS terminal development. Valdez is accessible to the rest of the state by air, sea, and the road system.

The Gravina site has a southeasterly exposure to Orca Bay, Sheep Bay, and Prince William Sound. The site is on a sloping terrace with low and rolling topography and occasional irregular ridges. Elevation is about 500 feet. North of the site, the terrain rises steeply to 1,100-foot peaks 4,000 feet from shore.

Bedrock on the terrace is believed to consist of pointed and fractured slate and is generally less than 30 feet below the surface with some outcropping. Soil cover on the terrace consists of organic silts underlain with gravel and peat. Steeper slopes are generally covered with 5 to 10 feet of organic material. Glaciated valleys adjacent to the site may have granular soils 20 feet thick over silty glacial till (FPC 1976a).

Drainage on steeper slopes is good. Flatter slopes and low-lying areas with organic soils are poorly drained, resulting in ponding.

The Gravina site is in a highly seismic area, though no active fault zones are known in the immediate vicinity.

The shoreline at Gravina is characterized by bluffs ranging from 50 to 100 feet high, oriented in a northeasterly direction (FPC 1976a). The 60-foot isobath lies approximately 1,300 feet from shore (FPC 1976a).

Orca Bay at the marine terminal site is approximately 6 miles wide, allowing ample maneuvering room. Waters in the immediate vicinity range from 50 to 300 feet deep, and anchorage is considered adequate. No underwater obstructions are noted on navigation charts. The entrance to Sheep

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Bay is about 4 miles wide, and water depth averages less than 60 feet. There are several small islands and shoal areas. Tidal and wind drift currents present no problem. Wave height could be up to 24.5 feet at the marine terminal site. Locally generated tsunami wave height estimates range from 10 to 16 feet/6 min. Maximum run-up height is estimated to be between 30 to 40 feet above mean sea level.

Ice and icing problems would be minimal. Prince William Sound is essentially ice free except for icebergs from nearby glaciers. Some sheet ice has been reported, probably the result of freshwater inflow at the head of various bays. Some shore ice could develop but not to significant levels. Calving by Columbia Glacier would probably not be a factor since major icebergs are tracked for notice to shipping traffic.

Navigation might be affected because, geographically the Gravina site tanker route would not be in the Valdez vessel traffic service. Periods of reduced visibility (0.5 miles) occur primarily at night, especially during summer.

IV System Components for the Alternatives

The basic project components for the proposed TAGS project and the alternatives, discussed in Section 2 of the DEIS, would be similar. The pipeline route from Prudhoe Bay to near Livengood for the proposed project and all alternatives considered would be the same. Likewise, the proposed project's approach to road crossings, elevated and below-ground river and stream crossings, fault crossings, and other basic construction techniques would be the same for all alternatives.

The major differences in construction would be for those conditions specific to the Cook Inlet alternative route that would require different construction techniques, such as the subsea pipeline under Cook Inlet, the approach to the pinch point near Denali National Park and Preserve, and the major access roads required for access to the compressor stations located in Minto and Susitna flats. To reach the Gravina site in eastern Prince William Sound, a 2.1-mile tunnel and 2 miles of subsea pipeline would be required.

Table IV-1 summarizes the major facility components that would be required for the alternatives when compared to the proposed project.

A. Mainline Pipeline and Compressor Stations

With the exception of the routes to Harriet Point and Cape Starichkof, the proposed project and the other alternatives would require construction of approximately 800 miles of pipeline and 10 compressor stations. The pipeline route to Harriet Point and Cape Starichkof would each require more than 800 miles of pipeline and an additional compressor station.

B. Elevated River Crossings

The Cook Inlet alternative would require six elevated crossings at the Yukon, Tanana, and Nenana (two crossings) rivers and at Hurricane Gulch and Montana Creek. These crossing techniques are discussed in the DEIS in Subsection 2.3.4 for the Yukon River and Subsection 2.3.3 for the remaining river crossings and are shown in Figures 2.3.3-2 and 2.3.4-4.

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Table VI-1 Summary of Major Facility Components for the
Proposed Project and Alternatives

	Prince William Sound				Cook Inlet		
	Proposed Project	Alternatives			Alternatives		
	Anderson Bay	Gravina	Gold Creek	Robe Lake	Harriet Point	Boulder Point	Cape Starichkof
Pipeline to LNG Site (miles)	797	807	797	783	826	791	856
Compressor Station	10	10	10	10	11	10	11
Elevated River Crossings	4	4	4	4	6	6	6
Subsea Pipeline (miles)	None	2	None	None	None	15	15
Length of Loading Line (miles)	<1	<1	<1	5	>1	>1	>1
Ferry Loading	yes	no	no	no	yes	no	no
Construction Camp at LNG Plant/Terminal Site	yes	yes	yes	yes	yes	yes	yes

C. Subsea Pipeline

A pipeline to the two sites on the Kenai Peninsula for the Cook Inlet alternative would require a 15-mile subsea crossing beneath Cook Inlet. The route to Gravina, an alternative in the Prince William Sound area, would require subsea crossings of Beartrap Bay and Comfort Cove for a length of between 0.5 and 2 miles, respectively.

Construction of the Cook Inlet subsea pipeline crossings would use a large pipeline lay barge capable of handling the concrete-coated, 36-inch diameter pipe. Welding of pipe joints and completion of the coating process at the joints would be

accomplished on the lay barge, and completed sections would be lowered to the sea floor. The pipe would then be buried using a jet sled equipped with high-capacity airlift pumps. Provisions for excavating and removing occasional boulder size material from the pipe alignment and trench would be incorporated in the construction plan.

Due to the extreme tidal fluctuations and currents found in Cook Inlet, a multipoint anchoring system would be required to hold the lay barge in position. The presence of the lay barge and its multipoint anchor system would result in the need for a traffic control system for vessels bound to and from the Port of

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Anchorage during the construction phase. Additionally, pipe burial depth should be sufficiently deep to provide adequate protection from anchor dragging and protection from scour.

D. Loading Lines

All three of the Cook Inlet area alternative locations would require a loading line greater than 1 mile in length from the LNG storage tanks to the loading berth as described in Subsection 2.5 of the DEIS. The cryogenic loading lines between the LNG storage tanks and the marine terminal would be less than a mile for the proposed Anderson Bay site and the Gravina and Gold Creek alternative sites in the Prince William Sound area. The Robe Creek alternative site, also in Prince William Sound, would require a cryogenic loading line 5 miles long.

E. Ferry Landings

A ferry landing would be required at the proposed site at Anderson Bay since there would be no road access. The Harriet Point alternative on the western side of Cook Inlet would also require a ferry landing due to the lack of roads in the area, as described in Subsections 2.5 and 2.6. of the DEIS

F. Temporary Construction Camps at LNG Plant Site and Marine Terminal

The lack of road access to the proposed Anderson Bay Site would mean a 1,700-bed temporary camp since no workers could commute. The remoteness of both the alternative Gravina and Harriet Point site would also require a temporary camp of about the same size as described in Subsection 2.3.1 of the DEIS. Although Gold Creek,

Robe Lake, Boulder Point, and Cape Starichkof are reasonably accessible to existing infrastructure by roadways, each site would probably require a construction camp, though somewhat smaller than the remote sites.

V Project Evaluation Criteria

A. Introduction

The following set of evaluation criteria was developed to identify and evaluate environmentally acceptable and economically feasible routes to transport Prudhoe Bay natural gas to tidewater and on to Asian Pacific Rim markets. The criteria were separated by major project components--pipeline system, LNG plant site, and marine terminal--and reflect project design, construction, and operational requirements. The criteria are presented below, and their applicability and importance are described.

B. Pipeline

1. Minimize Length of Pipeline

Minimize pipeline length to reduce total area of environmental disturbance, land commitments, and resources used, including gravel and water resources. The pipeline length also has a direct relationship to construction and operational and maintenance costs, construction schedules, need for additional compressor stations, and fuel usage.

2. Maximize Use of Existing Infrastructure

Use of existing construction infrastructure (access roads, construction camps, airports, materials, and disposal

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sites) as well as transportation corridors and existing, developed residential and commercial facilities in cities and towns along the route reduces the need to develop such infrastructures for project needs and reduces resource requirements.

3. Maximize Use of Proven Construction Techniques

Maximum use of construction techniques which have been used in the Arctic or for projects in similar topography, terrain and soils, wetlands, and water crossings to minimize potential construction and operational problems and potential environmental impacts. Avoid extremes of topography, terrain, soils, and hydrologic conditions that require the use of new or innovative engineering techniques.

4. Maximize Opportunity for Parallel Construction Techniques Along Existing Facilities

Wherever possible, use facilities along existing pipelines, transmission lines, and roadways would maximize construction efficiency and minimize the level of environmental impacts.

5. Avoid Areas of Potential Geohazards

Avoid, if possible, areas of known or potential geohazards that could affect the integrity of the system or could cause environmental disturbance or unsafe conditions during either construction, operations, or maintenance. Potential geohazards include slope instability,

seismic fault lines, and areas subject to soil liquefaction and avalanches.

6. Minimize Potential Conflicts with Sensitive Environments

Minimize conflicts with sensitive environmental areas by generally avoiding proximity to those environments. To the maximum extent practicable, pipeline routes should avoid conservation system units such as national parks, preserves, and forests; endangered species feeding or breeding areas; and wetlands.

7. Maximize Compatibility with Current and Planned Land Use

Maximize land-use compatibility and avoid direct land-use conflicts in undeveloped areas, recreation areas, subsistence use areas, wildlife habitat, and residential areas.

8. Minimize the Number of Water Crossings

Pipeline route selection should reduce the number of river and stream crossings to minimize environmental impacts to fisheries, bank stability, and other potential effects especially in significant habitat areas for fish movement, spawning, overwintering, and rearing.

9. Avoid Permitting Delays

Avoid areas that would require a potentially protracted approval processes or unnecessary schedule delays, such as in conservation system units and designated state recreation or wildlife lands.

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10. Minimize Potential Threat to
National Security

Joint use of areas with facilities designated as important for national security should be evaluated for its direct bearing on the achievement of national security goals that depend on uninterrupted economic activity.

11. Maximize Availability of Gas to
Alaska Consumers (if feasible)

The location of the gas pipeline near the greatest number of users of natural gas provides at least potential future benefit of gas diversion to consumers along the route.

C. LNG Plant Site

1. Adequacy of Available Land

A minimum of 250 acres of suitable terrain for construction of facilities would be required along with an adequate buffer safety zone to ensure public safety and security of operations.

2. Avoid Areas with Poor Foundation
Characteristics

A foundation of bedrock or a dense glacial till with well-drained gravelly material that has a low potential for soil liquefaction during earthquakes and frost action would provide good foundation support for engineering integrity and safety of operation.

3. Avoid Areas with Faults

Avoid areas with active earthquake faults to ensure safety of operations and

integrity of facilities and to minimize extensive engineering design requirements.

4. Avoid Sites Potentially Exposed
to Seismic Sea Waves

The LNG plant should be sited so that facilities are located above the highest expected seismic sea wave run-up or with adequate elevation to prevent flooding.

5. Minimize Length of Pipeline to
Marine Terminal

Minimize the length of the cryogenic LNG pipeline from the storage tanks to the marine terminal site for engineering feasibility and operational safety. (Maximum distance is 2.5 miles.)

6. Maximize Use of Existing
Community Infrastructure

The LNG plant site should have reasonable access to existing community infrastructure to provide for construction and operational support, housing, adequate transportation, and public services.

7. Avoid Sensitive Environmental
Habitat

Site location should minimize impact to sensitive or unique environmental areas or wildlife habitat in vicinity of the site.

8. Public Safety Considerations

The LNG plant site should be sufficiently distant from residential areas, airports, or critical facilities to ensure adequate public safety in the event accident or LNG spill.

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9. Maximize Value-added Industrial Opportunities

The LNG plant should be located in an area where the commercial use of natural gas for value-added industrial offers the greatest potential for development.

10. Minimize Site Preparation Requirements

Avoid sites with topographic conditions that require extensive preconstruction site preparation and material requiring disposal.

D. Marine Terminal

1. Minimize Exposure to Extreme Oceanographic Conditions

The site should be located in an area protected from extreme winds, high tides, strong currents, sea ice, and exposure to waves from storms and seismic events.

2. Minimize Distance from Shore to 50-foot MLLW Depth

The distance from shore to the LNG tanker berthing area (60' MLLW depth) directly affects the length of cryogenic pipeline required from the LNG plant to the ship-loading terminal facility with engineering design, project safety, and cost considerations.

3. Maximize Suitability of Tanker Maneuvering and Anchorage Area

Area of marine terminal must have 50-foot water depth close to shore and an adequate navigation channel and turning basin to meet safety requirements (minimum 2,000-foot turning diameter) and suitable

anchorage area with water depths less than 200 feet.

4. Minimize Potential Hazards to Navigation

Optimum tanker approach channels should have a minimum width of 450 feet, minimum water depth of 50 to 60 feet, and require no sharp channels, turns, or obstructions to shipping. Ports of entry should have a well-defined vessel traffic control system.

5. Minimize Potential Problems Related to Soils and Geohazards

Potential seismic activity and marine subsoil conditions (shear strength, bedrock depth, liquefaction possibilities) must be factored into final site selection. Geohazard considerations include magnitude and probability of the occurrence of earthquake and seismic sea waves created by a subsurface slide.

6. Minimize Potential Threat to National Security

Minimize interaction with facilities designated as important for national security goals.

VI An Evaluation of Reasonable Range Alternatives to the Proposed Action

A. Introduction

This section presents the results of the application of evaluation criteria for the pipeline route, LNG plant site, and marine terminal criteria, listed in Section IV, for the proposed TAGS project and the project alternatives in the Prince William Sound and Cook Inlet regions. In

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Section VI.B summarizes important aspects of rating each alternative for each criterion and provides the rationale for the ratings listed in Figure VI-1. Section VI.C. includes an evaluation of each alternative with respect to the criteria established.

Results summarized in Figure VI-1 indicate the degree of favorability of the proposed project alternatives considered for each specific criterion under discussion. Categories are defined as follows.

Favorable - based on this criterion, the site/alignment offers no impediments to construction and operation of the proposed facility.

Moderately Favorable - the site/alignment has negative conditions that could be mitigated with a reasonable effort and expense within a reasonable time frame and with a high probability of success.

Unfavorable - the site/alignment has major negative conditions that could probably be mitigated but with unreasonably high expense, time frame, and/or uncertainty of success.

Highly Unfavorable - the site/alignment has major negative conditions that could not be adequately mitigated with a reasonable effort and expense, within a reasonable time frame, and/or with a high probability of success.

B. Evaluation of Pipeline Criteria

1. Minimize Length of Pipeline

The distance to Boulder Point is similar to the proposed action and is also favorable. The magnitude of additional

pipeline length for both Cape Starichkof and Harriet Point (of 59 to 29 miles, respectively), however, would require one more compressor station with attendant increases in costs for construction and operations and environmental impacts associated with the presence of the facility and would be rated unfavorable.

The total length of the pipeline right-of-way from Prudhoe to Anderson Bay would be 796.5 miles. With a maximum variance in pipeline length of only 14 miles from the proposed route, the Prince William Sound alternative alignments are not significantly different from each other or from the proposed route. In general, such a difference in length alone would not be expected to greatly affect cost, time of construction, or total area disturbed by the pipeline and would therefore be rated favorable. Gravina pipeline would be approximately 10 miles longer than that proposed for Anderson Bay and would rate moderately favorable.

