

**ALASKA NATURAL GAS TRANSPORTATION SYSTEM
RIGHT-OF-WAY LEASE**

**COMMISSIONER'S ANALYSIS and PROPOSED
DECISION and ACTION**

ADL 403427

Alaska Department of Natural Resources
State Pipeline Coordinator's Office
411 West 4th Avenue, Suite 2C
Anchorage, Alaska 99501

October 2004

PURPOSE OF ANALYSIS

The Right-of-Way Leasing Act (AS 38.35) sets forth the procedures governing an application for a gas pipeline right-of-way across State lands. Under this Act, the Commissioner of the Department of Natural Resources is granted all powers necessary to lease State land for pipeline right-of-way purposes. In leasing land for pipeline right-of-way purposes, the Commissioner must make a written finding that the applicant is fit, willing and able to perform the transportation or other acts proposed in a manner that will be required by the present or future public interest. Additionally, prior to granting a right-of-way lease, the Commissioner is required to prepare an analysis of the application.

The following document is the Commissioner's Analysis for the updated application for a natural gas pipeline right-of-way lease across State lands for the Alaska Natural Gas Transportation System, which was submitted by the Alaskan Northwest Natural Gas Transportation Company and TransCanada Alaska Company, LLC on June 1, 2004. The public comment period for this Analysis is October 15 through December 15, 2004. Written comments may be submitted by US Mail or in person to:

State of Alaska, Joint Pipeline Office
411 West 4th Avenue, Suite 2C
Anchorage, Alaska, 99501

The following public hearings have been scheduled for the updated right-of-way lease application and Commissioner's Analysis (comments will be accepted verbally or in writing at the hearings):

Barrow:	Tuesday, November 16
Anchorage:	Wednesday, December 1
Fairbanks:	Monday, December 6
Delta Junction:	Tuesday, December 7
Northway:	Wednesday, December 8
Tok:	Thursday December 9

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NATURE OF THE REQUEST

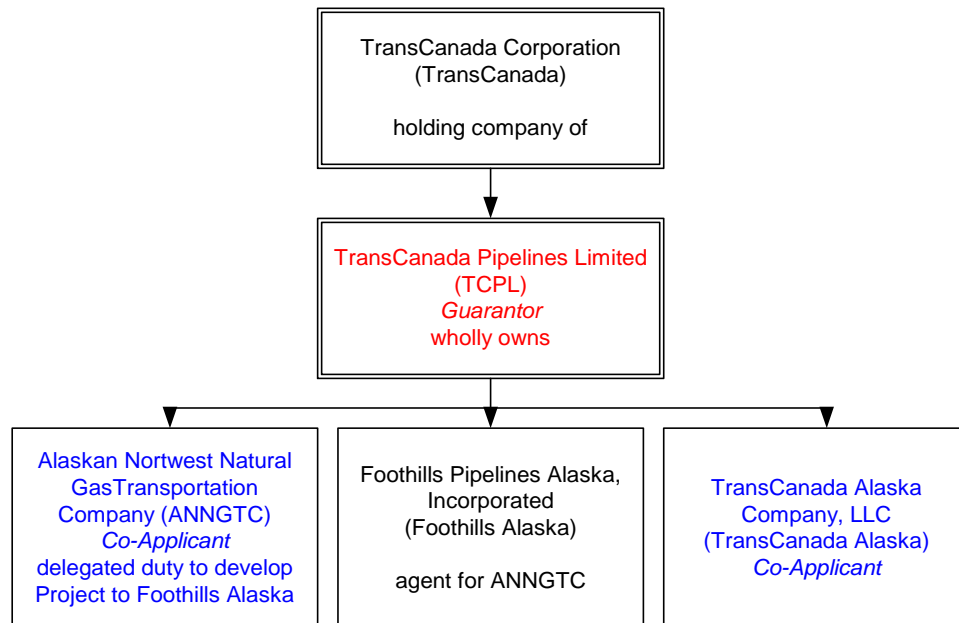
On June 1, 2004, Alaskan Northwest Natural Gas Transportation Company (“ANNGTC”) and TransCanada Alaska Company, LLC (“TransCanada Alaska”), the “Co-applicants”, filed an updated application for a natural gas pipeline right-of-way lease across Alaska State lands for the Alaska Natural Gas Transportation System (“ANGTS Project” or “Project”). The updated application was submitted pursuant to the Alaska Right-of-Way Leasing Act, AS 38.35, and is intended to supplement the original ANNGTC application filed on April 15, 1981 (ADL 403427).

ANNGTC and TransCanada Alaska are Co-Applicants for the right-of-way lease under 38.35.050(d). The ANNGTC Board of Partners has delegated to Foothills Pipe Lines Alaska, Inc. (“Foothills Alaska”) the specific duty, on behalf of ANNGTC, to prepare, file and prosecute with the appropriate Federal, State and local agencies and other governmental authorities such applications and requests for permits, authorizations and certificates as may be necessary for the further development of the ANGTS Project in Alaska. ANNGTC, Foothills Alaska and TransCanada Alaska are all wholly-owned subsidiaries of TransCanada Corporation (“TransCanada”). TransCanada is a recently-established holding company that was created under a plan of arrangement that was approved by the common shareholders of TransCanada PipeLines Limited (“TCPL”) on April 25, 2003 and subsequently by the Court of Queen’s Bench of Alberta, Canada. The arrangement became effective on May 15, 2003. TransCanada now holds all of the common shares of TCPL. TCPL continues to hold the assets and liabilities it held before the creation of TransCanada as its parent company.

TCPL is a Canadian public company incorporated in 1951 by a Special Act of Parliament in Canada and continued on June 1, 1979 under the Canada Business Corporations Act. TCPL is a direct, wholly-owed subsidiary of TransCanada. TCPL, directly and indirectly through subsidiaries, owns and operates substantial natural gas pipeline assets in North America. The Co-applicants are indirect wholly-owned subsidiaries of TCPL. TCPL and its subsidiaries have significant technical expertise with regard to the construction, operation and maintenance, and termination of natural gas pipelines and shall provide this expertise to the

Co-Applicants throughout the Project. TCPL owns and operates one of the largest remote controlled natural gas pipeline networks in the world and its subsidiaries have accumulated a significant base of knowledge and information pertaining to building and operating a gas transportation system through Alaska and northern Canada, and maintain policies and management systems to construct and operate the ANGTS.

The corporate structure of TransCanada, for those subsidiaries involved in the Alaska segment of the ANGTS Project, is depicted below. Additional subsidiaries of TransCanada, not depicted on the diagram, that also operate pipelines in North America, but are not involved in the Alaska portion of the ANGST Project are described on page 120 of this Analysis.



THE ALASKA NATURAL GAS TRANSPORTATION SYSTEM¹

The ANGTS is the gas pipeline project approved in accordance with the Alaska Natural Gas Transportation Act of 1976 (ANGTA) in the U.S., the Northern Pipeline Act in Canada, and the Agreement between the United States and Canada on Principles Applicable to a Northern Natural Gas Pipeline (Agreement on Principles). As approved, the ANGTS is a 4,800-mile international pipeline Project commencing at Prudhoe Bay and paralleling the Trans-Alaska (Oil) Pipeline System (TAPS) to Fairbanks, where it angles southeast, following the Alaska Highway to the Alaska-Yukon border with Canada, down through the Yukon Territory and northern British Columbia, and into Alberta. In Alberta, the pipeline splits into two legs. The Eastern leg proceeds southeast, crossing the U.S.-Canada border at Monchy, Saskatchewan and terminating near Chicago. The Western leg proceeds southwest, crossing the U.S. Canada border near Kingsgate, British Columbia and terminating at a point near Antioch, California.



Proposed Alaska Natural Gas Transportation System, from the TransCanada State of Alaska “Stranded Gas Development Act” Application.

¹ The information pertaining to ANGTS and the description of the Project and construction methods, with minor edits, is from the June 1, 2004 “Alaska State Right-of-Way Application for the Alaska Natural Gas Transportation System” submitted by TransCanada Alaska and Foothills Alaska.

The Co-Applicants propose to design, build and operate the 1,750-mile yet-to-be constructed portion of the ANGTS to transport Alaska North Slope (ANS) natural gas from Prudhoe Bay, Alaska to a major trading and infrastructure hub in Alberta, Canada. Foothills Pipelines LTD. (Foothills Canada), a wholly-owned subsidiary of TCPL, has already constructed, and owns and operates the Eastern and Western legs of ANGTS in Canada, or 30 percent of the Canadian portion of the ANGTS. Foothills Canada will build the Canadian portion of the pipeline from the Alaska-Canadian border to a point at Boundary Lake, Alberta, Canada. An extension by Foothills Canada of the existing ANGTS facilities to the Project at Boundary Lake will provide shippers with access to existing and expanded downstream North American pipeline infrastructure that will provide more than sufficient take away capacity for ANS gas to be delivered to North American markets.

ANNGTC is the entity selected and designated by the President, the United States Congress, and the Federal Energy Regulatory Commission (FERC) to construct and operate the Alaska segment of the ANGTS Project. As such, ANNGTC is the current holder of the conditional certificate of public convenience and necessity issued for the Project, the grantee of a right-of-way for the Project across federal lands in Alaska, and the holder of Clean Water Act Section 401 and Section 404 permits and Coastal Zone Management Act / Alaska Coastal Management Program consistency determinations.

With the passage of ANGTA, Congress determined that “the expeditious construction of a viable natural gas transportation system for delivery of Alaskan natural gas to United States markets is in the nation’s interest.” To avoid the U.S. inter-agency cross-jurisdictional issues that significantly delayed and increased the cost of Trans-Alaska Pipeline System (TAPS), ANGTA established, among other things, a streamlined process to reach an expedited decision on the selection and construction of a transportation system for delivery of Alaskan gas to the lower-48 markets.

To that end, ANGTA vested decisional responsibility in the President, subject to Congressional review, to select the natural gas transportation system for the delivery of ANS

gas to the U.S. markets. The statute also provided for the establishment of the Office of Federal Inspector (OFI), to which were transferred certain authorities of the Departments of Interior, Transportation, Agriculture, Treasury, Labor, and Energy, the Environmental Protection Agency, the Army Corps of Engineers, and the Federal Energy Regulatory Commission (FERC). The OFI was given primary responsibility for the coordination of federal permitting, enforcement of permit conditions, and facilitation and oversight of the construction and initial operation of the U.S. portions of the ANGTS.

Following several years of comparative hearings in both Canada and the United States, on September 20, 1977, the two countries consummated the Agreement on Principles. That Agreement designates the Alcan Project as the superior Project and states specific terms and conditions under which the Project would be built with the joint cooperation of the U.S. and Canadian governments.

On September 22, 1977, President Carter issued his “Decision and Report to Congress on the Alaska Natural Gas Transportation System,” which incorporates by reference the terms and conditions of the Agreement on Principles. In his Decision, the President officially designated: (i) Alcan Pipeline Company (predecessor to ANNGTC) to construct and operate the portion of the ANGTS within Alaska; (ii) Northern Border Pipeline Company to construct and operate the U.S. portion of the Eastern leg of the ANGTS; and (iii) Pacific Gas Transmission Company and Pacific Gas & Electric Company to construct the U.S. portion of the Western leg. The President’s Decision became final under ANGTA on November 2, 1977, by a Joint Resolution of Congress. Later in 1977, the Federal Energy Regulatory Commission (FERC) issued conditional certificates of public convenience and necessity authorizing the construction of the Alaska segment and Eastern and Western legs of the ANGTS.

In April 1978, the Canadian Parliament enacted the Northern Pipeline Act, which granted certificates of public convenience and necessity to the Foothills affiliates responsible for the construction and operation of the 2,000-mile Canadian portion of the ANGTS. The Act also

established the Northern Pipeline Agency and gave it the authority to oversee the construction of the system in Canada.

The President's Decision, the Northern Pipeline Act, and "Reasons for Decisions" of the Canadian National Energy Board authorizing Foothill Canada's construction of the Canadian portion of the ANGTS identified the benefits of prebuilding portions of the ANGTS in Canada and in the U.S. in advance of the entire system. In early 1980, the FERC issued certificates of public convenience and necessity authorizing the construction and operation of the Eastern and Western legs of the ANGTS (also known as the "prebuild" segments of the ANGTS). However, only after the U.S. government provided further assurances to Canada that the entire ANGTS, including the Alaska segment, would be constructed, did the Canadian government authorize the additional export volumes needed to support the construction of the Eastern and Western legs. Major portions of the Eastern and Western legs in both the U.S. and Canada subsequently were constructed.

Meanwhile, the ANNGTC, a partnership formed to construct the Alaskan segment of the ANGTS, proceeded with key technical work and related government approvals. For example: a Right-of-Way Grant for the Alaskan segment was issued by the U.S. Department of the Interior on December 1, 1980; numerous design approvals and environmental authorizations, such as the wetlands permits under Section 404 of the Clean Water Act, were issued by U.S. authorities; a conditional certificate of public convenience and necessity was issued by the FERC; and an easement agreement was executed by the Government of Canada and Foothills Canada, subject to certain Canadian governmental consents.

In addition, in 1981 the ANNGTC filed their original application with the State of Alaska for a right-of-way lease of State lands needed for the ANGTS Project. A substantial amount of work was done and money expended on the right-of-way lease. By early 1982, however, market changes resulted in a decrease in demand for ANS natural gas. As a result, in the spring of 1982, the ANNGTC announced a suspension of activities on the unbuilt portions of the ANGTS Project. Given this, a final right-of-way lease across State lands was never procured. However, this application has neither been finally acted upon by the Commissioner

of Natural Resources nor withdrawn by TCPL or its subsidiaries and, as updated, is the subject of this Analysis.

Given the extensive amount of work done and money expended on obtaining the right-of-way lease, the ANNGTC decided to maintain the lease application in good standing so that a right-of-way lease could be expeditiously obtained once gas markets improved and the ANGTS Project was remobilized. To that end, ANNGTC and TCPL undertook significant efforts to keep its pending lease application current. This work includes:

- Resolving State right-of-way and related transportation issues, including resolution of highway use issues such as completing a “Thermal Effects Study” of pipeline construction effects on the Dalton Highway and working on an “Agreement on Highway Use, Maintenance and Repairs” with the State;
- Progressed Project cost estimating;
- Periodic reconnaissance of the right-of-way route;
- Frost heave engineering and other technical work completed in support of the State right-of-way application, including the expenditure of more than \$30 million on the development of base route maps, drawings and surveys, more than \$77 million on the development of geotechnical data, and more than \$19 million on environmental-related data; and
- Extension and maintenance of the ANGTS Project Clean Water Act section 404 permits.

On March 26, 2001, the ANNGTC, through its authorized agent Foothills Alaska, notified the Commissioner that it would like the State to resume processing its application for a right-of-way lease for the ANGTS Project. Pursuant to Foothills Alaska’s request, the Alaska Department of Natural Resources, Gas Pipeline Office, issued a Public Notice to this effect. Throughout 2001 and much of 2002, Foothills Alaska worked on updating the State Right-of-Way application. Work on the Right-of-Way application was again suspended in 2002 due to economic uncertainty and pending legislation in the U.S. Congress.

In June 2004, the Co-Applicants submitted an updated application and requested that the State resume processing the ANGTS Project Right-of-Way Lease. TCPL's designation of TransCanada Alaska as a Co-Applicant under the application, in addition to ANNGTC as the original applicant, provides an alternate TCPL entity to whom the right-of-way lease can be issued at TCPL's designation, subject to provisions of State and Federal law and the final Right-of-Way Lease. Once the commercial arrangements with respect to the ANGTS Project are sufficient to secure financing, the Co-Applicants will develop the Project or TCPL may convey, pursuant to the terms and conditions of the State Right-of-Way Lease (Attachment A), to a third party who will ultimately build the Project.

The Co-Applicants may not transfer, assign, or dispose of their interest in the Lease to any person other than the Lease Guarantor or another subsidiary or affiliate of the Lease Guarantor, unless the Commissioner authorizes the transfer, assignment or disposal of their interest in the Lease after consideration of the protection of the public interest (Lease Section 23).

The default, remedies and forfeiture provisions of the Lease are described in Section 25. The occurrence of any one or more of the following events shall constitute an "Event of Default" under the Lease during the continuance of such event:

- (i) Violation of a provision of AS 38.35 or an obligation, condition, or provision of the Lease.
- (ii) failure of the Co-Applicants to substantially begin construction of the pipeline system within four (4) years after commercial arrangements sufficient to secure financing for the pipeline system are available to the Co-Applicants or to the Guarantor, subject to possible extension by the Commissioner, in the Commissioner's sole discretion, for good cause upon the Co-Applicants' request to the Commissioner.
- (iii) Failure of the Co-Applicants to substantially comply with the terms of the Lease as determined by the Commissioner in his sole discretion.

Purpose and need for completing the pipeline

There is a developing consensus that ANS gas will be needed in United States markets by the end of this decade. Both government and private organizations estimate, on average, that there was a shortfall in annual natural gas production in the lower-48 states of about 4 trillion cubic feet (Tcf) in 2002 and that this shortfall will increase to over 6 Tcf in 2015. Gas demand is expected to grow in each sector — residential, commercial and industrial — with about 40 percent of the increase resulting from gas consumed in electric power generation. Gas consumed annually by electricity generation alone is estimated to increase by over 2 Tcf between 2002 and 2015. Even with increased supplies of Canadian gas exports to the U.S., virtually all government and industry forecasts indicate a need to connect new sources of supply to satisfy increasing demand for natural gas in the lower-48 states.

ANS natural gas reserves are the largest known gas resource in North America, and the development of that resource would greatly enhance U.S. national energy security. The ANGTS Project was originally conceived as a critical component of U. S. energy policy.

Furthermore, the U.S. Congress and the Canadian Parliament, as well as the countries' respective regulatory bodies, have already approved the ANGTS Project and route. The ANGTA and Northern Pipeline Act created expedited and efficient procedures for completing the ANGTS Project.