2. Maximize Use of Existing Infrastructure

Along the Cook Inlet regional alignments, available infrastructure is variable and discontinuous. From Livengood through Minto Flats and again from north of Willow through the Susitna Flats, there would be no infrastructure to support construction. For the Harriet Point site, there would be little supporting infrastructure for the more than 100 miles of alignment from Willow beyond the minimal amount associated with the power lines to the Chugach Electric Association Beluga generating facility and the Susitna to Tyonek road system. More than 100 miles of workpad and access roads would be required to construct the pipeline segment between

Figure VI-1 Criteria Evaluation Matrix for Proposed TAGS Project and Alternative Evaluations

	Prince William Sound				Cook Inlet		
	Proposed Project to:	Alternatives			Alternatives		
	Anderson Bay	Gravina	Gold Creek	Robe Lake	Boulder Point	Cape Starichkof	Harriet Point
Pipeline Criteria							
- Minimize length of pipeline	○	⊗	○	○	○	⊗	⊗
- Maximize use of existing infrastructure	○	⊗	○	○	⊗	⊗	⊗
- Maximize use of proven construction techniques	○	⊗	⊗	○	⊗	⊗	⊗
- Maximize opportunity for parallel construction techniques	○	⊗	○	○	⊗	⊗	⊗
- Avoid areas of potential geohazards	⊗	⊗	⊗	⊗	⊗	⊗	⊗
- Minimize potential conflicts with sensitive environments	○	⊗	○	○	⊗	⊗	⊗
- Maximize compatibility with current and planned land use	○	⊗	○	○	○	○	⊗
- Minimize the number of water crossings	○	⊗	○	○	○	○	⊗
- Avoid permitting delays	○	⊗	○	○	●	●	●
- Minimize potential threat to national security	○	⊗	○	○	⊗	⊗	⊗
- Maximize availability of gas to Alaska consumers	⊗	⊗	⊗	⊗	○	○	○
LNG Plant Criteria							
- Adequacy of available land	○	○	○	●	⊗	⊗	○
- Avoid areas with poor foundation characteristics	○	○	○	○	⊗	⊗	⊗
- Avoid areas with faults	⊗	⊗	⊗	⊗	⊗	⊗	⊗
- Avoid sites potentially exposed to seismic sea waves	○	○	○	○	○	○	○
- Minimize length of pipeline to marine terminal	○	○	○	●	⊗	⊗	⊗
- Maximize use of existing community infrastructure	⊗	●	⊗	⊗	○	○	⊗
- Avoid sensitive environmental habitat	⊗	⊗	⊗	⊗	⊗	⊗	⊗
- Public safety considerations	○	○	⊗	●	○	⊗	○
- Maximize value added industrial opportunities	⊗	●	⊗	⊗	○	○	○
- Minimize site preparation requirements	⊗	⊗	●	⊗	○	○	○
Marine Terminal Criteria							
- Minimize exposure to extreme oceanographic conditions	○	○	○	○	⊗	⊗	⊗
- Minimize distance from shore to 60' MLLW depth	○	○	○	⊗	⊗	⊗	⊗
- Maximize suitability of tanker maneuvering and anchorage area	○	○	○	⊗	⊗	⊗	⊗
- Minimize potential hazards to navigation	○	⊗	○	⊗	⊗	○	○
- Minimize potential problems related to soils and geohazards	○	○	⊗	⊗	○	⊗	○
- Minimize threat to national security	⊗	⊗	⊗	⊗	⊗	⊗	⊗

Note: Individual criterion cannot be weighted on an equal basis.

- Favorable
- ⊗ Moderately Favorable
- ⊗ Unfavorable
- Highly Unfavorable

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Willow and Harriet Point, making this alternative unfavorable with regard to infrastructure requirements.

In addition to the infrastructure requirements for Minto Flats and Susitna Flats, the Boulder Point route would require infrastructure support for a 15-mile subsea pipeline from the north shore of the Cook Inlet near the mouth of the Susitna River to Point Possession on the Kenai Peninsula and about 15 more miles of road construction along a roadless pipeline right-of-way from Point Possession to the first existing road access to that right-of-way. Overall, the existence of suitable infrastructure along much of the route, including a parallel railroad and highway system and population and commercial centers in the Railbelt and Kenai areas, would be somewhat counterbalanced by a lack of infrastructure in specific areas to yield Boulder Point a rating of moderately favorable.

From near Boulder Point the route to Cape Starichkof would be accessible to the Sterling Highway and, thus, to the full support capabilities of the Kenai Peninsula. This route is also considered to be moderately favorable.

From Livengood southward the proposed project alignment to Anderson Bay generally follows the existing TAPS utility pipeline corridor and benefits directly from the potential use of a number of existing access roads and camp pads used for TAPS construction used for TAPS construction. The route also makes maximum use of the existing highway systems, airports and airstrips, and population centers that have supported similar construction and operations activities in the past. The route variations for Gold Creek and Robe Lake are insignificant as related to available infrastructure, and these routes

are also considered to be favorable in this regard.

The Gravina alignment is the same as for Anderson Bay, Gold Creek, and Robe Lake to the vicinity of Keystone Canyon near Valdez. From Keystone Canyon to the terminus at Gravina the alignment has no infrastructural support. Construction requirements would include roads and camps for most of the 32 miles of mountainous terrain between Keystone Canyon and Gravina. Similarly, operation of this segment of pipeline would rely on infrastructure support from Valdez and Cordova by marine or air service. Even with consideration of the highly favorable infrastructure of the route to Keystone Canyon, the overall Gravina route infrastructure would be considered unfavorable.

3. Maximize Use of Proven Construction Techniques

Constructability for the Cook Inlet alternative routes from Livengood to Cook Inlet in general would not be expected to pose greater problems than for the proposed TAGS alignments. The much smaller existing data base for engineering design could lead to construction delay as problems are found along the route (e.g., a complicated aerial crossing of Hurricane Gulch), potentially less suitable soils and drainage conditions in the Susitna Flats, and difficulties with the subsea pipeline crossing of the Cook Inlet.

For Boulder Point the need for a 15-mile subsea pipeline across Cook Inlet represents an important additional constructability consideration. Extension of the pipeline route to Cape Starichkof adds crossings of several heavily utilized sport-fishing streams, including the Kenai

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River. It also traverses extensive areas of poor drainage and areas where there was extensive ground breaking as the result of the 1964 earthquake that might be expected to have a similar response to future seismic events. On the basis of these factors, both the Boulder Point and Cape Starichkof sites are considered unfavorable in terms of constructability.

Constructability considerations for the route to Harriet Point--in addition to those mentioned for the route from Livengood to Cook Inlet excluding the subsea Cook Inlet crossing--are seismic activities, crossing extensive wetlands, and the potential for flooding by the Drift and Chakachatna rivers due to bursting of glacial lake dams or glacial melt. Volcanic activity is also severe in the area. Seismic considerations include a crossing of the Castle Mountain Fault, extensive ground breaking and cracking, and seismic activity associated with several nearby active volcanoes. Overall these factors would be considered to be unfavorable for this route.

Construction of the TAGS pipeline from Livengood to Anderson Bay would rely on engineering designs and construction techniques proven during construction of TAPS along the same corridor as well as with the authorized ANGTS gas pipelines, which has an approved design for basically the same system as the proposed TAGS through Delta Junction. Pipeline routes to alternative sites at Robe Lake and Gold Creek would similarly rely on proven construction techniques in known geological and geotechnical environments. Robe Lake would be considered as favorable. However, because the last 3 miles of pipeline alignment to Gold Creek would be located on steep sideslope, this route would be rated as moderately favorable. The pipeline route to Gravina would require routing through 32 miles of glaciated mountainous terrain

through the Chugach National Forest and a 2.1-mile mountain tunnel. In terms of constructability, this route alternative would have to be considered as unfavorable.

4. Maximize Opportunity for Parallel Construction Techniques Along Existing Facilities

Each of the three Cook Inlet alternatives also has lengthy stretches with no parallel access. These include lengths through Minto Flats for approximately 70 miles and Susitna Flats for approximately 50 miles, Cook Inlet submarine crossings, and that portion of the route to Boulder Point and Cape Starichkof on the northern part of the Kenai Peninsula prior to convergence with an existing pipeline corridor. Boulder Point and Cape Starichkof would be moderately favorable.

The Harriet Point alternative route along the west side of Cook Inlet partially parallels an existing small-diameter gas pipeline and an existing oil pipeline near Drift River and is rated as moderately favorable.

Construction efficiency would be maximized and environmental impacts minimized for the routes that closely follow existing pipeline and transportation corridor. The proposed route to the Prince William Sound sites in Port Valdez all benefit from a close association with TAPS and its existing access roads and have been rated favorable for this criterion.

Gravina departs from the TAPS line at Keystone Canyon and then proceeds through the Chugach Mountains and the Chugach National Forest for approximately 32 miles--an area with no existing access from which to utilize parallel construction--and is rated as moderately favorable.

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5. Avoid Areas of Potential Geologic Hazards

Alignments to Cook Inlet must pass through a similar range of geohazardous conditions as the proposed alignment, including crossings of the Minto Fault and the McKinley strand of the Denali fault system, marshlands, and the Tanana River with its multiple shifting channels. The Boulder Point and Starichkof alignments must cross the inlet with a 15-mile subsea pipeline as well as the Castle Mountain fault system. The Cape Starichkof alignment further traverses 15 miles of terrain susceptible to seismically induced failure. As geohazards are much less well-known along both the Boulder Point and the Starichkof alternatives, these routes are rated unfavorable for geohazards.

The Harriet Point alignment runs parallel to the Basin Bay Fault, which intersects the Castle Mountain Fault. The Castle Mountain Fault has been the site of many earthquakes. This route also transits areas which could be susceptible to seismically induced cracking and ground breakage and is located with the vicinity of two active volcanoes. Harriet Point is rated as unfavorable.

Geologic hazards are natural or man-made geologic conditions that potentially endanger life and property. Geologic hazards that TAGS may encounter during its design life include mass wasting, ground subsidence or heave, earthquake-induced ground failure, glaciating, snow avalanche, erosion, flooding, and tsunamis or seiche. As TAPS demonstrated, technology is available to identify these hazards, determine their probable severity, and to mitigate their effects in siting, design, and construction.

Geohazards are considered as moderately favorable for the proposed alignment because the hazards have been identified and taken into consideration in the siting and design of TAPS.

The difference in geohazards between routes to Robe Lake and Gold Creek differ from the proposed alignment in passing through some additional avalanche and landslide areas but overall are not considered to present major differences in engineering design requirements. These are also rated as moderately favorable.

The 32 miles of alignment, unique to Gravina alternative, pass through the heavily glaciated Chugach Mountains, through areas with avalanches and landslides near tunnel entrances, and crosses the Jack Bay and Gravina faults. This alignment is considered to be unfavorable.

6. Minimize Potential Conflicts with Sensitive Environments

Cook Inlet alternatives impinge on several sensitive areas avoided by the proposed project. South of Livengood to Tanana the Cook Inlet pipeline traverses Minto Flats, an important waterfowl and subsistence use area for Alaska Natives. A compressor station and an access road would also be required in this general area for the life of the project. The alternative pipeline route passes through the eastern edge of Denali National Park and Preserve, which, aside from any question of obtaining congressional approval for this part of the right-of-way, is the most heavily visited park in Alaska. Pipeline construction activities could directly interfere with park traffic and disturb the aesthetics and scenic qualities for park visitors from north of the park on through Broad Pass and south through Denali State Park. South of

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Willow, the Cook Inlet route passes through the Susitna Flats, which are characterized by high waterfowl use, several highly productive anadromous fish streams, and associated high recreational use. Whether potentially increased access is considered as positive in promoting use and development or as negative in disturbing the ecosystem and changing the character of this area for recreational use, it is quite likely that construction of a pipeline through this area would produce changes in the Susitna Flats. A compressor station and access road would be required there for the life of the project.

In addition, the Boulder Point route crosses a small part of the Captain Cook State Recreation Area. The Cape Starichkof route would cross the Kenai River Management Zone, which is heavily used by both sport and commercial salmon fishermen.

The Harriet Point route passes through critical waterfowl habitat, including nesting areas of the rare tule goose and the Trading Bay State Game Refuge with critical moose, brown bear, and other large mammal habitat and significant salmon streams.

Boulder Point and Cape Starichkof were considered as moderately favorable and Harriet Point unfavorable due to these factors.

The proposed TAGS route follows existing utility corridors for its entire length and poses minimal change in character or use of environments along the 800-mile corridor. A few specific areas are near places known to be used by threatened or endangered species, mainly peregrine falcons near Sagwon Bluffs, Grapefruit Rocks, and along the Tanana River and bald eagles south of Keystone Canyon. Minor routing adjustments and other mitigation such as timing of construction should effectively avoid any potential impacts. The routes to

Anderson Bay, Gold Creek, and Robe Lake are considered as favorable. The route to Gravina must continue across 15 miles of undeveloped Chugach National Forest land. With the linear aspect of the intrusion, the low potential for postconstruction impacts of a buried pipeline, and the absence of conflict with current use of this forest land, this route is considered as moderately favorable.

7. Maximize Compatibility With Current and Planned Land Use

The Cook Inlet alternative alignment (from Livengood to Cook Inlet) traverses the eastern end of Denali National Park and Preserve, which would pose a major potential land-use conflict due to the Alaska National Interest Lands and Conservation Act (ANILCA). Aside from problems related to permits and approvals with ANILCA Title XI (see Section VI.A.9 discussion), pipeline construction activities would interfere with the current use by visitors to the park in terms of both aesthetics and traffic flow. The pipeline also would cross approximately 70 miles of roadless fish and wildlife subsistence habitat in the vicinity of Minto Flats; would traverse highly utilized fishing and recreational areas along the Alaska Railroad/Parks Highway corridor, including McKinley Village, Denali State Park, and the Nancy Lakes Recreation Area; and would cross approximately 50 miles of undeveloped area in the Susitna Flats area. The alignment to Boulder Point would traverse 17 miles of the Susitna Flats State Game Refuge, the edge of the Kenai National Wildlife Refuge, and the Captain Cook State Recreation area. From Boulder Point to Cape Starichkof the alignment crosses several heavily utilized sport salmon fishing streams and the Kenai National Wildlife

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Refuge. The route to Harriet Point on the west side of Cook Inlet is largely undeveloped, but it is undergoing significant change. In addition to an established timber harvest area, a major coal export program is beginning. It also would cross more than 20 miles of the Susitna State Game Refuge. All three of the Cook Inlet routes are considered unfavorable because of land-use conflicts at Minto and Denali National Park and Preserve.

The proposed alignment from Livengood to Anderson Bay follows a designated transportation and utility corridor through the Prince William Sound area. The proposed alignment traverses a portion of Blueberry Lake SRS. The alignments to Robe Lake and Gold Creek alternative sites pass near several existing or proposed recreational sites in the vicinity of Robe Lake, including the Salmonberry Ridge Ski Hill and the proposed bike trail extension No. 3. Beyond Robe Lake, the route to Gold Creek passes near the Robe River Neighborhood Park and the proposed Robe River Fishing Platform (Valdez CDD 1986). The Gold Creek route would also pass through state lands proximate to the city of Valdez, the Valdez Airport, and the proposed Gold Creek Trail (CDD 1986). Because the final pipeline segment represents such a small proportion of the total alignments and nearly any impacts on these existing and planned land uses would be due to construction only, the Gold Creek and Robe Lake alignment has been rated overall as favorable and similar to the proposed Anderson Bay route.

The pipeline alignment to Gravina transits approximately 15 miles of the Chugach National Forest. The Forest Service has defined a management direction for the Gravina Management Area that includes maintenance of landscape character and

"dispersed recreational opportunities" as well as enhancement of marine-oriented recreational opportunities and fish habitat. Installation of 36-inch gas pipeline would not necessarily interfere with these objectives. This alternative is considered as moderately unfavorable on the basis of its potential conflict with the Chugach National Forest Plan (USFS 1984).

8. Minimize the Number of Surface Water Crossings

Approximately 100 streams are crossed by Cook Inlet regional pipeline alignments between Livengood and Cook Inlet. Though total stream crossings are fewer for the Cook Inlet routings to Boulder Point and Cape Starichkof, many of these are heavily utilized by anadromous fish and receive much heavier recreational use than the streams along the proposed route south of Livengood. By comparison with streams crossed by the proposed alignment, the Boulder Point and Starichkof are considered to be favorable and Harriet Point to be moderately favorable due to the sensitivity of those streams crossed.