The ANGTS Project is the only natural gas transportation Project currently authorized under U.S. and Canadian statutes to transport ANS gas to the lower-48 states. Moreover, the comprehensive statutory and regulatory foundation for the ANGTS Project, including ANGTA, the President's Decision, the Northern Pipeline Act, and the Agreement on Principles, remain in place and provide unique and streamlined procedures for expediting construction of the ANGTS Project. The authority of the OFI, as transferred to the Secretary of Energy and delegated to the Assistant Secretary for Fossil Fuel, also continues in effect today with respect to expediting and coordinating federal permitting, enforcement of permit conditions, and facilitation and oversight of the construction and initial operation of the U.S. portions of the ANGTS Project.

On top of this legal and regulatory foundation unique to the ANGTS Project, stands the substantial work that already has been done by TCPL and its subsidiaries. Much of the Eastern and Western legs of the ANGTS Project have already been constructed and expanded in Canada and the U.S. and have been in operation for many years (Phase 1).

Substantial progress has been made on completion of the remainder of the ANGTS Project (Phase 2). TCPL, in conjunction with the principal Prudhoe Bay gas producers, constructed and operated a number of full-scale field test site programs. They have also conducted extensive mile-by-mile data gathering along the entire pipeline route in Alaska. TCPL and its subsidiaries have spent hundreds of millions of dollars in both Alaska and Canada to confirm northern pipeline engineering design and construction techniques related to construction and operation in permafrost, frost heave and thaw settlement, stabilization of disturbed areas and environmental disturbance mitigation. Much of this data will be deployed in the current design studies.

While market constraints have delayed the construction of the northernmost portions of the ANGTS Project, the certificates and permits issued by Canadian, U.S., and Alaskan authorities remain valid. TCPL and its subsidiaries have maintained approvals and authorizations in effect, continued to conduct engineering and other pipeline feasibility studies, and investigated the applicability of new technologies to reduce the cost of construction of the ANGTS Project.

The ANGTS Project also will provide construction and operational jobs and new business opportunities for Alaskan citizens along its overland route. Moreover, the ANGTS Project provides opportunities to serve demand for natural gas not only in the lower-48 states, but also along the route in Alaska. The residents of these areas currently are confronted with high energy costs. The ANGTS Project will provide to these residents, for the first time, low cost clean natural gas for home heating, electricity generation, and potential industrial development. AS 38.35.120 provides the covenants that must be contained in a noncompetitive lease of State land for a right-of-way for an oil or natural gas pipeline. Specifically, AS 38.35.120 (a)(2) provides “it will interchange crude oil or natural gas,

depending on the kind of pipeline involved, with each like common carrier and provide connections and facilities for the interchange of crude oil or natural gas at every locality reached by both pipelines when the necessity exists, subject to rates and regulations made by the appropriate state or federal regulatory agency;”

THE CO-APPLICANTS’ PROPOSED PROJECT²

Completing the Alaskan portion of the ANGTS Project will involve construction, operation and maintenance of a natural gas pipeline system extending approximately 745 miles from Prudhoe Bay, Alaska to the Canadian border near Beaver Creek, Yukon.

The ANGTS Project is an interstate pipeline subject to ANGTA, the Natural Gas Act and the regulations promulgated thereunder and various other federal and state statutes and regulations. Therefore, the Co-Applicants will, among other things, seek from the FERC an amendment to its conditional certificate of public convenience and necessity and work with the OFI and the State of Alaska to obtain Notices to Proceed pursuant to ANNGTC’s Right-of-Way Grant across federal land and the right-of-way lease across state land. In doing so, TCPL and its subsidiaries will update the environmental data already developed in conjunction with its Section 404 permits, the Federal Right-of-Way Grant and previous work on the FERC certificate.

Given this, the pipeline and aboveground facilities will be designed, constructed, operated, and maintained in accordance with, among other things:

- Department of Transportation regulations in 49 CFR 192, “Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards;”
- 18 CFR 380.12, “FERC’s Environmental Reports for Natural Gas Act Applications,” and FERC environmental policy guidelines thereunder;

² The proposed ANGTS Project is subject to evaluation of final design criteria at such time as the Co-Applicants anticipate construction. The final design parameters may differ from those described in this analysis and must be approved by FERC.

- Federal Right-of-Way Grant for the Alaska Natural Gas Transportation System Alaska Segment, Serial No. F-24538 (December 1, 1980), as such may be updated and/or amended from time to time;
- FERC conditional certificate of public convenience and necessity, issued on December 16, 1977, as such may be amended and finalized;
- U.S. Army Corps of Engineers “wetlands” permits, issued under section 404 of the Clean Water Act;
- State of Alaska Right-of-Way Lease (ADL 403427); and
- Applicable State and local government requirements.

The Co-Applicants proposed design of the pipeline system must be consistent with USDOT standards in place at the time of construction. Compared to the 1981 application, the current design minimizes the environmental footprint of the pipeline system with regard to compressor stations by over 60 percent. The Co-Applicants are aware that when commercial arrangements with respect to the ANGTS Project are sufficient to secure financing, the initial capacity of the pipeline and, therefore, the number and location of the compressor stations, as well as other components, may change. Any updating of the ANGTS Project will require the approval of the FERC and the Commissioner. The Co-Applicants will be required to secure any necessary amendments or other authorizations from the State necessitated by any amendment to the facilities authorized to be constructed by the FERC.

The current components of the ANGTS Project include the pipeline, compressor stations, metering stations, other permanent facilities such as regional operations and maintenance center (O&M Center), roads, and temporary facilities used for construction such as material sites, roads, workpads, and construction camps. In addition, a gas conditioning facility would be constructed in Prudhoe Bay. The following summarizes the characteristics of the major components of the ANGTS Project:

Pipeline: The pipeline route will adhere to the corridor concept as originally stated in the President’s Decision, and will maximize utilization of existing facilities and rights-of- way to the extent feasible and prudent. The route will originate at Prudhoe

Bay in northern Alaska and connect to the gas conditioning plant at the Prudhoe Bay metering station, designated as Milepost 0. The pipeline alignment was approved by the Bureau of Land Management, OFI and the Commissioner.

The proposed pipeline route follows the TAPS in a southerly direction to about Milepost 274 near Prospect Creek. The pipeline will then follow TAPS in a southeasterly direction to about Milepost 535 at Delta Junction. Here the line will diverge from the TAPS route, and continue in a southeasterly direction to the Alaska/Yukon border at about Milepost 745. The Alaska segment of the pipeline will connect with the Canadian segment at a metering station on the Canadian border.

The application currently proposes to use a 48-inch outside diameter pipe. Maximum allowable operating pressure will be 2,500 pounds per square inch (psig). The annual average daily capacity of the pipeline will range from 4,500 to 5,900 million standard cubic feet per day (MMSCFD).

The mainline pipe material will meet the requirements of the Code of Federal Regulations (CFR) Title 49, Part 192 and API-5L, Grade X80. Pipe wall thickness will be 1.042 inch for pressure containment in Class 1 locations and will increase according to class location requirements (49 CFR 192.5, Class locations). The pipe will be externally and internally coated. Pipeline corrosion control will be provided by a combination of external coating and a cathodic protection system.

Provisions for six intermediate gas delivery points along the pipeline were incorporated as part of the initial Right-of-Way application submitted in 1981 and may change subject to approval by the Commissioner and FERC prior to construction.³ These proposed intermediate gas delivery points are:

³ These general locations and the specific alignment stationing are subject to commercial and technical evaluation and, when necessary, approval of the FERC. The pipeline system in Alaska will transport natural gas but will not own any of the gas being transported. Therefore, arrangements will have to be made with the gas owner (either the State of Alaska or another gas shipper) by the entity that would transport or distribute the gas within Alaska. Additional delivery points may also be authorized and will be included in the design when resolved.

- Anaktuvuk Pass
- Fairbanks
- Delta Junction
- Dot Lake
- Tok
- Northway

Mainline block valve assemblies will be provided at a nominal spacing of 20 miles and at compressor station locations. Launchers and receivers for pipeline in-line inspection devices (pigs) will be installed at compressor and metering stations.

The Co-Applicants propose installing the pipe in a buried mode, except at compressor and metering stations, and at fault crossings and some large river crossings.

The pipeline will cross 24 major streams and rivers requiring special construction considerations such as heavy wall pipe, continuous concrete coating or set-on concrete weights. At some locations, aerial crossings will be used. There will be approximately 80 road crossings, all uncased and using heavy wall pipe. The pipeline will cross TAPS at approximately 23 locations, the TAPS fuel gas line at 10 locations, and other pipelines at 3 locations.

The Co-Applicants assume that the gas conditioning facility at Prudhoe Bay would produce pipeline quality gas ranging from a hydrocarbon mixture with 89 percent methane, and a gross higher heating value of 1076 Btu/SCF, to 86 percent methane and a gross higher heating value of 1121 Btu/SCF.

The Co-Applicants also assume that the gas conditioning facility will remove carbon dioxide and excess liquids to pipeline specifications, compress it to the delivery pressure of 2,500 psig, and chill it to 30°F. The ANGTS pipeline will be designed and operated to maintain the soil around the buried sections of the pipeline in a frozen state in areas of continuous permafrost. In areas of discontinuous permafrost, the

operating temperature of the gas in the pipeline would be between 5°F and 40°F, depending on the season of the year.

Compressor Stations: Six compressor stations will be constructed at the same time as the pipeline; ultimately, up to thirteen compressor stations may be built. The locations of compressor stations along the pipeline will be based on hydraulic design criteria and adjustments for compatibility with surrounding land use and sensitive environmental areas. The anticipated location of the initial six compressor stations is provided in Table 7 of the application. The number and location of compressor stations may change or need to be further optimized based on final capacity and design parameters.

Compression equipment will consist of a 44,000 HP (ISO) Dry Low Emission (DLE) gas turbine powered single stage centrifugal compressor with dry gas seals. The compressor packages will be equipped with “low noise” compressor intake and exhaust, and a sound reducing unit enclosure and compressor building.

Each compressor station site will require about thirty-five acres, and the metering stations about five acres of land. Compressor station components will be extensively modularized to minimize on-site construction and commissioning work in remote locations. Each compressor station will include compressors, refrigeration equipment, gas scrubber unit, areas for periodic habitation (for maintenance and emergency occupancy), control and service functions, as well as utility and power generation equipment. Permanent living quarters may be required at some compressor stations.

Foundations will generally use steel piles. In permafrost areas, the gas compressor and warehouse buildings will sit on insulated, ventilated gravel pads with thermopiles to remove heat dissipated from the building. Other buildings and small skids will be designed with an airspace or insulation between the building and the ground to preserve the ground thermal regime. Active or passive refrigeration systems will be used where required to minimize settlement in permafrost.

Compressor stations will include gas-chilling facilities to control the natural gas discharge temperature. Multiple trains of propane cycle gas chillers will chill gas, provide operating flexibility and support a modular approach to design and construction.

The compressor station sites will consist of a fenced gravel pad, with a pile-foundation metal building housing the turbine, compressor and chiller units. Electrical power requirements will generally be supplied through on-site generation, although grid power may be utilized, where available. Pipeline gas will be used to power the drivers for the gas compressors, refrigerant compressors and electric generators.

The pipeline system will be controlled remotely using a Supervisory Control and Data Acquisition (SCADA) system, based out of a central gas control center currently planned for Calgary, Alberta Canada. Compressor stations and pipeline operating conditions will also be monitored from the O&M Center to most likely be located in or near Fairbanks. In addition, compressor stations and mainline block valves will have local control systems, which can shut down the compressor station or close a mainline block valve automatically in the event of an emergency. Each compressor station will include a control system that will interface through the SCADA link to the central gas control facility and O&M Center.

The communication system will include voice and SCADA intertie to each compressor and metering station and the mobile radio system. A basic communication system will be installed during the construction phase to provide voice and data links between the pipeline and compressor station construction locations. This basic communication system will later be modified to provide the operational communications systems. Mobile and fixed communication systems will be satellite-based, with microwave back-up. Data communications will provide

worldwide access through commercial lines, as well as to the other pipeline segments in Canada and the lower-48 states.

Other Permanent Facilities: The operation and maintenance facilities will provide facilities and equipment required for maintenance and operation of the pipeline, compressor and metering stations.

An O&M Center will be located centrally to serve both the northern and southern segments of the Alaskan portion of the pipeline system and will most likely be located in the Fairbanks area. The O&M Center may include the following:

- A warehouse for storing spare parts inventory;
- A garage and maintenance shop, including maintenance equipment;
- Offices; and
- A secondary operations control center with related supervisory control equipment, power supplies and communications equipment.

Storage buildings will be placed at compressor stations, Deadhorse and Delta Junction to house small equipment and parts.

Two metering stations will be built into the pipeline. One will measure the quantity of gas supplied to the pipeline from the Gas Conditioning Plant at Prudhoe Bay, and the other will measure the gas delivered to the Canadian segment at the Alaska/Yukon border. Furthermore, additional facilities for receipt and/or delivery of natural gas in Alaska will be constructed, as necessary.

Temporary Facilities: Temporary facilities will include those facilities required to support the construction phase activities, including an Alaskan construction headquarters, the construction camps for the pipeline and compressor station construction, existing airfields, access roads, and approximately 300 material and spoil disposal sites.

A site near Fairbanks will serve as the Alaskan headquarters during construction. The facility will be used by the Co-Applicants, construction contractors and government agency personnel as the central control point to provide construction oversight and support services.

Seventeen pipeline construction camps will be needed along the route, including one located near the Fairbanks Alaskan construction headquarters. These camps will be capable of accommodating between 250 and 1,700 persons, depending on location and planned use and will be self-contained, including power, lighting, incineration, water and sewer systems.

The existing sites⁴ (Franklin Bluffs, Happy Valley, Toolik, Galbraith, Atigun, Chandalar, Dietrich, Coldfoot, Prospect Creek, Old Man, Five Mile, Livengood and Delta) will be utilized, if feasible, as required in Lease Stipulation 2.5.1(3) and 2.12. Contamination in the pads resulting from past fuel spillage is an important consideration at several of the proposed construction camps. The State and the Co-Applicants recognize that certain sites authorized for use by the Co-Applicants under the Lease may contain releases or threatened releases of hazardous substances that are the result of activities that were undertaken by persons or entities other than the Co-Applicants prior to any field activity on such sites by the Co-Applicants (Lease Section 20).

The State and the Co-Applicants intend that the Co-Applicants' liability arising from or in connection with the release or threatened release of existing contamination at a site shall be limited to liability for those releases or threatened releases of existing contamination on, at, or in the vicinity of a site only to the extent caused by the Co-Applicants, its agents or contractors, subcontractors, employees servants,

⁴ For the purposes of this Analysis, the term "site" shall mean a specific area of the leasehold selected for a particular operation or use by the Co-Applicants in accordance with the terms of the Lease, and the term "existing contamination" shall mean hazardous substances present at the site prior to the Co-Applicants' initial field activity on the site.

representatives, parent companies, affiliates, subsidiaries, officers, directors, any entity acting at the direction of Co-Applicants, or their agents or employees during or after the Co-Applicant's initial field activity on the site. The Co-Applicants will not be liable for failing to prevent the passive leaching or migration of existing contamination at a site into the air, land, or water. The limitation on Co-Applicant's liability is subject to the conditions set forth in Lease Section 20.

The Co-Applicants will assess existing sites with regard to existing contamination and evaluate their suitability for use. New pipeline construction camps are under consideration at Knob Ridge, Tok and Northway. Construction camps will also be located at the compressor station sites, if feasible. These will be much smaller than the permanent camps.

A pipe yard at Fairbanks will be provided to receive and store mainline pipe, store, externally coat and double-joint pipe as required. Construction material and pipe storage yards will be needed along the route as required for logistical support of construction activities.

Access roads will be constructed or upgraded to provide access to stations, new material sites, pipeline spreads, and related facilities. Because of the proximity of the pipeline route to the Dalton and Alaska Highways, these access roads will be relatively short in length. In addition, the Co-Applicants will resolve any issues regarding use of the State's highways prior to construction with the appropriate State agencies.

Gas Conditioning Facility: A conditioning facility would be constructed to condition gas prior to its entering into the pipeline. A lease application for the use of State lands for such a facility is currently pending under the State of Alaska's Right-of-Way Leasing Act, AS 38.35. There are several reasons for pursuing a lease for the conditioning facility separately, both physically and temporally, from a lease for the pipeline. The timing of ground-disturbing activities for a conditioning facility differs

from that associated with the pipeline. Moreover, the stipulations appropriate for the pipeline differ significantly from those appropriate for the conditioning facility.

Also, at the present time, considerable uncertainties also remain with respect to the conditioning facility. Until commercial negotiations with the North Slope oil and gas production companies or other third parties are concluded, it will not be known who will construct and/or own the facility; whether custody to the gas would be transferred at the inlet or the outlet of the facility; or to what extent the ANGTS Project could and/or will utilize a portion of the producers' Miscible Gas Project facility. Once ownership issues regarding the conditioning facility are settled through ongoing commercial discussions, it will be known whether the conditioning facility will be constructed and/or owned by the Co-Applicants or by some other entity. The extent to which the existing Miscible Gas Project facility will be used by the ANGTS Project will also be determined.

As a result of these uncertainties and the significance of the commercial negotiations, TCPL and its subsidiaries will, as soon as commercial negotiations are concluded, provide an update to the ANGTS project description, and if the Co-Applicants are to construct and/or own the conditioning facility, move forward on the pending lease application for the conditioning facility. In the alternative, a third party will seek a lease from the state to construct and/or own the conditioning facility.

General Land Use Information:

- Ownership: state land (50 percent; some of which is subject to the Federal Right-of-Way Grant), federal land (36 percent), and private land (14 percent; predominately Alaska Native Corporation, Mental Health Trust, University of Alaska and Alaska Railroad lands);
- Construction right-of-way on state land of 500 feet, with 600 feet in width for a longitudinal distance of 1,500 feet at stream and river crossings. The entire width normally would not be used during construction but is needed to provide room for

- construction access across variable terrain conditions. Overall, about 21,000 acres of construction right-of-way could be involved;
- After construction, the right-of-way width for operation of the pipeline will be 54 feet on the federal right-of-way and 100 feet on the state right-of-way, corresponding to an overall area of about 7,000 acres;
 - Initially six and, possibly up to a total of thirteen, compressor stations will be constructed. Each of these will occupy about thirty-five acres. The two metering stations will occupy about five acres each;
 - Material sites will be re-opened or new ones developed as needed for obtaining gravel and other materials to construct work pads, access roads and for use in trench backfill. Existing gravel pits that were opened for the construction of TAPS, the Dalton Highway and the Alaska Highway will be used to the extent possible; and
 - Access to the compressor stations, valves and other locations will be mostly by existing Dalton and Alaska Highway road systems, with minimal new access road construction required.