The pipeline route from Livengood to Valdez would have to cross approximately 150 streams and rivers. Most of these streams were also crossed by the TAPS pipeline and would be crossed by ANGTS to Delta Junction. The difference in total stream crossings between Gold Creek, Robe Lake, and the proposed Anderson Bay project site is two less for Robe Lake, two more for Gold Creek. Each of these three alignments is considered to be favorable with respect to stream crossings. The alignment to Gravina has approximately six additional streams, plus it crosses Charter Bay and Comfort Cove

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on Prince William Sound and would therefore rate unfavorable.

9. Avoid Permitting Delays

The Livengood to Cook Inlet alternative alignment passes through several areas that pose major issues related to permits and approvals. Subsistence use in the Minto Flats area, heavily used anadromous fish streams, and crossing the Denali State Park and Susitna Flats State Wildlife Refuge make obtaining permits through these areas potentially difficult. The most problematic segment to permit along the Cook Inlet alignments would be through the Denali National Park and Preserve.

On the basis of the requirement of ANILCA, Title XI, congressional approval would be required for a right-of-way through Denali National Park and Preserve and a suitable alternative to that alignment designated, namely the action proposed to construct the TAGS project to Anderson Bay. All three Cook Inlet alternatives are considered to be highly unfavorable due to the project time delays that would be involved in any attempt to secure congressional approval when the proposed route to Anderson Bay would avoid the Denali National Park and Preserve entirely.

The procedure under 43 CFR 36 for authorizing a pipeline through Denali National Park and Preserve would require among other things:

No federal approvals for any part of the proposed pipeline system until all the provisions of 43 CFR 36 are met.

A determination that there are no other alternative modes of access or any

economically feasible and prudent alternative.

Since the National Park Service lacks authority to issue rights-of-way for pipelines under Section 28 of the Minerals Leasing Act of 1920 (30 USC 185), approval of the proposed TAGS project through a portion of the Denali National Park and Preserve therefore would require:

A specific determination that "... there is no economically feasible and prudent alternative route for the system."

A recommendation by the National Park Service to the president that the TAGS should cross a portion of the Denali National Park and Preserve.

A presidential recommendation to Congress supporting legislation to authorize construction of the TAGS project through Denali National Park and Preserve.

An act of Congress approving a TAGS alignment through Denali National Park and Preserve.

Several route options around Denali National Park and Preserve have been considered. These include following the general route of the Anchorage-Fairbanks Intertie and along the eastern bench above the Nenana River. The former was deleted because of severe engineering problems associated with crossing steep, deeply incised terrain (the intertie required helicopters to install its facilities in this area). The latter has severe conflict

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with expanding commercial lodging establishment supporting visitors to Denali National Park and Preserve and to the scenic setting now afforded park visitors.

Since an acceptable environmental and cost-effective alternative has previously been reviewed and approved as discussed in Appendix J of the DEIS, the Cook Inlet alternatives are unfavorable from a permit standpoint.

Number and type of permits discussed in the DEIS generally apply to both routes. However, the process and timing to obtain these permits is quite different. The proposed alignment from Livengood to Anderson Bay generally follows existing transportation and designated utility corridors and probably has less potential permitting delays since it is basically adjacent to constructed TAPS and authorized ANGTS to Delta Junction.

Additional technical reviews would be necessary whenever TAGS would lie close to authorized ANGTS or to TAPS. Routings to Prince William Sound would have more proximity reviews than those to Cook Inlet.

Both Cook Inlet and Prince William Sound routes involve military installations. Cook Inlet has one, and Prince William Sound has two. Cook Inlet routings would require permits from the Alaska Railroad; Prince William Sound would not.

Air quality permitting for the LNG plant near Valdez would probably require a monitoring program, as discussed in Subsection 4.2.6 in the DEIS. Preliminary emissions calculations indicate no major air emission increase from the facility as identified in Subsection 4.2.6 in the DEIS. The route alignments to Anderson Bay, Robe Lake, and Gold Creek would differ only in permits related to land use near Valdez. Though they might elicit a different response from local agencies relative to

current land use plans, there is no current information to suggest that either of these sites would be less favorable in terms of securing necessary permits, and all are considered favorable. The alignment to Gravina would pass through approximately 15 miles of the Chugach National Forest.

The forest is managed for multiple use, and there are no specific provisions for a utility right-of-way. On the basis of potential permitting problems which could delay or halt the proposed project, the Gravina alignment would have to be considered moderately favorable.

10. Minimize Potential Threat to National Security

Three questions must be answered with regard to pipeline alternative alignments and potential national security impacts. First, would any of the alignments potentially affect U.S. dependence on foreign energy supplies during a time of international conflict when supplies might be curtailed? Secondly, do any of the proposed alternative alignments pose a greater risk to the security of the supply from an action of war or terrorism? Finally, do the alignments pose any greater or lesser ability to establish effective security measures to protect them?

No matter which alignments were selected, 800 miles of pipeline always carries the potential for terrorism. None of the alignments offers any greater or lesser exposure to disruption. The only obvious potential difference vis-a-vis national security rests in the proximity of the TAGS pipeline to the existing TAPS and the authorized ANGTS systems. Should it ever become necessary to attempt to protect the TAGS line from possible terrorist

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actions, it would seem that security measures to protect a single TAPS, TAGS, and ANGTS corridor would have a greater potential for success than trying to secure two separate alignments through uninhabited areas. On this basis the proposed alignment to Anderson Bay and the alternatives to Robe Lake and Gold Creek are all considered favorable, and the Gravina and three Cook Inlet alignments are considered as moderately favorable.

11. Maximize Availability of Gas to Alaska Consumers

Though there is no specific plan to provide access lines to tap natural gas flowing through the proposed TAGS for use by public or commercial facilities along the route, this criterion considers the possibility of greater access to potential future uses as a favorable characteristic.

Cook Inlet alternative alignments also pass near Fairbanks, and potential future gas use would be considered favorable. In addition, the route parallels the Railbelt from Fairbanks through the Matanuska-Susitna Borough, providing potential direct future gas supplies to the population along this corridor. The Boulder Point and Cape Starichkof alignments provide a potential future gas supply to an area (Kenai/Soldotna) with the population and industrial infrastructure to maximize the potential for any possible future uses. The Harriet Point alignment, though it veers away from the prime population and infrastructure areas as it heads to the west side of the inlet, would pass through an area that has current industrial facilities (Beluga Power Plant, Drift River petroleum facility) and is proposed for future development (expansion of Beluga Power Plant and development of Diamond Chuitna coal mine

and export terminal). On the basis of this overall analysis, all Cook Inlet alignments are considered to be favorable.

The proposed alignment from Livengood to Anderson Bay passes close to the Fairbanks area, affording potential access to the second-largest population center in the state. With the recent completion of the Anchorage-Fairbanks electrical intertie and with the presence of the Alaska Railroad line from Fairbanks through Anchorage to Seward, both future public and commercial uses for natural gas are potentially favorable. Other than the Fairbanks area, the route passes through only small population centers through the remainder of the route to the Valdez terminus, where additional future possibilities may exist for use of natural gas.

The Robe Lake and Gold Creek alignments are essentially the same as the proposed project for this criterion and would be moderately favorable. Gravina differs mainly in that the alignment does not pass as close to Valdez, where existing infrastructure and resident population provide greater potential for wanting a gas supply or value-added industries than does Gravina. Therefore, the Gravina route would be rated unfavorable.

C. LNG Plant Site

1. Adequacy of Available Land

Adequate land is available at both Boulder Point and Cape Starichkof to construct the LNG plant and probably to provide an adequate buffer. The lands at the LNG plant site and for the buffer zone are, however, under private individual and Native corporation ownership, and development would be uncertain. The site at Cape Starichkof is privately owned and

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located adjacent to several residences and a recreational use area. The Boulder Point site is owned by individuals and a Native corporation and is rated as moderately favorable. The Cape Starichkof site has been given a rating of unfavorable. The Harriet Point site, located on state lands, is isolated from any other use and has adequate acreage for the construction of the LNG plant site and an adequate buffer zone. This site is rated as favorable.

The proposed LNG site at Anderson Bay contains approximately 300 acres of developable land with a 3,000-acre uninhabited buffer zone surrounding the shore side of the site which provides an adequate zone to ensure public safety. The site itself would be located on state-owned land, and the buffer zone is within both state and federal lands. The Gold Creek and the Gravina sites would be located on state-owned and possibly the Chugach Natives' corporation land and have adequate land area suitable for the development of an LNG plant site and buffer zone. All three of these sites are rated as favorable. The Robe Lake site, though located on state lands with adequate acreage for the construction of the LNG plant, abuts to privately owned land proximate to existing residential development and a high recreational use area. This site is considered highly unfavorable.

2. Avoid Areas With Poor Foundation Characteristics

The three Cook Inlet sites have an abundance of glacial till, gravel outwash, and alluvial material. Each site appears to contain foundation materials which are acceptable though not as desirable as the bedrock base found at the four Prince William Sound area sites and therefore would

be considered as moderately favorable in this evaluation.

The Anderson Bay site is composed of a series of bedrock ridges mantled with glacial till, presenting a good base for facility foundations. Robe Lake, Gold Creek, and Gravina sites are similar in structure, presenting similarly favorable foundation conditions.

3. Avoid Areas With Faults

None of the sites considered has active faults identified that could pose design and safety problems, although all of Alaska is potentially active. Therefore, the proposed Anderson Bay site and all alternatives would be considered as moderately favorable with regard to this criterion.

4. Avoid Sites Potentially Exposed to Seismic Sea Waves

Boulder Point and Cape Starichkof would be well above historical high water levels. Harriet Point site would be elevated high enough to withstand waves from seismic or volcanic events. On the basis of potential exposure to seismic sea waves, all Cook Inlet alternative sites were considered favorable.

The configuration and orientation of Port Valdez minimizes the potential that any major tsunami generated in Prince William Sound would have a major impact in the port. The proposed facility at the Anderson Bay site would be located above the highest anticipated seiche that might be expected to develop through submarine landslides such as occurred in Shoup Bay during the 1964 earthquake when the site was exposed to a maximum wave run-up of 78 feet (FPC 1976a). The Gold Creek site, at 300 to 500 feet,

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would be well above any potential seismic seawave, even though the 1964 run-up was 174 feet. The Robe Lake site (at 200 to 400 feet above sea level) would be both well away from the port and above the critical height.

The Gravina site would be located well above the predicted 10- to 16-foot wave height and 30- to 40-foot wave run-up elevation (FPC 1976a). All sites were evaluated to be favorable.

5. Minimize Length of Piping to Marine Terminal

The required loading line length is a factor of the distance from the LNG plant to the shore and the shore to the marine berth. All three of the alternative Cook Inlet sites have marine terminals located between 4,000 and 5,000 feet from shore. The length of the loading lines would be within 2.5 miles, and each would be considered moderately favorable.

At the proposed Anderson Bay and Gold Creek sites the distance from shore to marine terminal would be approximately 500 feet as is Gold Creek, and Gravina would be about 1,500 feet. All of these sites are rated as favorable for this characteristic since LNG storage tank facilities are close to the shoreline, and a minimal length of loading line would be required. The Robe Lake site would require approximately 5 miles of loading line between the LNG plant and the marine terminal since the LNG plant site would be situated a considerable distance from the marine terminal. This site would receive an unfavorable rating; in fact, this length of cryogenic loading line would be sufficiently beyond the 2.5-mile limit set by the FPC (1976a) that the site would be eliminated from further consideration.

6. Maximize Use of Existing Community Infrastructure

Of the three Cook Inlet sites, the two on the Kenai Peninsula, Boulder Point, and Cape Starichkof, would have excellent infrastructural support, including highway access, a commercial airport, available support industry, population base, and communities oriented toward expansion. These are considered as highly favorable for this criterion. Harriet Point, on the other hand, has no infrastructural base and would be considered as unfavorable.

The Robe Lake, Gold Creek, and proposed Anderson Bay LNG facility site have the advantage of being close to Valdez and its developed marine harbor area. Other advantages include a population base, housing, schools, airport, and highway access. Undoubtedly, these would require some expansion, but there is an excellent infrastructure base to develop. Anderson Bay, however, would require a 1,700-person camp during construction, and operation crews would be ferried to the site. Smaller camps would be required at both Robe Lake and Gold Creek during construction. All three of these would be considered moderately favorable.

Gravina offers no existing infrastructure from which to expand. All roads, airports, housing, and services would have to be built. All support services would either be developed or imported by air or water. Gravina would be rated as highly unfavorable by this criterion.

7. Avoid Sensitive Environmental Habitat

Among the Cook Inlet sites considered, Boulder Point has the least potential for impact on critical habitat. All three sites

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have various amounts of spruce woodland and mixed wetlands used by moose, bear, and other small mammals. Separating Cape Starichkof is the site's proximity to important anadromous fish streams, beach set net sites, important salmon migratory travel route to upper Cook Inlet, and clamming areas with attendant high recreational use. Harriet Point is distinguished by designation as critical habitat for moose, Harriet Creek is an anadromous stream, and the coastal intertidal zone is considered critical for razor clams and harbor seals. Boulder Point is considered moderately favorable, and Harriet Point and Cape Starichkof are rated as unfavorable with respect to potential impacts to sensitive environments.

The proposed Anderson Bay site is similar to much of the land surrounding Port Valdez and Prince William Sound in general. It does not have any particularly high concentrations of shorebirds or waterfowl and is not noted for use by marine mammals. An active bald eagle nest has been spotted to the west and outside of the buffer zone. Of two streams that cross the site, one is utilized by anadromous fish. Assuming that disturbance to the eagle nest can be minimized, the site is considered to be moderately favorable with respect to this criterion.

The Gold Creek site is similar to Anderson Bay with the exception that there is important waterfowl use of nearby Island Flats. There is an active bald eagle nest within 0.5 miles of the site and an anadromous fish stream crosses just north of the site.

The Robe Lake site is upland of an important salmon spawning area and migratory pathway but is itself not of major

importance as a sensitive environment. Gold Creek and Robe Lake sites are considered moderately favorable on the basis of limited potential to impact sensitive environments.

Sensitive aspects of Gravina include the presence of numerous bald eagle nests and utilization of the area by sea otters, harbor seals, and sea lions (FPC 1975). Gravina is rated as unfavorable on this basis.

8. Public Safety Considerations

Of the Cook Inlet sites, Boulder Point and Cape Starichkof both have a small number of nearby residences, some recreational use, and are considered as moderately favorable. Large areas of privately held land in the vicinity could be developed in the future. At Boulder Point residences in the vicinity of the LNG plant site could be required to be relocated, depending on the need for a specified exclusion zone. Harriet Point is well away from any population and would be rated as favorable.

The Anderson Bay site is well away from residential and commercial areas, airports, and the Alyeska marine terminal. In the event of a major accident or spill (as discussed in Subsection 4.2.19 of the DEIS) the Anderson Bay site would be considered as favorable in terms of public safety. The Gold Creek site is away from residential or commercial areas but in a heavy recreational use area. The Robe Lake site is surrounded by residences and is also heavily used for recreation. Gold Creek would be considered as moderately favorable and Robe Lake highly unfavorable from the standpoint of public safety in the event of a major accident or spill. Gravina would be well away from any population and is rated favorable.

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9. Maximize "Value-added" Industrial Opportunities

Of the Cook Inlet alternatives, those sites with access to the strong infrastructural base of the Kenai Peninsula, Boulder Point, and Cape Starichkof are rated as favorable. For Harriet Point, potential secondary development would have to wait additional infrastructure to support the expansion, so this site would be considered as unfavorable.

The proposed Anderson Bay site, as well as the other two sites on Port Valdez, offer some potential for development of secondary industries in that the requisite infrastructure and economic base are extant in Valdez. With the presence of the TAPS terminal operation and the proposed Alaska Pacific Refinery, it could be expected that future expansion would be limited only by space and the community's ability to absorb additional population. The potential for industrial value-added opportunities for these sites would be considered as moderately favorable. With virtually no infrastructural development, Gravina would be considered as highly unfavorable with respect to this criterion.

10. Minimize Site Preparation Requirements

Boulder Point, Cape Starichkof, and Harriet Point sites would require the least site work for LNG plant construction and are considered as favorable.

The proposed Anderson Bay site would require a substantial amount of earthwork before construction. Soils are of good quality overlaying bedrock, and site preparation would not pose major difficulties. Excess material could be used to develop the construction wharf,

off-loading area, construction support, and laydown area. The situation is similar for the Robe Lake and Gravina sites, and all are considered as moderately favorable. The Gold Creek site would require extensive earthwork with the added problem of spoil disposal for the vast amount of excess material created during site preparation. Gold Creek would be rated as unfavorable for this criterion.

D. Marine Terminal

1. Minimize Exposure to Extreme Oceanographic Conditions

Each of the three Cook Inlet sites must deal with high currents and waves, sea ice that can include solid iced-up conditions at Boulder Point, common occurrence of floating ice "pancakes" in the range of 6 to 18 inches thick, and the possibility of seismic sea waves. Tsunami risk is perhaps greatest at Harriet Point due to the presence of active volcanoes near the site. Currents and sea ice are greatest at Boulder Point. Overall oceanographic conditions that could affect daily operations and safety would be considered to be unfavorable at all three sites.

The proposed marine terminal site at Anderson Bay is in an area with low currents and waves of less than 1 foot about 90 percent of the time, very little sea ice, and a less than average potential impact from seismic sea waves. This situation would be similar at the other three alternative Prince William Sound sites considered in this analysis. The presence of icebergs calved from Columbia Glacier in ship channels of Prince William Sound is closely monitored by the U.S. Coast Guard and reported through the Valdez Vessel Traffic Service and is not considered an

EVALUATION OF ALTERNATIVE PIPELINE ROUTES AND
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obstacle to operations. All Prince William Sound sites evaluated would be considered favorable with respect to oceanographic conditions that would be encountered in Alaska coastal waters.

2. Minimize Distance to 60-Foot
Depth Isobath

At Boulder Point, Harriet Point, and Cape Starichkof, the 60-foot isobath is between 4,000 and 5,000 feet offshore. Boulder Point, Harriet Point, and Cape Starichkof are classified as moderately favorable.

The 60-foot isobath is located within 500 feet of the shoreline for the proposed Anderson Bay site as well as for alternative Gold Creek. The alternative Robe Lake site 60-foot isobath is approximately 2,500 feet offshore but several miles from the LNG plant site. The berthing area for the Gravina alternative lies about 1,000 feet offshore. On the basis of the distance to tanker berthing depth from the shoreline, Anderson Bay, Gold Creek, and Gravina would be considered favorable, but Robe Lake would be ranked as unfavorable.

3. Maximize Suitability of Tanker
Maneuvering and Anchoring Areas

Each of the three Cook Inlet sites has adequate room for maneuvering and anchoring, however, at Cape Starichkof these are areas of significant longshore drift and shoaling which could require dredging. Boulder Point and Harriet Point rate favorably, and Cape Starichkof is moderately favorable.

The area for anchoring and maneuvering vessels is excellent at the proposed Anderson Bay marine terminal location and for alternatives Gold Creek and Gravina due to the broad expanse of open water with

excellent anchorage depth of less than 200 feet (FPC 1976a). These three locations would be rated as favorable. The terminal facility location with the alternative Robe Lake site would be proximate to the main aggregation of Valdez recreational and commercial vessels and located at the head of the Port Valdez, which would restrict maneuvering room and limit anchorage areas. The Robe Lake location would be considered unfavorable with respect to this criterion.

4. Minimize Potential Hazards to
Navigation

All three of the Cook Inlet sites benefit from a good system of navigational aids and the requirement for vessels to be accompanied by a state licensed coastal pilot north of Kachemak Bay. All three of these sites must contend with problems associated with winter sea ice, shoaling, and submerged outcrops. The Cape Starichkof site in particular could require dredging to remove shoals. Uncharted submerged outcrops and boulders at Boulder Point pose definite hazard. With major consideration to navigation safety, Cape Starichkof and Harriet Point sites are considered as moderately favorable, and the Boulder Point site is rated as unfavorable.

The automated vessel traffic service (VTS) already in place for the Valdez Arm, Valdez Narrows, and Port Valdez and the limited potential navigational hazards (except for icebergs from Columbia Glacier and those related to shoaling and rock outcrops) make the proposed Anderson Bay site and alternative Gold Creek site favorable from a navigability standpoint. The alternative Robe Lake marine terminal site located near the main aggregation of Valdez recreation and commercial vessels and in the general vicinity of a sunken wreck

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would be rated as unfavorable. Gravina does not have the benefit of the automated VTS but otherwise has favorable navigation conditions and would be rated moderately favorable.

5. Minimize Potential Problems
Related to Soils and Geohazards

Cook Inlet marine terminal sites would all be subject to erosion and accretion problems associated with the high current regime and documented movement of large-scale mobile bedforms. Proximity to active volcanoes would expose facility operations to added risk of seismic sea wave. General engineering soil characteristics related to shear strength and liquefaction potential are considered to be favorable, and the Cook Inlet terminal sites are rated overall as favorable.

At the proposed Anderson Bay site there is minimal probability of a major submarine slide in the area of the marine terminal. The situation is similar in most respects to the Alyeska marine terminal site. A slide elsewhere in the harbor, such as occurred in Shoup Bay during the 1964 earthquake, would be expected to generate a sea wave that could affect any terminal site in Port Valdez. Such conditions would be incorporated into facility engineering design. At the Robe Lake terminal site there is some degree of sediment instability as evidenced by recurring submarine slides. Also, there is considerable potential for soil liquefaction and ground failure during a seismic event. Little information exists regarding submarine soils at Gold Creek; however, the submarine slopes along the front of the alluvial fan at the mouth of the creek are probably similar to those that underwent failure in Shoup Bay during the 1964 earthquake. The Gravina site has

favorable subsurface conditions with minimal probability of submarine slides (FPC 1976a). On this basis, the Anderson Bay and Gravina sites are considered to be favorable, but the Robe Lake terminal site is considered as unfavorable because marine-specific information on potential hazards for the Gold Creek site was not available. However, based on the fact that the sites similarity to Shoup Bay, the Gold Creek site should probably be classed as unfavorable until site-specific information could be developed to suggest otherwise.

6. Minimize Threat to National
Security

None of the sites considered poses any major advantage or disadvantage to national security from an economic point of view. The proposed TAGS LNG terminal and the Alyeska marine terminal are located within 3.5 miles of one another. Operations to secure and protect the two facilities in time of national crisis would be facilitated by their proximity. Due to the balance between these two factors, the proposed Anderson Bay site and all alternatives considered would be rated as moderately favorable with respect to this criterion.

E. Evaluation of Proposed TAGS Project and
Alternatives Considered

1. Introduction

The summary of evaluation criteria analyses (Table VI-1) provides a matrix for comparing the proposed action and the alternatives considered. The overall results of the criteria evaluation for the proposed project at Anderson Bay are summarized below, followed by a synopsis of the evaluation of each of the alternatives.

EVALUATION OF ALTERNATIVE PIPELINE ROUTES AND
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2. Proposed Project - Anderson Bay

Evaluation criteria considered for the proposed TAGS project was rated either favorable or moderately favorable for each criterion.

Among criteria for the Livengood to proposed Anderson Bay route, only the number of water crossings and the potential access of the pipeline to possible future uses along the right-of-way were rated higher than for other alternatives.

LNG siting criteria for the Anderson Bay site were all favorable or moderately favorable.

3. Boulder Point

Evaluation of the pipeline route from Livengood to the Boulder Point site identifies numerous criteria for which this alternative is less desirable to the applicant's proposed project, including a 15-mile subsea crossing of Cook Inlet. Most significant are those factors ranked as unfavorable. These include use of proven construction technology, geohazards, and land-use incompatibility. Permitting is rated as highly unfavorable, largely on the basis of the passage through Denali National Park and Preserve. As discussed under evaluation of individual criteria (Section V.B.9), this alignment for this routing would require congressional approval.

For all criteria related to siting of the LNG plant, the Boulder Point site rated at favorable or moderately favorable. The Boulder Point ratings exceeded those for the proposed Anderson Bay site only for infrastructure, value-added development, and site preparation. For all other criteria, Anderson Bay was rated equal to or better. Public safety and marine terminal acceptability are superior at Anderson Bay.

The existing Kenai Peninsula infrastructure would be better able to support construction and operation of the facility with existing community resources. The Kenai Peninsula would probably be better situated to support expanded ancillary projects should they be possible. Third, site preparation at the Boulder Point site would require less construction terrain disturbance. For land availability, soil foundation characteristics (presence of bedrock), and the distance from the LNG plant to the marine terminal, the advantage lies with the proposed project.

Though characteristics of the marine terminal also all favor selection of the Anderson Bay site, the Boulder Point site is generally favorable. Rated as less favorable were two criteria for a Boulder Point marine terminal--the distance from shore to water deep enough for maneuvering and berthing is more than 4,000 feet and navigational hazards, including shoaling, submerged boulders, outcrops, ice conditions, and excessive currents. Despite these constraints the Boulder Point site appears to be a feasible alternative.

4. Cape Starichkof

Cape Starichkof, which shares a common alignment with the Boulder Point site as far as Boulder Point, has one distinct disadvantage--the extra pipeline length and additional compressor station required to transport the gas 59 more miles would have many implications for construction time and associated increase in impacts to the environment and costs. The LNG site characteristics are similar to those for Boulder Point except that land availability would be more of an issue and the environment in the Cape Starichkof vicinity is more sensitive with respect to

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fisheries, and recreational use of the area. Marine terminal site characteristics are also similar to those for Boulder Point except that navigational hazards, uncharted submerged boulders and outcrops, and potential sea-ice problems would be less of a factor at Cape Starichkof. The same permitting problems associated with Denali National Park and Preserve exist. Cape Starichkof was rated as less favorable than Boulder Point and eliminated from further consideration.

5. Harriet Point

The pipeline alignment to Harriet Point poses problems over the Boulder Point and Cape Strichkof alignments. Like Starichkof, Harriet Point would require a longer pipeline and an additional compressor station. Most of the route along the western shore of Cook Inlet is away from available infrastructure to support construction. Few data exist for environmental impact assessment and engineering design analyses. The route also passes through areas of sensitive environments for wildlife and fisheries. The LNG plant site has advantages of land availability and little potential impact to public safety from an accident or spill should one occur. One distinct disadvantage for the LNG plant site is the lack of any infrastructure. Facility construction and operation would be much more difficult and costly since there is no community or commercial base in the immediate vicinity to support the project. The potential for any secondary development would be curtailed. Along with the permitting issue associated with the crossing of Denali National Park and Preserve, Harriet Point would be rated as less favorable than Boulder Point and eliminated from further consideration.

5. Gravina

For the pipeline from Livengood to the site, Gravina was rated as unfavorable for use of proven technology, geohazards, land-use compatibility, and permitting. All of these factors were related to the segment of the route from Keystone Canyon through the Chugach Mountains, including 15 miles of routing through the Chugach National Forest. Though operation of a marine terminal at the site had no serious drawbacks for the LNG facility, Gravina was considered to be highly unfavorable infrastructure for construction and operation of the facility and with regard to potential benefits that might be derived from secondary developments in the vicinity of the plant. The Gravina site has numerous distinct disadvantages compared to the proposed Anderson Bay site and eliminated from consideration.

7. Gold Creek

The Gold Creek site rated as favorable or moderately favorable for nearly all evaluation criteria. The final segment of the pipeline alignment, near Robe Lake and around the outskirts of the city, was not as favorable as that of the proposed project. The last 3 miles along the west shore of Port Valdez would be located in steep-sided hills, which would result in difficult construction, movement of large volumes of material, and a broad visual scar along the mountainside. The LNG plant site would require extensive excavation and would pose the added problem of disposing of large volume of spoil from the site. Use of the Gold Creek site would negatively affect potential expansion of the city and recreational use of the Gold Creek area

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and would require major site work and spoil disposal. Although the rating of the Gold Creek site was similar to the proposed Anderson Bay site, it did not appear to have any substantive advantages over the proposed TAGS project and was eliminated from further consideration.

8. Robe Lake

Though the Robe Lake alternative would result in the shortest pipeline among Prince William Sound alternatives, consideration of the LNG site and the associated marine terminal facility immediately highlight the major concerns with this alternative. Land that would be needed for the LNG facility is in the midst of residential and recreational use areas. Major site work would be required, and resultant impacts on aesthetics, interference with recreational use, and even removal of the parcel of land from that available for residences or recreation would be major drawbacks. Though the safety record for LNG plants is excellent, should a catastrophic accident or spill occur, this site would be the worst among the TAGS alternatives in terms of potential impact to public safety. Further, the distance from the LNG plant site to the shoreline and the distance from shore to water deep enough for tanker maneuvering and berthing combine to require a 5-mile cryogenic loading pipeline from the plant to the LNG tanker loading area. The engineering and cost of such a line would make it nearly infeasible. The location of the berthing and maneuvering area within the harbor has disadvantages with respect to navigational safety, and the submarine soils in this region of the harbor are not favorable for development. Overall, the Robe Lake site should be eliminated from consideration.

F. Summary

Neither of the Cook Inlet alternatives to Cape Starichkof nor Harriet Point offers engineering, environmental, cost, or safety advantages over location of a facility at Boulder Point. The cost, time, and additional impacted area associated with the Cape Starichkof and Harriet Point sites make them less desirable options and therefore they have been eliminated from further consideration.

Of the three alternatives considered for the Prince William Sound region, Gold Creek is the only one that appears comparable to the proposed Anderson Bay site. However, due to the extensive earthwork required for the LNG plant site, routing through an area of expansion for the city of Valdez, the associated spoil disposal requirements, the difficult pipeline constructability for the last 3 miles to the site, and the greater negative impacts on Valdez recreational use and potential future expansion, this alternative offered no overriding advantage over the proposed project at Anderson Bay.

Note: For cited references, see References of DEIS pages ___ to ___.

OILWATCH ALASKA

PO Box 101555 Anchorage, AK 99510 © © Ph: 907-277-8910 Email: oilwatch@alaska.net

March 2, 1998

Hon. Representative Mark Hodgins
Room 110
State Capitol
Juneau, AK 99801-1182

Dear Representative Hodgins,

Your attention to the North Slope Gas Line is to be commended. Many questions remain to be asked and we have some as well.

In addition to the many economic type questions, there is the issue of anti-trust which deserves consideration. There are two active anti-trust cases coming forth at the moment, one is Oxy before the FERC and the other is Maritime Endeavor which has a federal case pending against Alyeska. These cases raise some of the same questions that Dr. Richard Fineberg pointed out in his report to us entitled, *The Big Squeeze: TAPS and the Departure of Major Oil Companies Who Found Oil on Alaska's North Slope*. This report suggests that the major owners of the Trans-Alaska Pipeline (TAPS) may be using their control of the pipeline to strangle competition. One result of these actions may be costing Alaskans and their public treasury billions of dollars. I will be happy to provide you a copy of Dr. Fineberg's report as well as communications we have had with the Attorney General's office. Dr. Fineberg's report and the anti-trust actions that are cropping up reinforce the need for an independent examination of the facts. Some of these same concerns may also apply to North Slope Gas.

We understand that Pedro Van Meures is appearing before House Special Committee on Oil and Gas Tuesday morning, and there are a number of questions that come to mind that he might be able to address:

1. What are the effects of Asian economic problems on (a) demand, (b) capital for a major (grassroots) project?
2. Are there any major changes in the supply from existing projects?

3. Effects of economic changes since 2/97 on (a) timing and (b) the number of possible grassroots projects.
4. Regarding the nine projects ranked at p. 21 of his 2/97 Executive Summary, how would he rank each of the nine projects in terms of:
 - (a) changes in hurdle rate of return for project and
 - (b) gap between (a) and the probable trend of the project's projected Rate of Return (better or worse than 12 months ago)?
5. Are there other competing grassroots project on the map?
6. Would formal structure of public oversight of the very broad negotiating powers the proposed package gives the administration materially affect the project's hurdle rate of return? If so, would it enhance (lower) the project's hurdle rate of return by reducing litigation threat and instability or would it detract from the project's attractiveness (raising the project's hurdle rate of return)?