CO-APPLICANTS' PROPOSED CONSTRUCTION AND OPERATIONAL METHODS⁵

General Pipeline Construction Procedures: In Alaska, the Co-Applicants propose that pipeline construction work would be completed in 12 sections. Each section would be assigned as part of a package to one of four contractors. Mainline pipeline construction activities will be completed during both the summer and winter seasons.

In most cases, the designation of an area of work as summer or winter construction will be dependent on the ability of the terrain to support construction equipment. Terrain that cannot support construction equipment during the summer is normally designated as winter construction. The Alaska portion of the pipeline route includes approximately 75 percent winter construction work, allowing the work to be completed in two years. Construction

⁵ The proposed ANGTS Project is subject to evaluation of final design criteria at such time the Co-Applicants anticipate construction. The final design parameters may differ from those described in this analysis and must be approved by FERC.

support activities will start approximately one year prior to mainline construction and continue for two years. Construction activities include double jointing pipe, stockpiling pipe, clearing, aggregate processing, camp mobilization, and some access road construction.

Generally, existing roads and highways will provide access to the pipeline, however, a limited number of temporary access roads may be required and some permanent, high-grade access roads will be needed to provide access for compressor station sites.

Each pipeline section will be provided with one or two stockpile sites for pipe. Stockpile sites will be surfaced with gravel to allow movement of material during all types of weather.

Field construction crews will be housed in temporary work camps during construction. Each pipeline section will have a designated camp located near the center of the section, beside or near a stockpile site.

Prior to the start of construction, the applicants will finalize surveys, locate the centerline and construction workspace, and complete land or easement acquisition. The right-of-way will be surveyed and staked, and existing utility lines will be located and marked to prevent accidental damage during pipeline construction.

Clearing of the pipeline right-of-way will generally be completed either one year or one season ahead of the mainline construction activities. This will result in a longer effective construction season.

Topsoil will be stripped where appropriate, then stockpiled and salvaged for rehabilitation of the soil profile after construction.

Grading in Alaska will utilize conventional grading methods in non-permafrost areas, and gravel and snow pads to protect the northern tundra and permafrost.

Welding will be completed using mechanized welding equipment. The use of mechanized welding equipment will increase the productivity of the welding process and provide welds that are of consistently higher quality than welds completed manually.

Chain trenchers will be used for ditching through permafrost areas where necessary and where geotechnical conditions permit. The use of chain trenchers eliminates the need to drill and blast in most permafrost and reduces the amount of imported backfill. In non-permafrost areas, conventional ditching methods will be used, which will include the use of backhoes and wheel trenchers. Hard rock will be drilled and blasted, then the broken rock removed by backhoes. Modern heavy construction equipment in use today will have the capacity to construct the pipeline.

Pipeline pressure testing will generally be completed during the same season as mainline construction. During detailed construction planning, consideration will be given to such testing alternatives as using air as a test medium or using a freeze inhibitor in permafrost zones to prevent the test medium from freezing.

Construction workpads will consist of gravel, ice, snow or graded surfaces on which equipment can work. The selection of these workpad types will be based on criteria of geography, terrain, the potential for soil and vegetation impacts, and other design considerations. Vegetation will be removed by mechanical cutting.

The trench will be dewatered, cleaned of debris, and padded as necessary before the pipe is lowered into the trench. If the excavated material is rocky, the pipe will be padded with select fill from material sites or by separating suitable material from the existing trench spoil.

Cleanup and restoration of the construction areas will begin after the backfilling and pressure testing. The work areas will be final graded and restored to approximate pre-construction contours. Surplus construction material and debris will be removed and recycled. Permanent erosion controls (water bars or slope breakers) will be installed, and the construction work areas will be seeded soon afterward in accordance with Lease Stipulation 2.5.1. In areas of

winter construction, seeding and other revegetation work may be delayed until summer when conditions are suitable.

Specialized Pipeline Construction Procedures: Construction at roads and highway crossings will be done in accordance with requirements of applicable permits or approvals. Most paved roads will be crossed by boring underneath the roadbed and installing heavy wall pipe. Pits will be excavated on both sides of the road at the depth of the pipeline and a hole equal to the diameter of the pipe will be bored under the road. The pipe section will then be pushed through the borehole. If additional pipe sections are required, these are usually welded to the first section of pipeline in the bore pit before being pushed through the bore hole. There would be little or no disruption to traffic on roads that are bored.

Other roads and driveways may be bored or crossed by trenching across the road. Traffic mitigation plans will be developed to minimize disruptions in traffic on high use roadways.

Drilling and blasting will be necessary in areas of hard rock such as mountain passes. Decisions regarding the location and timing of blasting will take into consideration the activities of fish and wildlife that could be disturbed.

Special construction techniques will be used for stream crossings to minimize impacts to riparian and aquatic resources. Horizontal directional drilling and boring methods of inserting the pipeline beneath river channels, as well as open cut, flume, or dam and pump techniques will be evaluated for crossings. Site specific crossing designs will be based on local environmental and geotechnical conditions, cost, logistics, and available technology.

Where construction occurs on natural grade, topsoil will be stockpiled to the side of the workpad prior to ditching to preserve the material for aiding revegetation unless otherwise approved by the Commissioner.

Compressor Stations Construction Procedures: Ultimately a total of thirteen compressor stations might be constructed. The initial design will include six compressor stations. The

compressor station components will be modularized to minimize on-site construction and commissioning work in remote locations. Each compressor station will include areas for periodic habitation (for maintenance and emergency occupancy, control and service functions), as well as utility and power generation equipment. Some permanent housing facilities may be required at specific compressor stations.

Compressor building foundations will generally be driven steel piles, and building modules will be designed with airspace between the building and the ground to preserve the ground thermal regime.

Other Permanent Facility Procedures: Access roads, workpads, storage yards, and other permanent facilities will be constructed to support the operation and maintenance of the pipeline system. These will include gravel pads and may have structures (buildings) for storage of equipment and materials for operation and maintenance of the pipeline system. These will be constructed using conventional gravel pad techniques appropriate for the region, terrain and local conditions. Conventional diesel-powered equipment including dozers, graders, loaders, and trucks will be used for construction.

Unlike TAPS, which has a requirement for maintaining permanent access throughout the system for oil spill response, the ANGTS Project involves only gaseous hydrocarbons that would dissipate into the atmosphere if released and not require a spill response. Permanent access throughout the pipeline system is not necessary. Access to the pipeline for routine inspection and maintenance will involve travel on existing access roads. In areas where there are no existing roads, ice or snow roads may be constructed for winter access to perform routine work. In the event of an emergency situation where equipment would need to access an off-road area, temporary work pads and roads would be utilized and specialized techniques would be used to reduce potential impacts.

The close proximity of the pipeline route to the existing highways minimizes the need for new access roads. Access routes to the pipeline will utilize existing roads and trails where

possible. The access points along the highways will be restricted as appropriate to prevent unauthorized access and potential environmental damage caused by vehicle travel.

Operation and Maintenance: Co-Applicants will operate the pipeline in accordance with U. S. DOT safety regulations in 49 CFR 192 and other federal and state requirements. The right-of-way will be monitored, and erosion or unstable conditions will be repaired as necessary. Pipe movement and general condition will be monitored, using various proven methods including internal inspection devices, and mitigating action will be taken if necessary. Vegetation maintenance, if necessary, would be done by physical methods such as brushing or mowing; no herbicides or other chemicals will be used for vegetation control. Monitoring the cathodic protection system will be done during regular cathodic protection surveys.

Safety: The U. S. DOT safety regulations for natural gas pipelines require specific class locations for pipe wall thickness based on population density. Pipe wall thickness may also be increased during final design as the chosen mechanism to provide control of ductile fracture and to accommodate pipe movement caused by frost heave or thaw settlement. All external pipe surfaces will be coated with a high integrity coating such as fusion-bonded epoxy, or a multi-layer pipe coating system to help prevent corrosion or environmental cracking. Where additional weight is required for buoyancy control, site-specific evaluation will determine whether concrete coating, concrete weights, screw anchors or grouted anchors will be used. Heavy wall pipe will be installed at the appropriate depth at road and railroad crossings to withstand vehicle traffic loads.

Pipeline System Lifetime and Decommissioning: At this time, there is no plan to decommission any pipeline facilities. However, upon completion of use, the Commissioner will require that the Co-Applicants restore all disturbed areas of State land to the satisfaction of the Commissioner, consistent with the FERC requirements and pursuant to schedules approved by the Commissioner and approved plans required under Lease Stipulation 2.5.1.