It seems that the Asian economic crisis may: a) have little effect, b) kill some potential competing projects, c) may encourage Asian producers to sell their gas at much lower prices than Alaska could compete with in order to have some income as they struggle with their financial crises.

It is not easy to sort out, but I wish you well in trying to do so in the best interest of Alaskans--we need to be well compensated for our valuable nonrenewable resources. Rushing this project forth may or may not be beneficial. If there is anything that our expertise or knowledge base can contribute to your efforts, please call or email. Thank you.

Most sincerely,



Jim Sykes, Executive Director

LEGAL SERVICES

DIVISION OF LEGAL AND RESEARCH SERVICES
LEGISLATIVE AFFAIRS AGENCY
STATE OF ALASKA

(907) 465-3867 or 465-2450
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130 Seward Street, Suite 409
Juneau, Alaska 99801-2105

MEMORANDUM

March 11, 1998

SUBJECT: Gas projects (CSHB 393(O&G))

TO: Representative Mark Hodgins, Chair
House Special Committee on Oil and Gas

FROM: Tamara Brandt Cook *TBC*
Director

Here is a draft committee substitute you requested of a bill originally introduced by the governor. I have some comments.

(1) The bill as introduced does not seem to comply with Art. IX, sec. 1 of the state constitution which states:

The power of taxation shall never be surrendered. This power shall not be suspended or contracted away, except as provided in this article.

Under AS 43.82.210 in the bill, a contract will contain terms that substitute periodic payments in lieu of taxes. These contract terms will, I suppose, be expected to prevent the state from later changing the law and imposing those taxes as a result of the federal and state prohibitions on the impairment of contracts. (Art. I, sec. 15, Constitution of the State of Alaska) The problem is that this is exactly the kind of contract that is prohibited under Art. IX, sec. 1. While the state may certainly provide for a tax exemption, I do not think it is possible for the state to give up its power to repeal the exemption and impose the tax in the future. Any contract that has that effect will probably be void as against public policy.

(2) AS 43.82.230(a) requires the commissioner of revenue to include in a contract a term requiring contracting with and employment of state residents, "within the constraints of law..." As a practical matter, there is little chance that such a term could ever be included. (*Hicklin v. Orbeck*, 565 P.2d 159 (Alaska 1977), rev'd on other grounds, 437 U.S. 518 (1978)) To the extent that the change made in this CS to the definition of "Alaska resident" adds a durational residency requirement of one year or longer, it is likely to be constitutionally invalid.

(3) The requirement added in AS 43.82.435 of this CS that the authority to enter into a contract be authorized by the legislature may violate the separation of powers doctrine. While the legislature may enact standards for the exercise of an executive power, it may generally not reserve the power to approve or authorize a particular action. For example,

Representative Mark Hodgins

March 11, 1998

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former AS 37.05.280, requiring legislative approval of certain leases of state office space, was held to violate the principle of separation of powers. (Marine View Chapter Juneau Tenants Association v. Alaska State Housing Authority, Superior Court, First Judicial District, 1JU-80-1037 Civ., Nov. 3, 1981) Currently the Procurement Code contains a similar lease approval requirement in AS 36.30.080, but at the time of the Code rewrite, a representative of the Attorney General's office testified that the provision was invalid. Likewise, the executive branch has, for many years, taken the position that the requirement for legislative approval of royalty oil contracts is unconstitutional (See Governor's transmittal letter for SB 164 dated April 22, 1995, Senate Journal, pages 1190-1191) Note, however, that while the executive branch has consistently, and, in my view, correctly, asserted that legislative approval provisions are unconstitutional, it has often conformed to them to accommodate the legislative desire for oversight.

(4) AS 43.82.400 uses the term "public revenue." I don't know what that means.

(5) The definition of "uneconomic or uncompetitive" added in paragraph 12 of AS 43.-82.900 in this CS is not useful. That phrase is not used in the bill at all except in the paragraph (11) of the same section. Taken together the net result of both the definitions is to define "stranded gas" as follows: (11) "stranded gas" means gas that is not being marketed due to prevailing cost or price conditions as determined by an economic analysis by the commissioner. Is that a good definition for your purpose? If so, I suggest you substitute it for paragraphs (11) and (12).

(6) In AS 43.82.510 added by this CS it is presumed that more than one municipality will be affected and so several members will be appointed to the group. What if only one municipality is affected?

(7) In AS 43.82.200(2)(A) and (B) are mutually exclusive. Does this make sense?

(8) AS 43.82.300 is unclear to me. Upon approval of an application, a commissioner can request certain information, but, if the information is not provided, the commissioner is prohibited from continuing to review the application. Hasn't the application already been approved? What, then, is left to review?

TBC:lmb
98-035.lmb

Enclosure

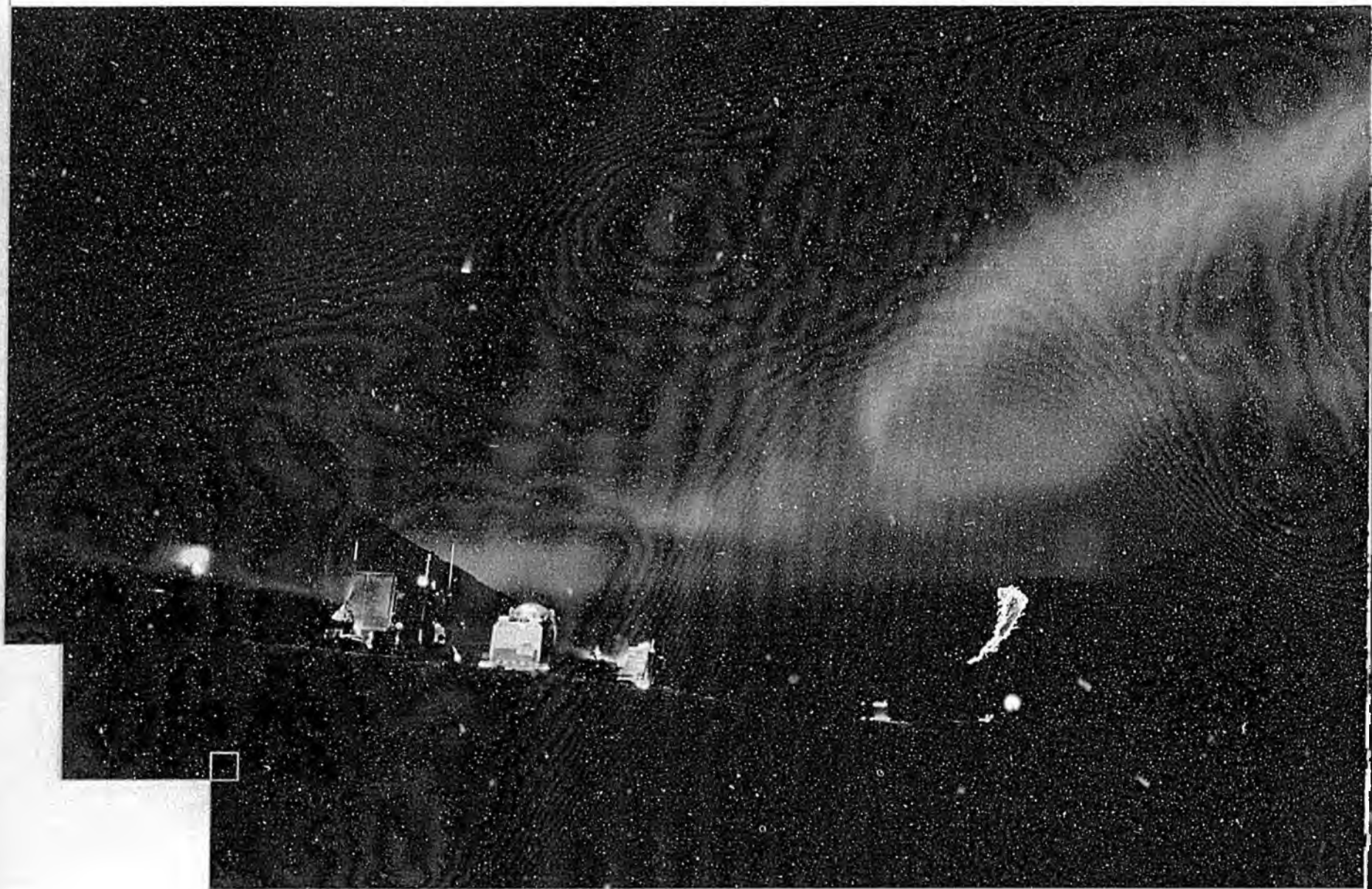


ALASKA NORTH SLOPE GAS

Naturally Powerful

ARCO Alaska, Inc. 

PARTNERS IN ALASKA'S FUTURE



*"Development of North Slope Gas
is an important part of ARCO
Alaska's strategic game plan."*

Ken Thompson
President, ARCO Alaska



*North Slope Gas Project
advantages include a proven
resource, existing infrastructure,
and growing market demand.*

ALASKA NORTH SLOPE GAS *Naturally Powerful*



Alaska has a unique opportunity: the state's North Slope contains enormous known natural gas resources. In geographic terms, Alaska is ideally situated for deliveries to Pacific Rim nations. Japan, Korea, Taiwan and many other Asian countries are expected to increase their use of natural gas throughout the next decade. On a worldwide level, the predicted demand for liquefied natural gas (LNG) will exceed current supplies within the same time frame.

The Alaska North Slope Gas Project would make it possible to deliver large volumes of LNG to these emerging markets overseas. Much of the necessary field equipment is already in place at Prudhoe Bay, including the world's largest gas-handling facility. The trans-Alaska pipeline may provide a right-of-way corridor and infrastructure for transportation to tidewater. Overseas transportation systems are established; since 1969, Alaska gas producers have been providing Japan with regularly scheduled tanker shipments of LNG from the Kenai region.

Before North Slope LNG can be brought to market, project sponsors must achieve economic viability. Three core challenges remain: further reduction of capital costs, confirmation of buyers for large volumes of LNG, and development of a stable, appropriate tax and regulatory environment.

Your interest in Alaska North Slope LNG is appreciated. The following pages provide an overview of the proposed methods for developing and marketing this clean-burning energy resource. For more details, please contact ARCO Alaska.

THE RESOURCE

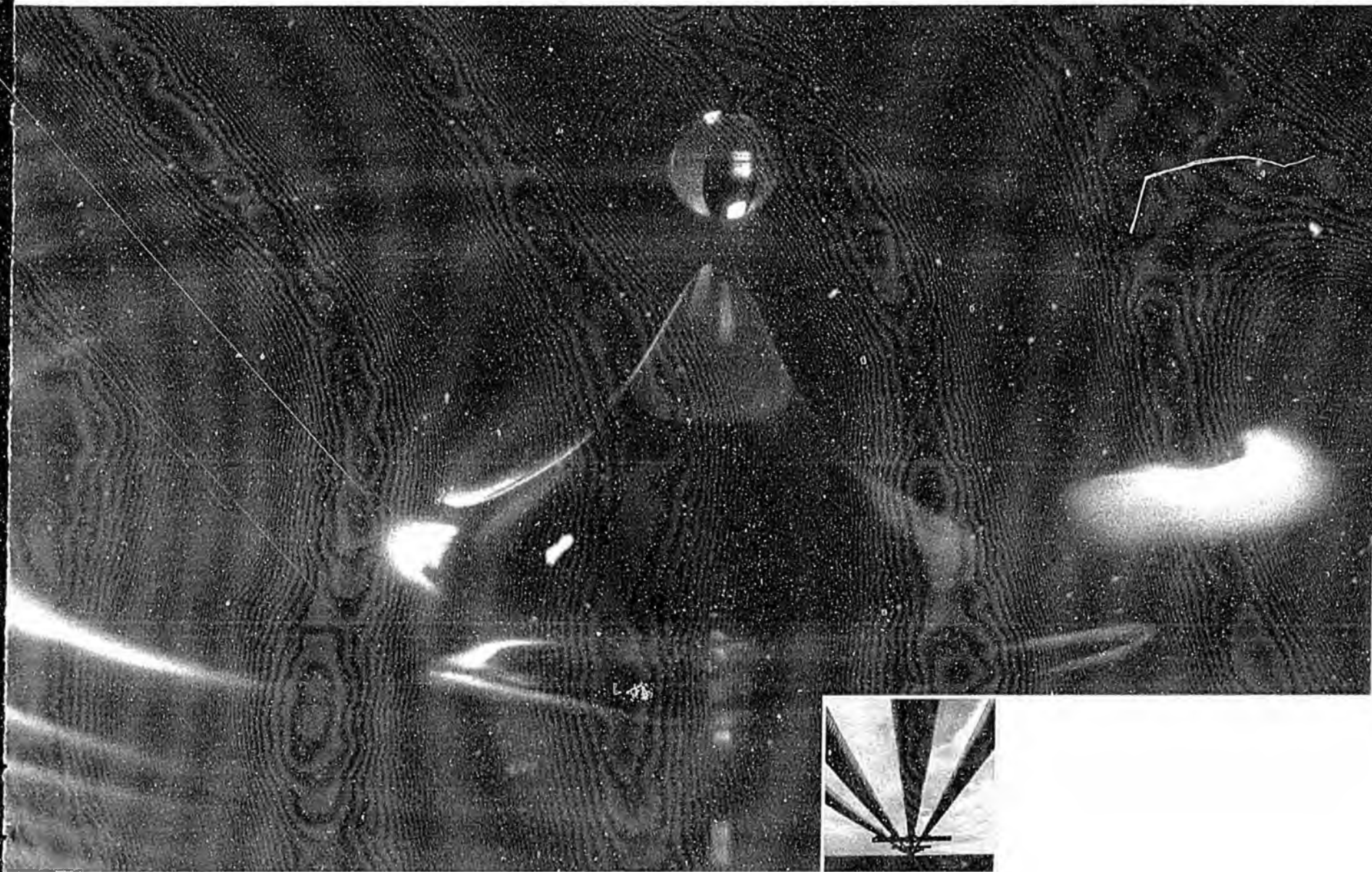
ARCO discovered the super-giant Prudhoe Bay oil field in 1968. Recoverable natural gas resources at Prudhoe Bay are estimated at 26 trillion cubic feet—the energy equivalent of more than 3.8 billion barrels of oil. Of this amount, ARCO owns 32 percent, or over 8 trillion cubic feet, of recoverable gas. Exxon and British Petroleum (BP) are also significant owners of the asset. Surrounding oil fields may contain an additional 5 trillion cubic feet.