AUTHORITY

As an interstate natural gas pipeline, the Alaska portion of the ANGTS Project is subject to Federal law and to regulation under the Natural Gas Act, in addition to any applicable State law requirements. In this regard, the design, construction, operation, maintenance, and termination of the ANGTS Project must be undertaken in a manner consistent with conditions and stipulations included in various federal permits and authorizations, including a certificate of public convenience and necessity from FERC, a right-of-way across Federal lands from the Bureau of Land Management, Clean Water Act section 404 (wetlands) permits from the U.S. Army Corps of Engineers, and Clean Water Act section 401 permits and Coastal Zone Management Act / Alaska Coastal Management Program consistency determinations from the State of Alaska in support of the section 404 permits. Project activities also will be conducted in a manner consistent with conditions and stipulations included in the State right-of-way lease, in addition to other State and local requirements.

The State of Alaska's policy, as set out in AS 38.35.010, is that development, use, and control of a pipeline transportation system make the maximum contribution to the development of the human resources of this state, increase the standard of living for all its residents, advance existing and potential sectors of its economy, strengthen free competition in its private enterprise system, and carefully protect its incomparable natural environment. The Commissioner of the ADNR has been given all powers necessary and proper to implement this policy and to grant leases of state land for pipeline rights-of-way, to transport natural gas under conditions prescribed by AS 38.35.015 and the administrative regulations. The Commissioner is charged with deciding whether the applicant is fit, willing, and able to perform the transportation or other acts proposed in a manner that will be required by the present or future public interest.

The Commissioner is adjudicating the Co-Applicants application pursuant to AS 38.35 (Right-of-Way Leasing Act) and AS 38.05 (Alaska Land Act) and their associated regulations, and the policies and procedures established for pipelines on state land.

ADMINISTRATIVE ACTIONS ON THE APPLICATION

The Commissioner has determined that the updated application does not constitute a substantial change to the original application. This decision was based on evaluation of the following criteria (AS 38.35.050):

1. the updated right-of-way alignment did not exceed by at least 10 percent the amount of acreage in the original application;
2. the updated design will not use less effective environmental or safety mitigation measures or less advanced technology than proposed in the original application; and
3. The updated route did not fundamentally change from the original proposed route.

ADNR has worked in consultation with a number of State and Federal agencies on the proposed ANGTS Project in accordance with their specific mandates. Some of the agencies have statutory and regulatory authority that govern certain aspects of the proposed Project. Such agencies will maintain their regulatory role over applicable activities. The Lease will require the Co-Applicants to comply with all applicable statutes and regulations. The following agencies will have a role in the Project:

The Alaska Department of Natural Resources (ADNR): The ADNR is the state land management agency charged with overseeing state land use activities. The State Pipeline Coordinator's Office (SPCO), Division of Oil & Gas (DO&G), Division of Mining, Land and Water (DMLW), the Office of Habitat Management and Permitting (OHMP), State Historic Preservation Office (SHPO) and the Office of Project Management and Permitting (OPMP) are located within ADNR and review, coordinate, condition, and approve activities on state land.

a. Fish Habitat Management: Title 41 gives ADNR permitting authority over activities affecting anadromous fish streams and for activities that could interfere with the efficient passage of resident or anadromous fish. A fish habitat permit must be obtained from ADNR, OHMP prior to using, diverting, obstructing, polluting, or changing the natural flow or bed of an anadromous fish waterbody (AS 41.14.870). A fish habitat permit also is required for activities that may obstruct fish passage (AS 41.14.840). Additionally, under the ACMP, wetlands

and tideflats must be managed to assure adequate water flow, nutrients, and oxygen levels, minimize adverse effects on natural drainage patterns, and the destruction of important habitat (6 AAC 80.130(c)(3)). Rivers, streams, and lakes must be managed to protect natural vegetation, water quality, important fish or wildlife habitat, and natural water flow (6 AAC 80.130(c)(7)). To further protect fish and wildlife habitat, 6 AAC 80.070(b)(3) requires that facilities be consolidated, to the extent feasible and prudent.

- b. Alaska Coastal Management Plan (ACMP) Review:** An ACMP review is required for the portions of ANGTS Project that are within the North Slope Borough Coastal Management Area. The activities in this area are subject to the North Slope Borough Coastal Management Plan and the ACMP. If a project occurs within the coastal zone and requires a state or federal authorization, an ACMP review of the application will be conducted to determine whether the proposed activity is consistent with the standards of the ACMP and any relevant enforceable district policies. Following the review, each agency will approve or disapprove the consistency determination and determine whether any alternative measures (changes in the project description or scope) are required prior to approval. The public is provided the opportunity to participate in ACMP consistency reviews. The ACMP public process goes through a 30 or 50-day review and, if approvals are needed by other agencies or divisions and offices within ADNR, the review is coordinated by OPMP within the ADNR Commissioner's office. This process provides for coordinated agency reviews, public input, and ensures consistency with the ACMP and the North Slope Borough Coastal Management Plan. To initiate the review process, the applicant or OPMP distributes application packages to affected coastal resource districts and permitting agencies. The individual agencies initiate their internal consistency reviews and, if necessary, must send a request for additional information to the coordinating agency within 25 days of a 50-day review. Public and agency review comments are due on or before day 30, and a proposed consistency finding is issued on or before day 44. Requests for additional review must be received on or before day 49, and the final consistency determination is issued on or before day

50 unless a reviewing agency objects and the determination is elevated. If the determination is elevated, a Commissioner's decision is issued within 45 days of receipt of the elevation request. If a 30-day review schedule is used, these milestones will be shorter. The resource agency(s) will check the CPQ and plan of operations to decide whether the project qualifies for the A or B list and agencies may authorize some activities using either the A or B lists. "A list" activities are considered "categorically consistent" and do not result in significant impacts to coastal resources and they do not require a consistency review. On-pad placement of light poles, railings, electrical towers/poles, modules and associated oil and gas buildings are examples of A list activities. A CPQ is required for Projects on the A list unless the A list says a CPQ is not required. "B list" reviews are classified as generally consistent activities, with the application of standard alternative measures. B list activities adopting the alternative measures are consistent with the ACMP. Individual ACMP consistency reviews are not necessary for activities on the B list. However, a CPQ application is required for all projects on the B list. The coordinating agency will also review the standard alternative measures and any applicable procedures against the plan of operations submitted. Those activities not fully covered by the A or B lists may require an individual consistency review. The "C list" is a list identifying state resource agency authorizations that may trigger the consistency review process described at the beginning of this section.

- c. **Pipeline Rights-of-Way:** The ANGTS Project must be authorized by ADNR under the Right-of-Way Leasing Act, AS 38.35. This Act gives the Commissioner broad authority to oversee and regulate the transportation of oil and gas by pipelines, which are in whole or in part located on state land, to ensure the state's interests are protected. The Right-of-Way Leasing Act is administered by the SPCO.
- d. **Other Rights-of-Way:** Pursuant to AS 38.05.850, ADNR may issue permits, rights-of-way, or easements on state land for roads, trails, ditches, field gathering lines or transmission and distribution pipelines not subject to AS 38.35, telephone or electric transmission and distribution lines, log storage, oil well drilling sites

and production facilities for the purposes of recovering minerals from adjacent land under valid lease, and other similar uses or improvements, or revocable, nonexclusive permits for the personal or commercial use or removal of resources that the director has determined to be of limited value.

- e. Temporary Water Use Permit (TUP):** A TUP may be required under 11 AAC 93.210 – 220. TUP permits are issued by the DMLW and may be required for construction and maintenance activities. An application for a temporary water use permit must be made if the amount of water to be used is a “significant” amount as defined by 11 AAC 93.970(14), the use continues for less than five consecutive years, and the water applied for is not otherwise appropriated. The permit may be extended one time for good cause for a period of time not exceeding five years. The application must include: (1) the application fee; (2) a map indicating the location of the property, take point, and point of use; (3) the quantity of water to be used; (4) the nature of the water use; (5) the time period during which the water is to be used; and (6) the type and size of equipment to be used to withdraw the water. At the discretion of the Commissioner, a temporary water use permit will be subject to conditions, including suspension and termination in order to protect the water rights of other persons or the public interest.
- f. Permit and Certificate to Appropriate Water:** Industrial or commercial use of water requires a Permit to Appropriate Water (11 AAC 93.120). The permit is issued for a period of time (not to exceed five years for industrial or commercial uses) consistent with the public interest and adequate to finish construction and establish full use of water. The Commissioner will, in his discretion, issue a permit subject to conditions he considers necessary to protect the public interest. Under 11 AAC 93.120(e)(1)(A), the conditions will include the requirement that no certificate will be issued until proof of adequate access to complete the appropriation of water has been obtained, and the conditions will require the permittee to meter the water use and report water use information to ADNR. Under 11 AAC 93.120(e)(2)(A), the conditions might include reserving a sufficient quantity of water to achieve any of the following purposes: protection of fish and wildlife habitat, recreation, navigation, sanitation and water quality,

protection of prior appropriators, and for any other substantial public purpose. A Certificate of Appropriation (11 AAC 93.130) will be issued if: (1) the permit holder has shown that the means necessary for the taking of water have been developed; (2) the permit holder is beneficially using the amount of water to be certified; and (3) the permit holder has substantially complied with all permit conditions. Again, the commissioner will, in his or her discretion, issue a certificate subject to conditions necessary to protect the public interest. For example, the applicant may be required to maintain a specific quantity of water at a given point on a stream or waterbody, or in a specified stretch of stream, throughout the year or for specified times of the year in order to protect fish and wildlife habitat, recreation, navigation or prior appropriators (11 AAC 93.130(c)(1)).