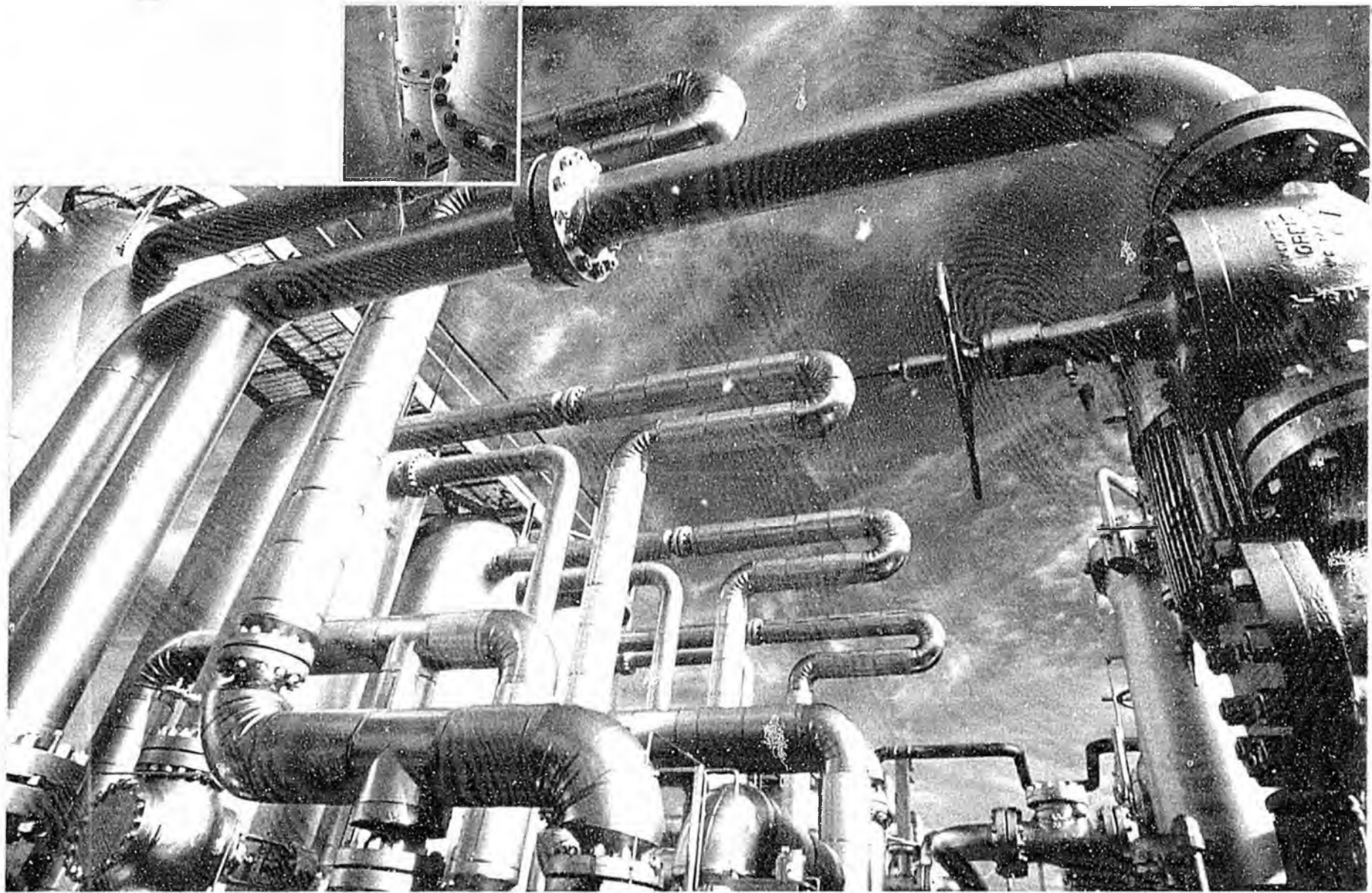
The North Slope generates large volumes of natural gas as a by-product of oil recovery. This gas is processed at facilities installed and operated by ARCO Alaska, on behalf of all Prudhoe Bay producers. Operations were expanded in 1990, and again in 1993, creating the world's largest gas-handling complex. The plant can safely process up to 8 billion cubic feet of natural gas every day—an amount exceeding Japan's daily gas usage.



Prudhoe Bay Gas Ownership

<i>ARCO</i>	32%
<i>Exxon</i>	32%
<i>BP</i>	21%
<i>State of Alaska</i>	13%
<i>Others</i>	2%







LNG transportation at low pressure in dedicated ships is the industry standard.

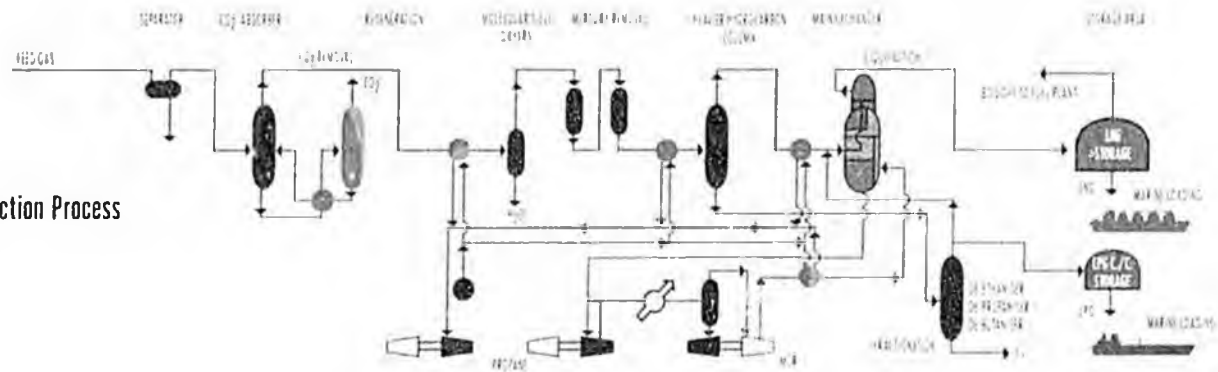
TECHNOLOGY & SAFETY

Natural gas is pure; it can be used directly by a power plant or other end-user. On land, gas is transported to market by pipeline. But before natural gas is transported long distances across water, it is liquefied by chilling to -260°F , using safe and proven super-cooling technologies. This LNG uses 1/600th of the volume required by the vapor; a gallon of LNG weighs 45 percent less than a gallon of water.

LNG is carried at low pressure in refrigerated tankers, and delivered to ports equipped with specialized receiving facilities. The liquid is stored in refrigerated tanks. When natural gas is needed, the LNG is allowed to warm, restoring the liquid to a gaseous state, which can then be piped to end-users.

ARCO Alaska has nearly three decades of experience working with North Slope natural gas. This proven expertise and safety record qualifies ARCO for this world-class LNG project.

Typical LNG Production Process





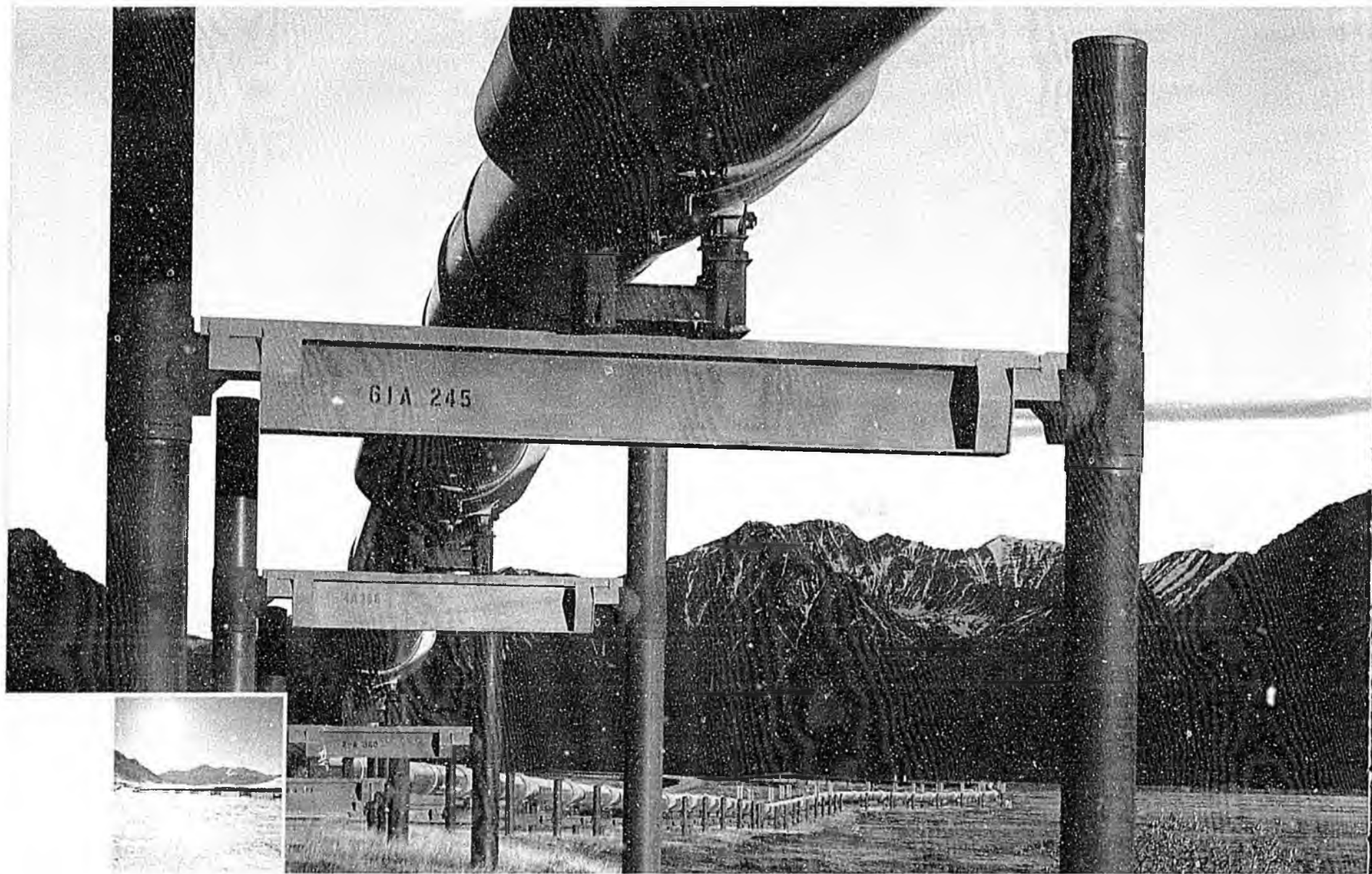
THE OPPORTUNITY

The Alaska North Slope Gas Project closely parallels crude oil production. Produced natural gas will begin its journey at a new Prudhoe Bay gas-conditioning facility, where carbon dioxide and trace impurities will be removed. After purification, the pipeline-quality gas will be pressurized to 2,400 psi, and then cooled to pipeline temperature (about 30°F). Gas will be transported from the North Slope via gas pipeline (located roughly parallel to the trans-Alaska oil pipeline) along an 800-mile route to a liquefaction plant at the existing Valdez Marine Terminal. After the gas is liquefied, it will be stored in low-pressure, double-walled tanks until transferred to refrigerated tankers.

The proposed production system incorporates existing infrastructure wherever possible, resulting in significant cost efficiencies. The current concept is designed to accommodate future opportunities and project enhancements as they are pursued.

LNG is the ARCO base plan, though other options are not being foreclosed. For example, technology for refining natural gas to petroleum liquid will be tested in 1998 in the pilot plant at the ARCO Cherry Point refinery. If proven viable, this technology may also have application on the North Slope.



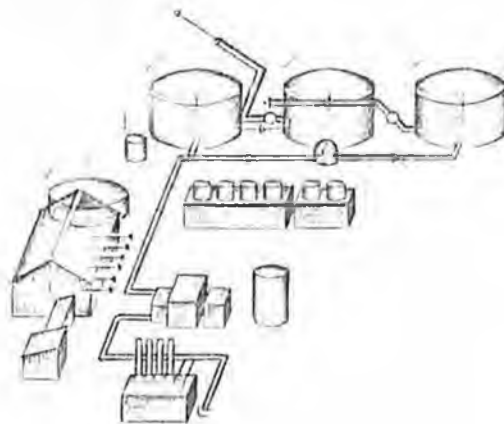


THE ECONOMICS

"Alaska has some of the world's greatest reserves of natural gas, and our people have a proven track record of safe, long-term resource development. We have some obstacles to overcome along the way, but we are working with the industry to make Alaska's North Slope gas competitive in world markets in the near future."

Governor Tony Knowles

LNG plant at Valdez
Artist's Rendering



Despite abundant supplies, expertise and in-place infrastructure, the success of the Alaska North Slope Gas Project depends upon overcoming significant economic hurdles. Natural gas projects of similar size, offering direct competition to Alaska LNG, will not need an 800-mile pipeline to an ice-free port. The cost of this physical requirement does place a competitive and economic burden on North Slope resources. As a result, attention is being focused on innovative ways to reduce capital and operating costs, thus creating a lower economic threshold for the project.

Project costs are currently estimated at \$15 billion, with potential for reduction to \$12 billion. Budget allocations include 37 percent for pipeline construction and compressor stations, 25 percent for tankers, 28 percent for a liquefaction plant and loading terminal, and 10 percent for a gas treatment plant.

To be fully feasible, the project will need further cost reductions, and a rapid ramp-up to coincide with market demand at the appropriate time. Alaska North Slope gas could be in the market starting in 2007, at the earliest.

ARCO plans to develop a project based upon realistic pricing with buyers in high-potential markets. In addition, we are working with the state and federal governments to improve the investing environment. Progress has been made by Alaska's current Legislature and administration to strengthen fiscal support for development of Alaska North Slope gas. We believe there is potential for even more improvement through ongoing discussion and cooperation.

THE MARKET

The U.S. Energy Information Office predicts a 76 percent increase in global demand for natural gas by 2015. In Asia, demand is expected to grow by 6.5 percent every year; regional growth-markets include China, India, the Philippines, Taiwan and Thailand. The worldwide demand for natural gas has been driven, in part, by increasing concern for the environment. The need for environmentally sensitive energy sources is particularly notable in Asia, where many countries import all their energy or rely heavily on nuclear power. Japan has been a leader in the shift toward LNG. In 1970, Tokyo Electric Power Company started the LNG trend with its first gas-fired electric power plant, based on LNG produced in Alaska.

Alaska remains a geographically and logistically attractive source of LNG, initially providing 14 million tons per year. Consider one of Alaska's inherent advantages: some buyers may be wary of making long-term commitments to obtain gas from regions where political and social instability could interrupt supply. In contrast, Alaska offers a secure supply, and a long history of dependable delivery.

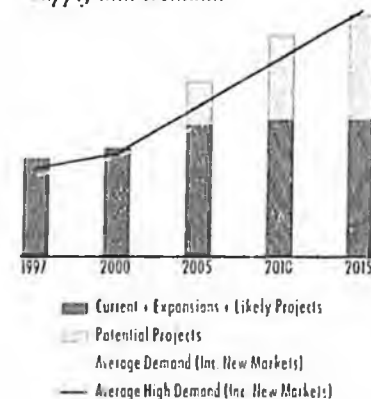


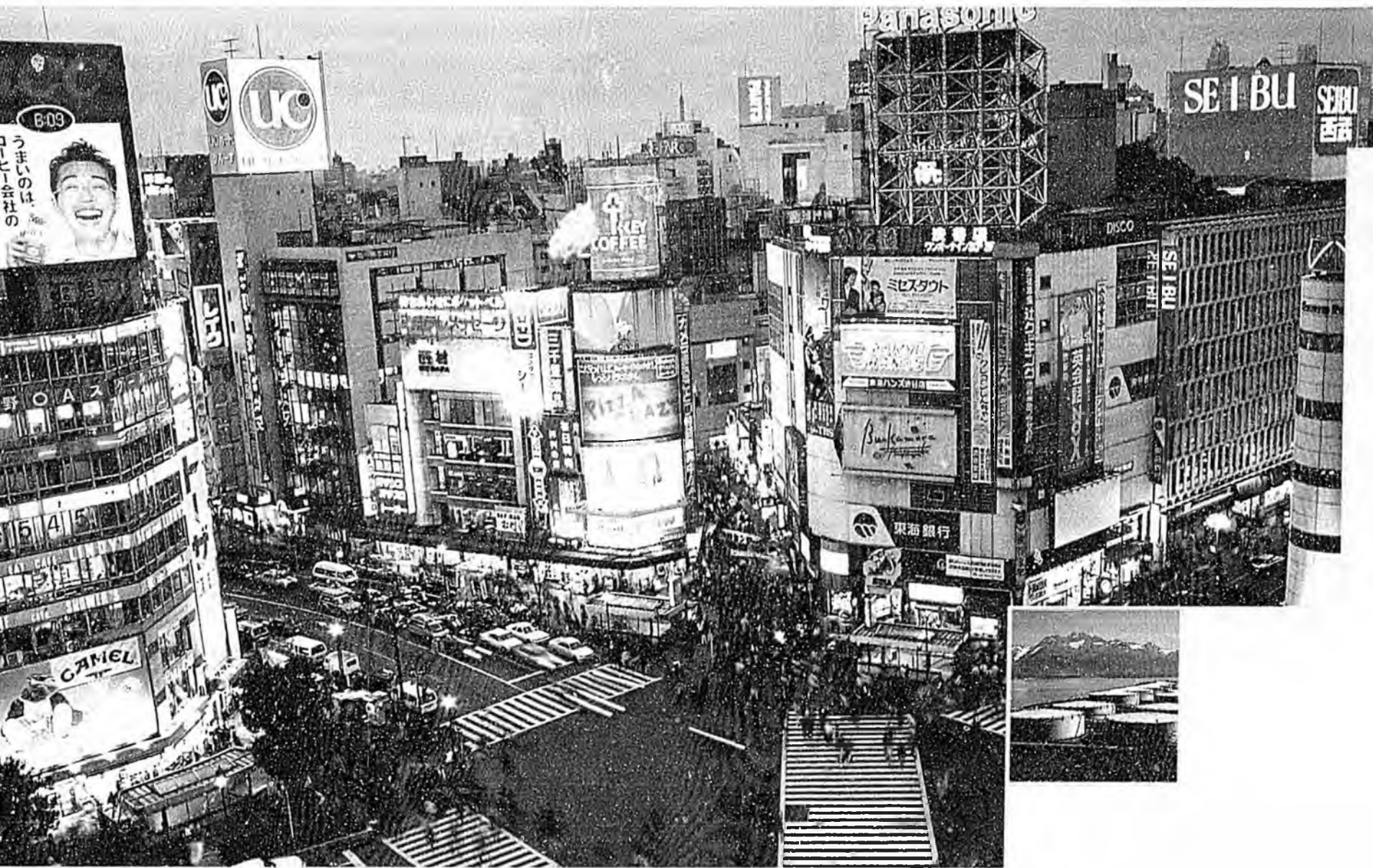
Over 80 percent of Japan's power is generated with clean-burning natural gas.