- g. Land Use Permits:** Land use permits are issued by the DMLW and the SPCO and may be required for a variety of commercial or recreational activities. Land use permits can be granted for periods up to five years, depending on the activity, but ADNR anticipates that permits contemplated in conjunction with the license will likely be for a period of one year (11 AAC 96.025). A generally allowed use listed in 11 AAC 96.020 is subject to the following conditions: (1) activities employing wheeled or tracked vehicles must be conducted in a manner that minimizes surface damage; (2) vehicles must use existing roads and trails whenever possible; (3) activities must be conducted in a manner that minimizes (A) disturbance of vegetation, soil stability, or drainage systems; (B) changing the character of, polluting, or introducing silt and sediment into streams, lakes, ponds, water holes, seeps, and marshes; and (C) disturbance of fish and wildlife resources; (4) cuts, fills, and other activities causing a disturbance listed in (3)(A) - (C) of this section must be repaired immediately, and corrective action must be undertaken as may be required by the department; (5) trails and campsites must be kept clean; garbage and foreign debris must be removed; combustibles may be burned on site unless the department has closed the area to fires during the fire season; (6) survey monuments, witness corners, reference monuments, mining location posts, homestead entry corner posts, and bearing trees must be protected

against destruction, obliteration, and damage; any damaged or obliterated markers must be reestablished as required by the department under AS 34.65.020 and AS 34.65.040; (7) every reasonable effort must be made to prevent, control, and suppress any fire in the operating area; uncontrolled fires must be immediately reported; (8) holes, pits, and excavations must be repaired as soon as possible; holes, pits, and excavations necessary to verify discovery on prospecting sites, mining claims, or mining leasehold locations may be left open but must be maintained in a manner that protects public safety; (9) on lands subject to a mineral or land estate property interest, entry by a person other than the holder of a property interest, or the holder's authorized representative, must be made in a manner that prevents unnecessary or unreasonable interference with the rights of the holder of the property interest.

- h. Material Sale Contract:** If the operator proposes to use state-owned gravel or other substrate materials for construction of pads and roads, an ADNR material sale contract must include, if applicable: (1) a description of the sale area; (2) the volume of material to be removed; (3) the method of payment; (4) the method of removal of the material; (5) the bonds and deposits required of the purchaser; (6) the purchaser's liability under the contract; (7) the improvements to and occupancy of the sale area required of the purchaser; (8) and the reservation of material within the sale area to the division; (9) the purchaser's site-specific operation requirements including erosion control and protection of water; fire prevention and control; roads; sale area supervision; protection of fish, wildlife and recreational values; sale area access and public safety. A contract must state the date upon which the severance or extraction of material is to be completed.
- h. The State Historic Preservation Office (SHPO):** The SHPO is responsible for the preservation and protection of the historic, prehistoric and archaeological resources of the state.

The Alaska Department of Environmental Conservation (ADEC): The ADEC has statutory responsibility for preventing air, land, and water pollution. Written permits are typically required before an activity can begin. For example, before solid waste

disposal, wastewater or air quality permits are issued, two public notices and an opportunity for public comment (and a public hearing, if requested) are required.

- a. Oil Discharge Prevention and Contingency Plan:** Applicants must comply with the requirements of AS 46.04.010 - .900, Oil and Hazardous Substance Pollution Control. This requirement includes the preparation and approval by ADEC of an Oil Discharge Prevention and Contingency Plan (C-Plan) (AS 46.04.030; 18 AAC 75.445). Prior to receiving a permit to drill, the applicant must demonstrate the ability to promptly detect, contain, and cleanup any hydrocarbon spill before the spill affects fish and wildlife populations or their habitats.
- b. Wastewater Disposal:** Domestic grey-water must be disposed of properly at the surface and a Wastewater Disposal Permit is required pursuant to 18 AAC 72. Typically, waste is processed through an on-site plant and disinfected before discharge. ADEC sets fluid volume limitations and threshold concentrations for biochemical oxygen demand (BOD), suspended solids, pH, oil and grease, fecal coliform and chlorine residual. Monitoring records must be available for inspection and a written report may be required upon completion of operations.
- c. Solid Waste Disposal Permit:** Solid waste storage, treatment, transportation and disposal are regulated under 18 AAC 60. For all solid waste disposal facilities, a comprehensive disposal plan is required, which must include engineering design criteria and drawings, specifications, calculations and a discussion demonstrating how the various design features (liners, berms, dikes) will ensure compliance with regulations. In accordance with 18 AAC 60.215, before approval, solid waste disposal permit applications are reviewed for compliance with air and water quality standards, wastewater disposal and drinking water standards, as well as for their consistency with the Alaska Historic Preservation Act. The application for a waste disposal permit must include a map or aerial photograph (indicating relevant topographical, geological, hydrological, biological and archeological features), with a cover letter describing type, estimated quantity and source of the waste as well as the type of facility proposed. Roads, drinking water systems and airports within a

two-mile radius of the site must be identified, along with all residential drinking water wells within ½-mile. There must also be a site plan with cross-sectional drawings that indicate the location of existing and proposed containment structures, material storage areas, monitoring devices, area improvements and on-site equipment.

- d. Air Quality Control Permit to Operate:** The federal Prevention of Significant Deterioration (PSD) program, which is administered by ADEC, establishes threshold amounts for the release of byproducts into the atmosphere. Oil and gas exploration and production operations with emissions below predetermined threshold amounts must still comply with state regulations designed to control emissions at these lower levels (18 AAC 50). Activities that exceed predetermined PSD threshold amounts are subject to a more rigorous application and review process. Such activities include the operation of turbines and gas flares. For oil and gas activities, these requirements translate into the requirement for a permit to flare gas during well testing (a safety measure) or when operating smoke-generating equipment such as diesel-powered generators. Permit conditions will induce additional scrutiny if a black smoke incident exceeds 20 percent opacity for more than 3 minutes in any 1-hour period. The burning of produced fluids is prohibited unless failures or seasonal constraints preclude storage in tanks, backhauling or reinjection. If liquids are to be incinerated, they must be burned in smokeless flares. The open burning of produced liquids is prohibited except under emergency conditions.
- e. 401 Certification:** Under 18 AAC 15.120, a person who conducts an operation that results in the disposal of wastewater into the water of the state need not apply for a permit from ADEC if the disposal is permitted under a National Pollution Discharge Elimination System (NPDES) permit. When a NPDES permit is issued under Section 401 (33 U.S.C. § 1341) of the Clean Water Act, ADEC does not require a separate permit, but participates by certifying that the discharge meets state and federal water quality standards. When an application is made, a duplicate must be filed with the ADEC and public notice of the certification application is published jointly by EPA and ADEC (18 AAC 15.140 and 40

C.F.R. § 125.32). As a result, the state and federal reviews run concurrently. Public comment is sought and a hearing can be requested. Within 30 days of an EPA determination, the ADEC must provide a copy of the certification to the applicant, EPA, and all persons who submitted timely comments. The decision may impose stipulations and conditions (such as monitoring and/or mixing zone requirements), and any person disagreeing with the decision may request an adjudicatory hearing (18 AAC 15.200 - .920). Once activity begins, both EPA and the ADEC have the responsibility to monitor the Project for compliance with the terms of the permit. The Corps of Engineers 404 permit program (see Corps of Engineers) also requires certification under section 401 of the Clean Water Act and it is processed in a similar manner. The ADEC certification is termed a Certificate of Reasonable Assurance.

- f. Contaminated Site Cleanup:** For new releases of hazardous substances, AS 46.04.020(a) requires that a person causing or permitting a discharge of oil "immediately contain and clean up" the discharge. Similarly, AS 46.09.020(a) requires that a person causing a release of a hazardous substance other than oil make "reasonable efforts" to contain and clean up the hazardous substance after learning of the release. AS 45.09.020(b) requires DEC to develop guidelines prescribing general procedures and methods to be used in containment and cleanup of a hazardous substance. These procedures and methods have been established under 18 AAC 75. A responsible person is a person who is required under AS 46.04.020 or AS 46.09.020 to contain or perform a cleanup of a hazardous substance. In the event that DEC finds the responsible person's response to be inadequate, the statutes give the state specific authority to direct the responding party to cease operations and to assume control of the cleanup using state or state-contracted resources. While the statutes explicitly provide for the state assuming total control of the cleanup effort, DEC has other authorities that allow for a range of agency involvement between simple oversight and assuming total control of the cleanup effort. The department may, for example, direct the responsible person to take certain response actions. Regardless of who

controls the cleanup or whose resources are used, responsible persons are liable for the costs.

- g. Review Process:** Following receipt of an application for a solid waste disposal, wastewater, or air quality permit, ADEC must publish two consecutive notices in a newspaper of general circulation in the area affected by the proposed operation, as well as through other appropriate media. Comments must be submitted in writing within 30 days after the second publication and a public hearing may be requested. A hearing will be scheduled if good cause exists. Notice of a public hearing is handled in a manner similar to that of the initial application. A decision on an application includes (1) the permit, (2) a summary of the basis for the decision, and (3) provisions for an opportunity for an adjudicatory hearing (18 AAC 15). The decision, as conditioned, is sent to the applicant as well as each person, or entity, who submitted timely comments or testified at a public hearing. Permits may be valid for up to five years. Renewals are treated the same as the original application, but they do not receive public notice.