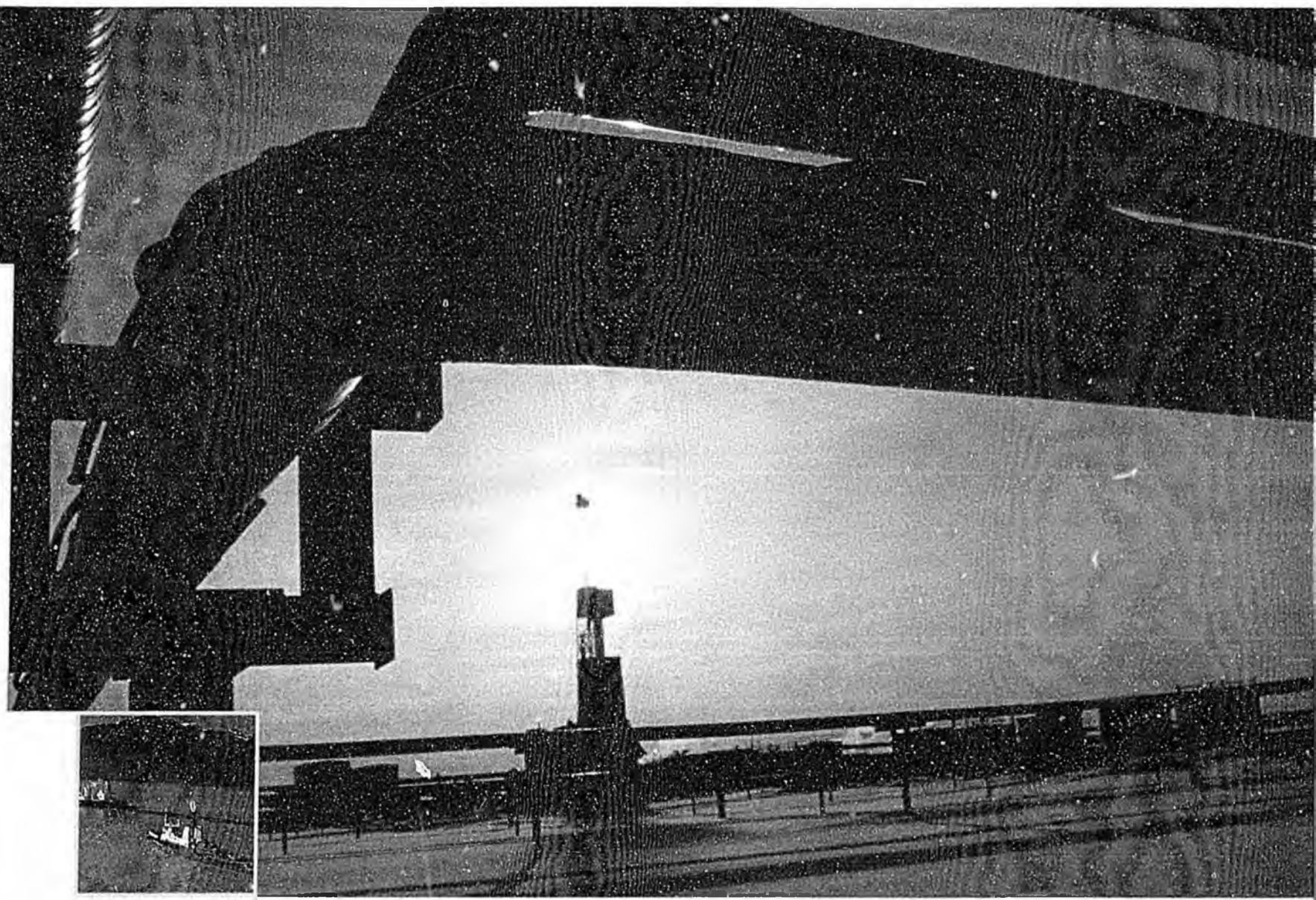
THE COMPETITION

In addition to existing Pacific Rim gas sources, substantial new LNG production is expected to become available between 2000 and 2005. This includes expansions in Malaysia, Australia and Qatar, and new green-field projects in Qatar and Indonesia. Consensus projections show a rough balance between supply and demand increases for the Pacific Rim, through about 2005. From 2005 to 2010 and beyond, demand increasingly outstrips supply, perhaps by 25 to 30 million tons per year by 2010. The Alaska North Slope Gas Project will be competing to fill this gap.

Far East LNG
Supply and Demand









THE EXPERTISE

An oil industry pioneer, ARCO Alaska wrote the book on safe, responsible development of arctic petroleum resources. Atlantic Richfield has earned a worldwide reputation as an innovative supplier of energy, and we are actively developing links with the countries that will ultimately buy North Slope natural gas.

ARCO Alaska has incomparable experience working with North Slope oil and gas. The world's largest miscible gas-flood project is located at Prudhoe Bay, supported by the world's largest gas-handling facilities complex. No other company in the world produces more oil through miscible gas technology.

ARCO is also an industry leader in environmentally sensitive resource utilization. We are internationally recognized for our clean-energy production, small "footprint" strategies on the North Slope, ongoing commitment to indigenous people, and care for wildlife habitat.


ALASKA NORTH SLOPE GAS
naturally powerful

Alaska has been exporting LNG to Japan for nearly 30 years. With economic feasibility, we can be poised to market 1-1 million tons per year of North Slope natural gas. Development of this resource can create jobs, state and federal revenue, and help to improve our balance of trade. Alaska North Slope natural gas is the right resource, in the right place, at the right time.

Alaska North Slope Gas
Naturally Powerful

HB

406

File 1

LEGAL SERVICES

DIVISION OF LEGAL AND RESEARCH SERVICES
LEGISLATIVE AFFAIRS AGENCY
STATE OF ALASKA

(907) 465-3867 or 465-2450
FAX (907) 465-2029
Mail Stop 3101

130 Seward Street, Suite 409
Juneau, Alaska 99801-2105

MEMORANDUM

March 5, 1998

SUBJECT: Draft CSHB 406(RES); version P (Work Order No. 20-LS1573\P)
TO: Representative Scott Ogan
FROM: George Utermohle *GU*
Legislative Counsel

Enclosed is the draft of CSHB 406(RES) that you requested.

This version (version P) contains the following changes to version H:

- ✓ one, three new paragraphs are added to the Findings section (Sec. 1(a) of the bill);
- ✓ two, a new subsection is added to Sec. 16.16.010 relating to allocation of resources and preferences in time of shortage (Sec. 2 of the bill);
- ✓ three, Sec. 16.16.020(b) is rewritten to require concurrence of the Department of Fish and Game with a finding of shortage by the Board of Fisheries or the Board of Game and to make other changes (Sec. 2 of the bill);
- ✓ four, Sec. 16.16.020(c) is rewritten to substitute regional fish and game board for local fish and game advisory committee and to delete the requirements for use of a certain number of species and for sharing of resources in order to qualify for preference for personal and family use for sustenance (Sec. 2 of the bill);
- ✓ five, Sec. 16.16.020(d) is rewritten to substitute regional fish and game board for local fish and game advisory committee (Sec. 2 of the bill);
- ✓ six, Sec. 16.16.020(e) and (f) from the prior version are combined into a new (c) to reflect the elimination of the role of the local advisory committees in the process for determining eligibility for the preference for fish and game dependent uses (Sec. 2 of the bill);
- ✓ seven, a definition of "preference" is added to Sec. 16.16.095 (Sec. 2 of the bill);
- ✓ eight, the definition of "shortage" is rewritten in Sec. 16.16.095 (Sec. 2 of the bill);

Representative Scott Ogan

March 5, 1998

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✓ nine, a reference to the sustained yield principle is added to Sec. 16.05.245(b)(2) (Sec. 5 of the bill);

✓ ten, Sec. 16.05.260(e) is rewritten to eliminate the requirement that the governor appoint members of the regional fish and game boards from lists of persons submitted by the local fish and game advisory committees (Sec. 12 of the bill);

✓ eleven, Sec. 16.05.260(h) and (i) are rewritten and (j) is deleted to reflect the elimination of deference to the local fish and game advisory committees and to eliminate delegation of authority from the commissioner to the regional boards (Sec. 12 of the bill);

✓ twelve, Sec. 32 of the bill is amended to add AS 16.05.940(7) and (27) (definition of "customary and traditional" and "rural area") to the list of provisions repealed;

✓ thirteen, Secs. 37 - 40 are added to the bill to provide for an advisory vote on a preference for use of fish and game for personal and family use for sustenance and amendment of the Alaska National Interest Lands Conservation Act; for repeal of the provisions of the bill, and for the determination of the effective date of the bill; and

fourteen, in two places (Sec. 1(b)(2) and Sec. 13) the term regional fish and game management board was used and in both places the word "management" is deleted.

If I may be of further assistance, please advise.

GU:jdr

98-134.jdr

Enclosure

DEPARTMENT OF LAW
OFFICE OF THE ATTORNEY GENERAL

P.O. BOX 110300
JUNEAU, ALASKA 99811-0300
PHONE: (907) 465-3600
FAX: (907) 465-2075

March 2, 1998

The Honorable Scott Ogan, Co-Chair
House Resources Committee
Alaska State Legislature
Juneau, Alaska 99811

Dear Representative Ogan:

We understand that at the House Resources Committee hearing on Saturday, February 28, the question of the Governor's position on HB 406 - An act relating to fish and game was raised.

We are writing today to make it clear that the administration cannot support CS HB 406 (Res) for several reasons. First and foremost, it does not address the important goals stated by Governor Knowles when he appointed the Task Force on Subsistence last summer: 1) to ensure effective state authority over fish and game management on all lands and waters of Alaska; and 2) to recognize the paramount importance of the subsistence way of life to Alaskans. The bill does not fix what is broken, and it introduces several new problems that make it unacceptable to the administration.

The administration has serious concerns about several essential elements of the bill, among them the following:

- The bill does nothing to stop the federal takeover of fish and game management. Its definition of who will qualify for "sustenance" would exclude many who would qualify as "rural" residents under ANILCA. Because the two are inconsistent, the bill would require that ANILCA's rural resident priority be significantly amended. But, as Senator Stevens said in his recent speech to the legislature, any more amendments to ANILCA are very unlikely.

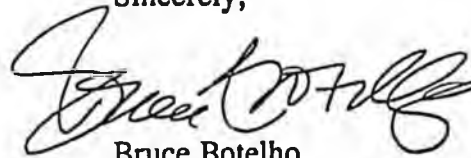
- An income-based program would be inconsistent with ANILCA. It would be an administrative, fish and game management, and enforcement nightmare.
- The bill introduces a set of burdensome government requirements and administrative steps to get a permit to hunt and fish for sustenance (a person is allowed to fish and hunt only if he or she earned or took in a certain amount of income, took a certain number of species, ate a certain amount of wild foods, and shared wild food with a certain number of others). This is big government at its worst.
- The bill would establish an individual eligibility system based on need, not a system that recognizes the traditional patterns of community cooperation and sharing that are the hallmarks of Alaska's subsistence economies.
- HB 406 would limit subsistence taking of fish and game to people on welfare or with annual family incomes of less than \$8,200 and require them to reveal personal financial and lifestyle details to a local advisory council in order to qualify.
- The bill would diminish the power of the Boards of Fish and Game and, at the same time, would add to their duties. It would do this by transferring their power to newly created regional boards and local advisory committees and, at the same time, by creating an extensive new, quasi-judicial governmental structure to handle the applications for a sustenance priority. The final administrative decision for each contested application would be made by the statewide boards, who are already overburdened with their rule-making duties.
- The bill allows a "regional area preference" that, by requiring that fish and game be eaten in the region where they are taken, effectively establishes a preference for residents who live in that region over residents who live outside of it. This would require amendment of the Alaska Constitution. The Alaska Supreme Court has said that "people who live in a fish or game population do not have a higher claim to that population than state residents whose domiciles are more distant." Thus, the "regional area preference" would require an amendment to Article VIII's common use and other "equal access" clauses.
- The bill says that sustenance is a "fundamental right" under the Alaska Constitution. However, our courts have called subsistence only a "highly important interest" - one that does not deserve the same constitutional protection as, say, freedom of speech or freedom of religion. If sustenance is established as a "fundamental right," any attempt by the legislature or the boards to distinguish between residents who are and who are not qualified to participate in the priority will require a higher level of scrutiny by the courts and will have to pass more rigorous tests to satisfy our equal protection clauses.

The Honorable Scott Ogan, Co-Chair
House Resources Committee

March 2, 1998
page 3

As you are aware, the basic elements included in the proposal submitted by the Task Force on Subsistence are critical to Governor Knowles and to this administration. Ensuring effective state authority over fish and game management on all lands and waters of Alaska is one of our two main goals. HB 406 will not do this, and for that reason we cannot support the legislation in its current form.

Sincerely,



Bruce Botelho
Attorney General



Frank Rue, Commissioner
Alaska Department of Fish and Game

cc: Members, House Resources Committee
The Honorable Gail Phillips, Speaker, House of Representatives
Pat Pourchot, Legislative Director, Office of the Governor
Geron Bruce, Legislative Liaison, Department of Fish and Game
Chrystal Smith, Legislative Liaison, Department of Law
Steve White, Assistant Attorney General
Mary Pete, Director, Subsistence Division, Department of Fish and Game

CS FOR HB 406

An Act Relating to fish and Game

Summary Points

2/27/98

1. Establishes that the ability to take fish and game for personal and family use for sustenance is a fundamental right under the Constitution of the State of Alaska.
2. Establishes that the harvest of fish and game for personal and family use for sustenance by residents is the highest and best use of fish and game.
3. Authorizes the Boards of Fisheries and Game to establish fish and game dependent use areas where dependence on fish and game for personal and family use for sustenance is the principal characteristic of the economy and way of life of the area.
4. Authorizes the Board of Fisheries or Board of Game, after determining that a shortage exists, to establish a preference for fish and game dependent uses.
5. In times of shortage, the Boards may require that the flesh or meat of fish and game must be consumed within the region where the fish or game was taken.
6. Defines a dependent fish and game user as one who:
 - possesses a \$5 resident hunting, trapping and sport fishing license.
 - is dependent on fish and game for personal and family use for sustenance or has no alternative means of sustenance or has decided to adopt a fish and game dependent life style.
 - has consumed a variety of species of fish and game as decided by the Boards
 - has shared fish and game with a minimum number of households as established by the Boards
7. Provides for Local Advisory Committee participation in the individual eligibility for a preference within their area.
8. Establishes 5 Regional Boards consisting of 9 members appointed by the Governor and confirmed by the legislature.
9. Requires regulation proposal to go through Local Advisory Committees and newly established Regional Boards.
10. The Regional Boards are required to give deference to Local Advisory Committee recommendations and the Statewide Boards of Fisheries and Game are required to give deference to recommendations of the Regional Boards. Several

criteria are established to guide when and how recommendations of the Advisory Committee's and Regional Boards can be overturned or rejected.

11. Provides for non-commercial bartering .
12. Provides a two year transitional period.

STATE OF ALASKA

DEPARTMENT OF LAW

OFFICE OF THE ATTORNEY GENERAL

TONY KNOWLES, GOVERNOR

PLEASE REPLY TO:

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February 27, 1998

rene

The Honorable ~~Jean~~ Nicholia
Alaska House of Representatives
State Capitol, Room 409
Juneau, AK 99701-1182

Re: CS HB 406 (Resources)

Dear Representative Nicholia:

You have asked several questions about CS HB 406 (Resources), a bill dealing with subsistence. Your questions, and our responses, are set out below.

1. Does this legislation comply with Title VIII of ANILCA and if not, why?

In Title VIII of the Alaska National Interest Lands Conservation Act ("ANILCA"), nonwasteful subsistence uses of fish wildlife are the priority, consumptive uses of those resources on the federal public lands of Alaska. 16 U.S.C. § 3112. When it is necessary to restrict harvest of those resources, subsistence uses have a preference over other uses, like sport hunting and commercial fishing. 16 U.S.C. § 3114.

ANILCA defines "subsistence uses" as uses by rural Alaska residents. 16 U.S.C. § 3113. In its present form, ANILCA defines "rural Alaska resident" as "a resident of a rural community or rural area." A "rural community or area" is defined as "a community or area substantially dependent on fish and wildlife for nutritional and other subsistence uses. Pub.L. No 105-83 (1997).¹

¹ The ANILCA definitions will be repealed on December 1, 1998, if by that date the state has not adopted laws that provide for the subsistence definition, preference, and participation specified in that law. Pub.L. No. 105-83 (1997). In that event, ANILCA will not
(continued...)

In contrast to ANILCA, CS HB 406 does not define eligibility for the "sustenance" priority in terms of the characteristics of communities or areas. Instead, the bill sets out individual criteria for that eligibility. Under those criteria, a person must: (1) possess a hunting, fishing, or trapping license which is only available to persons who have received public assistance or who have lower income; (2) depend on fish and game for sustenance or lack an alternative means of sustenance; (3) have consumed within the past 12 months a certain number of species of fish and game; and (4) have shared or received fish and game from other households. All of the individual criteria must be met before a resident will be entitled to enjoy the "sustenance" priority. Proposed AS 16.16.020(c), section 2 of CS HB 406.

Under ANILCA, the state is entitled to manage subsistence hunting and fishing on federal public lands if it adopts laws "which are consistent with, and which provide for the definition, preference, and participation specified in . . ." that federal law. 16 U.S.C. § 3115(d), emphasis added. The question, then, is whether the two sets of criteria for participating in subsistence/sustenance -- the rural residency criteria of ANILCA and the individual criteria of CS HB 406 -- are "consistent."

The question can best be answered by examining the judicial treatment of an earlier "consistency" dispute. In 1988, the Ninth Circuit Court of Appeals compared the state's definition of "rural," which looked at whether traditional uses were a principal characteristic of an area, with a definition of rural that the court could derive from ANILCA.² The court concluded that the state's definition was not consistent with the common understanding of "rural," i.e., areas of sparse population. Its conclusion was based on a comparison of the geographic areas that would qualify under each. *Kenaitze Indian Tribe v. State of Alaska*, 860 F.2d 312, 316-318 (9th Cir. 1988) The court noted that the Kenai Peninsula would qualify under its interpretation of "rural," but that it did not qualify under the state's definition. Because the state's definition would exclude practically all areas that would be commonly thought of as rural, the court concluded that the definition was not consistent with ANILCA. *Id.*

We believe that a court would follow a similar approach to determine if the individual criteria of CS HB 406 are consistent

¹ (...continued)
have a statutory definition of "rural."

² At that time, ANILCA had no statutory definition of "rural."

with ANILCA's definition. A court could not compare geographic areas because CS HB 406 does not use a person's place of residence as a qualifier. Instead, a court would likely compare the two groups who would qualify. If the membership of the group qualifying under the rural residency criteria differed significantly from the membership of the group qualifying under the individual characteristics criteria, it is likely that a court would find them inconsistent.

It is probable that the makeup of the two groups would be different. Under ANILCA, residents of all rural communities and areas qualify. Under the individual criteria of CS HB 406 some urban residents would qualify, and some rural residents would not qualify. Although not certain, it is likely that the number of sustenance users qualified by CS HB 406 would be fewer than the number qualified by ANILCA. Because of this probable difference in group makeup and size, we believe that a court would conclude that the bill does not "provide for the . . . participation specified in . . ." ANILCA (16 U.S.C. § 3115(d)). Thus, the two would be found inconsistent, and the state would not be entitled to manage subsistence on federal public lands in Alaska.

2. Does this legislation raise constitutional issues and if so, what are they?

CS HB 406 has a "regional area preference." Under section 2, "In a time of shortage of fish or game resources, the appropriate board may adopt a regional preference among beneficial uses of fish and game by requiring that the flesh or meat of fish and game be consumed within the region where the fish or game was taken."

Representative Ogan said that this is a key element of the bill. He believes that it is constitutional because it is a "preference among beneficial uses."³

Presumably, the "beneficial use" contemplated by the bill is the consumption of subsistence fish and game. To date, the Alaska Supreme Court has not recognized consumption as a "use" under the Alaska Constitution. The only recognized uses are commercial, sport (recreational), subsistence, and personal use. That is not to say, however, that the Court would not accept

³ Article VIII, section 4, of the Alaska Constitution allows "preferences among beneficial uses." the Alaska Supreme Court has held that because those preferences do not restrict admission to a resource user group, they are permissible under that clause and the other "equal access" clauses. *Gilbert v. Department of Fish & Game*, 803 P.2d 391 (Alaska 1990).

consumption as a beneficial use.

A constitutional problem arises because "consumption" must be in a particular geographic place, specifically the region where the fish and game are harvested. If the Boards adopted such a regional preference, it would significantly restrict the opportunity of residents living outside of a region to harvest subsistence resources in the region. For example, a person living outside a region who shot a subsistence moose would have to either: (1) remain in the region until the person or the person's family consumed the moose; or (2) give the moose away to non-family persons who do live in the region. The first option is impractical. Few persons would find it reasonable to set up a temporary household for weeks or months in a different region just to consume fish and game harvested there. The second option is contrary to the purpose of HB 406. If the harvester had to give the fish and game away to non-family members, the activity would no longer be "the harvest of fish and game for personal and family use for sustenance." CS HB 406, § 1.

Essentially, the "regional area preference" provision establishes a preference for subsistence harvest based on one's place of residence. Although it does not, on its face, exclude harvest by persons outside of a region, in its practical application, the only persons who could consume the fish and game in the region are those who live there. They would have a significant advantage, if not a monopoly, to those resources because of their closer proximity. Indeed, Representative Ogan said the purpose for the amendment is to make sure that, in times of shortage, persons are given a preference for harvesting fish and game in their own regions.

Since *McDowell*, the Alaska Supreme Court has said that, under the present Article VIII "equal access" clauses of the Alaska Constitution -- the clauses guaranteeing common use, prohibiting exclusive rights of fisheries, and requiring uniform application of natural resource laws -- the right to harvest subsistence resources cannot be based upon the location of a person's residence. Most recently, the Court, when discussing *McDowell*, said, "We both quoted and stressed language holding that people who reside near a fish or game population do not have a higher claim to that population than state residents whose domiciles are more distant. . . . Just as eligibility to participate in all subsistence hunting and fishing cannot be made dependent on whether one lives in an urban or rural area, eligibility to participate in Tier II subsistence hunting and fishing cannot be based on how close one lives to a given fish or game population." *State v. Kenaitze*, 894 P.2d 632, 638 (Alaska 1995). Under that principle, the Court struck down the Tier II proximity criterion. *Id.*

The Honorable Jean Nicholia
Alaska House of Representatives
Re: CS HB 406 (Resources)

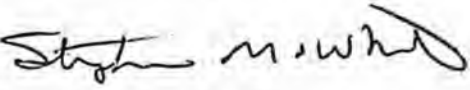
February 27, 1998
Page 5

The intended purpose and the practical effect of the "regional area preference" is to give certain residents a "higher claim" to subsistence resources because they live closer to them. For that reason, it is unlikely that the preference would survive a legal challenge under the present "equal access clauses." For the preference to be constitutional, Article VIII would have to be amended to allow a priority for subsistence hunting and fishing that is based upon a person's place of residence.

Please contact me if I can assist you further.

Sincerely yours,

BRUCE M. BOTELHO
ATTORNEY GENERAL

By: 
Stephen M. White
Assistant Attorney General

SMW:lmt:pch

J:\WHITE\NICHOLIA.WPD

LEGAL SERVICES

DIVISION OF LEGAL AND RESEARCH SERVICES
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130 Seward Street, Suite 409
Juneau, Alaska 99801-2105

MEMORANDUM

February 26, 1998

SUBJECT: CSHB 406(RES); Consistency with ANILCA (CSHB 406(RES))

TO: Representative Irene Nicholia
Attn: Paula Terrel

FROM: George Utermohle *GU*
Legislative Counsel

You have asked whether CSHB 406(RES), version H, if enacted, would satisfy the requirements of Title VIII of the Alaska National Interest Lands Conservation Act (ANILCA) for resumption of state management of subsistence uses of fish and game on federal public lands.

The short answer is no.

Under 16 U.S.C. 3115, as amended by P.L. 105-83, sec. 316(e)(6), the State of Alaska "may immediately assume management for the taking of fish and wildlife on the public lands for subsistence uses" if the Secretary of the Interior and the Secretary of Agriculture certify that the state has "enacted and implemented laws of general applicability which are consistent with, and which provide for the definition, preference, and participation specified in [16 U.S.C. 3113, 3114, and 3115]".

CSHB 406(RES) does not provide for either the definition, preference, or participation necessary to satisfy the current requirements of Title VIII of ANILCA.

DEFINITION. ANILCA defines "subsistence uses" as the customary and traditional uses by rural Alaska residents of wild renewable resources for certain specified purposes.

CSHB 406(RES) provides for the use of fish and game for personal and family use for sustenance (fish and game dependent uses). Such uses are available to all Alaska residents without regard to whether they reside in rural areas or urban areas. Even in times of shortage, use of fish and game for fish and game dependent uses is not limited to rural residents.

Representative Irene Nicholia
February 26, 1998
Page 2

ANILCA provides that subsistence uses of fish and game include customary trade. CSHB 406(RES) does not authorize customary trade of fish and game taken for fish and game dependent uses.

PREFERENCE FOR SUBSISTENCE USES. ANILCA provides that subsistence uses shall be accorded a priority over the taking of fish and game for other purposes. ANILCA also provides that, when necessary to protect fish and game populations or to protect continued subsistence uses of fish and game, access to the fish or game by subsistence users be limited in accordance with the subsistence user's customary and direct dependence on the fish or game population as a mainstay of livelihood, local residency, and the availability of alternative resources.

CSHB 406(RES) does not accord a preference for fish and game dependent uses of fish and game over all other uses of fish and game. In the event of shortage of fish or game, such that there is not sufficient fish or game to reasonably provide for the sustenance needs of persons who are dependent on fish and game for personal and family use for sustenance, then the Board of Fisheries or the Board of Game, as appropriate, may reserve a portion of the resource for fish and game dependent uses of fish and game and establish a preference to provide a reasonable opportunity to satisfy the need for fish and game dependent uses. Under CSHB 406(RES) the establishment of a preference for fish and game dependent uses is discretionary with the boards and would apply only in a situation that is considered to be a Tier II situation under ANILCA. The criteria for determining who may benefit from the establishment of a preference for fish and game dependent uses is tied to the person's financial or economic status and the person's recent dependence upon and use of fish and game for personal and family use for sustenance. Unlike ANILCA, eligibility for fish and game dependent uses is not tied to rural residency, customary dependency on fish and game, or proximity of residence to the resource.

LOCAL AND REGIONAL PARTICIPATION. ANILCA provides for the establishment of at least six subsistence resource regions. Each region is to have a regional advisory council of ten members. Four of the members of the council are to be residents of the region who have been nominated by tribal councils in the region. The remaining six members are to be nominated by local governments and local advisory committees in the region. Three of the remaining six members are to be subsistence users who reside in the region and the last three members are to be sport or commercial users who may reside in any subsistence resource region in the state. ANILCA also provides that there should be as many local advisory committees as the Secretary of the Interior and the Secretary of Agriculture determine necessary to assist the regional advisory councils in performing their duties.

CSHB 406(RES) provides that a maximum of five fish and game management regions be established in the state. Each region is to have a regional fish and game board consisting of nine members. Each of the members of the regional boards is to be appointed by the governor, subject to confirmation by the legislature, from lists of persons submitted by the

Representative Irene Nicholia

February 26, 1998

Page 3

local fish and game advisory committees. The members of the regional boards are not required to be from specific areas of the state or region or to be members of particular user groups. CSHB 406(RES) provides that there be a maximum of nine local fish and game advisory committees in each region.

There are also many additional details regarding local and regional participation that are addressed by ANILCA and CSHB 406(RES). In some matters the two pieces of legislation agree, in other matters they take different approaches, and in still other matters one or the other pieces of legislation is silent on.

In conclusion, there are such differences between what CSHB 406(RES) does in regard to fish and game dependent uses of fish and game and the requirements imposed under ANILCA as prerequisite for resumption of state management of subsistence uses of fish and game on federal public lands, that CSHB 406(RES) does not provide a basis on which the state may resume management of fish and game on federal public lands. Either CSHB 406(RES) or ANILCA, or both, would have to be changed before HB 406 could provide a basis on which the State of Alaska could resume management of fish and game on federal public land in Alaska.

If I may be of further assistance, please advise.

GU:glc

98-107.glc

HOUSE BILL – 406

QUICK REFERENCE *** SECTION BY SECTION

1. FINDINGS AND INTENT
2. ***INSTRUCTS DEPARTMENT AND BOARDS TO IMPLIMENT PREFERENCE FOR SUSTENANCE.***

SETS OUT CRITERIA ESTABLISHING ***REGIONS OF PREFERENCE*** AND ***BASIC CRITERIA FOR PEOPLE WHO APPLY FOR SUCH USE.***

ESTABLISHES APPEAL PROCESS FOR THOSE DENIED A PREFERENCE.

GIVES LOCAL ADVISORY AND REGIONAL BOARDS ***GREATER WEIGHT IN THEIR DECISIONS.***

ESTABLISHES LIMITS ON ***COMMERCIAL ACTIVITY.***

DEFINES: ***PRINCIPAL CHARACTERISTIC, REASONABLE OPPORTUNITY, SHORTAGE, and SUSTAINED YIELD***
3. CHANGES NAME IN DEPARTMENT FROM SUBSISTENCE TO FISH AND GAME DEPENDENT USE.
4. SAME AS ABOVE.
5. ***ESTABLISHES FILTERING PROCESS FOR REGULATIONS UP THROUGH LOCAL ADVISORY COMMITTEES – REGIONAL BOARDS – ON TO STATE BOARDS.***
6. CHANGES TERMINOLOGY IN EXISTING STATUTE TO BE CONSISTENT WITH PERSONAL AND FAMILY SUSTENANCE.
7. CHANGES STATUTE NUMBER AND REFERENCE FOR CONSISTENCY.
8. CHANGES TERMINOLOGY FOR CONSISTENCY.
9. CHANGES STATUTE NUMBER AND REFERENCE FOR CONSISTENCY.
10. CHANGES TERMINOLOGY FOR CONSISTENCY.
11. CHANGES TERMINOLOGY FOR CONSISTENCY.