The Alaska Department of Fish and Game (ADF&G): The ADF&G evaluates the potential effect of any activity on fish and wildlife, their habitat, and the users of those resources. ADF&G requires permits for certain activities in state game refuges, sanctuaries and critical habitat areas. Special Area management plans provide guidelines for certain activities within many legislatively designated areas. By statute, these areas are jointly managed with ADNR. Permits are conditioned to mitigate impacts. For example, timing restrictions may be used to limit the impact on wildlife during sensitive life-cycle periods.

- a. ADF&G Special Area Permit:** For activities in a legislatively designated area (such as a game refuge, a game sanctuary or critical habitat area), a Special Area Permit is required (AS 16.20 and 5 AAC 95).
- b. Review Process:** Most permit actions subject to ADF&G require a 30-day review unless surface occupancy issues or other related permits require additional time. An informal review is conducted with the ADNR and ADEC as well as any

affected coastal districts. Public notice of ADF&G permit actions is not required. Decisions are based upon recommendations provided by area staff, the commenting agencies and coastal districts.

The Alaska Department of Transportation and Public Facilities (ADOT/PF):

The ADOT/PF designs, constructs, operates, and maintains state transportation systems, buildings, and other facilities. The ADOT/PF evaluates potential impacts on state transportation systems and facilities. The ADOT/PF will issue utility permits for the portions of the Project within the existing road rights-of-way that ADOT/PF manages. Prior to any construction of the ANGTS Project, the Co-Applicants must enter into an agreement with ADOT/PF to address: a highway indemnification agreement; alignment of portions of the pipeline within highway rights-of-way; Yukon River Bridge provisions; Right-of-Way offset requirements; construction scheduling; Haul Road policies; pipe haul permits; highway maintenance; State airports; and other issues necessary to protect the State's interests.

The Alaska Department of Labor (ADOL): The ADOL reviews practices and procedures pertaining to occupational safety and health; mechanical, electrical and pressure systems; and wage and hour codes to protect employees. The ADOL has been apprised of the ANGTS proposal so they can evaluate the impacts relating to occupational safety and health for protection of employees.

The Alaska Office of Homeland Security (AOHS): The AOHS is the single, statewide focal point for coordinating the State's efforts to prevent terrorist attacks, reduce Alaska's vulnerability to terrorism, minimize the loss of life or damage to critical infrastructure, and recover from attacks if they occur. AOHS has streamlined many procedures in order to improve the flow of information throughout the government and to the private sector.

Alaska Department of Revenue (ADOR): The mission of the Department of Revenue is to collect and invest funds for public purposes.

The Regulatory Commission of Alaska (RCA): The RCA regulates public utilities by certifying qualified providers of the public utility and pipeline services; and ensuring that they provide safe and adequate services and facilities at just and reasonable rates, terms and conditions.

The Alaska Attorney General's Office (AGO): The AGO is responsible for prosecuting violations of state laws and provides legal services to all executive agencies. The AGO reviewed the proposed lease document and provided legal advice related to this application. On the advice of the ADNR Commissioner, the AGO is responsible for seeking a prohibition or mandatory injunction from the superior court to remedy any violations or potential violations of the right-of-way lease or AS 38.35.

The Federal Energy Regulatory Commission (FERC): The FERC is an independent agency that regulates the interstate transmission of natural gas, oil, and electricity. FERC also regulates natural gas and hydropower projects. As part of that responsibility, FERC:

1. Regulates the transmission and sale of natural gas for resale in interstate commerce;
2. Regulates the transmission of oil by pipeline in interstate commerce;
3. Regulates the transmission and wholesale sales of electricity in interstate commerce;
4. Licenses and inspects private, municipal, and state hydroelectric projects;
5. Approves the siting of and abandonment of interstate natural gas facilities, including pipelines, storage and liquefied natural gas;
6. Oversees environmental matters related to natural gas and hydroelectricity projects and major electricity policy initiatives; and
7. Administers accounting and financial reporting regulations and conduct of regulated companies.

- a. **The Natural Gas Act (NGA):** Under Section 7(c) of the Natural Gas Act, the FERC issues certificates of public convenience and necessity authorizing the

construction and operation of natural gas pipelines. The FERC also establishes initial rates for new facilities.

Most natural gas pipeline facility construction is authorized under the case-by-case certificate review process embodied in Subpart A of Part 157 of FERC's regulations (18 C.F.R Part 157 (2001)). FERC reviews numerous aspects of a proposed project, including the route, environmental impacts, engineering and design, gas supply, market, cost, financing, construction, operation, and maintenance, revenues, expenses, and income, and tariff and rate matters.

When FERC receives an application under Section 7(c), it issues public notice of the application in the Federal Register, and notifies potentially-impacted landowners of the proposed project. Interested persons may file motions to intervene or protest. Generally, FERC staff requests from the applicant any additional information it needs to fully understand the application, considers issues raised by other persons, and conducts a thorough environmental review. A certificate order is then drafted, containing whatever terms and conditions are deemed necessary for the public convenience and necessity. FERC can set an application for evidentiary hearing before an administrative law judge, if there are material issues of fact that cannot be resolved on the basis of the written record, although such hearings regarding construction applications are rare.

- b. The Alaska Natural Gas Transportation Act (ANGTA):** In response to the energy shortages of the 1970's, Congress passed ANGTA, in an effort to establish streamlined procedures for the consideration, approval, and construction of a natural gas pipeline to bring Alaskan natural gas to the Lower 48 States.

ANGTA established a unique process for selecting an ANGTS Project and expediting its construction and initial operation. Under this process, FERC was directed to recommend to the President a specific transportation proposal. The

President then would submit a decision to Congress, and Congress would approve or disapprove that decision.

Thereafter, FERC was to issue an NGA certificate for any approved project. ANGTA also established other procedural mechanisms to assist in the completion of the ANGTS Project, including requiring all federal agencies to expeditiously grant necessary authorizations for the ANGTS Project, establishing the OFI to oversee the timely, efficient, and environmentally sound construction of the ANGTS Project and to coordinate federal efforts related to the Project, and strictly limiting judicial review.

In 1977, in the President's Decision and Report to Congress on the ANGTS Project (President's Decision), President Carter designated the route and selected the Project sponsors for construction of the ANGTS Project, running 4,787 miles from Prudhoe Bay, south to near Fairbanks, and then southeast along the route of the Alaska-Canadian highway to near Caroline where it would split into two legs, one continuing to California in the West, and the other to Illinois in the Midwest.

The President's designation of the ANGTS Project route and choice of sponsors to construct and operate it were closely coordinated with the government of Canada and followed adoption of an Agreement Between The United States And Canada On Principles Applicable To A Northern Natural Gas Pipeline (Agreement on Principles).

Pursuant to the Agreement, Canada enacted the Northern Pipeline Act, which is similar to ANGTA.

On December 16, 1977, FERC issued a conditional certificate under ANGTA and the NGA to designate Project sponsors. (The Project sponsors have changed over the years and the certificate is currently held by ANNGTC, a wholly-owned subsidiary of TCPL).

The U.S. Department of Transportation, Office of Pipeline Safety

(USDOT/OPS): The U.S. Department of Transportation's (USDOT) Research and Special Programs Administration (RSPA), acting through the Office of Pipeline Safety (OPS), administers the Department's national pipeline safety regulatory program, pursuant to Chapter 601 of 49 USC to assure safe transportation of natural gas, petroleum and other hazardous materials by pipeline. RSPA has regulatory responsibility for pipeline safety, protecting high consequence areas (including environmental and public safety), pipeline security, pipeline integrity, pipeline spill planning and response. This responsibility includes setting and enforcing pipeline standards, researching causes, controlling problems and assisting states, local governments, recognized tribal governments and other Federal agencies. OPS develops regulations and other approaches to risk management to assure safety in design, construction, testing, operation, maintenance and emergency response of pipeline facilities.

The U.S. Environmental Protection Agency (EPA)

a. National Pollution Discharge Elimination System (NPDES) Permits: The federal Clean Water Act requires an NPDES permit to release pollutants into the waters and wetlands of the United States. The permitting system is designed to ensure that discharges do not violate state and federal water quality standards by identifying control technologies, setting effluent limitations, and gathering information through reporting and inspection. Typically, approved discharges are covered by a general permit developed through a public review process after the specific location of a proposed discharge has been identified by the EPA in an Authorization to Discharge. When a general permit for a specific geographical area does not exist, proposed discharges are subject to an individual approval process and a NPDES permit. A NPDES permit covers the discharge of drilling muds, cuttings and wash water, as well as deck drainage, sanitary and domestic wastes, desalination unit waste, blow-out preventer fluids, boiler blowdown, fire control system test water, non-contact cooling water, uncontaminated ballast and

bilge waters, excess cement slurry, water flooding discharges, produced waters, well treatment fluids and produced solids.

- b. Review Process:** Discharges needing authorization before a general permit is issued require individual permits (40 C.F.R. § 122). Once EPA receives an application for a proposed discharge, a draft permit and fact sheet is prepared to address the proposal. Public notice solicits comments and provides notification of state certification under section 401 of the Clean Water Act. There is a minimum period of 30 days for public comment and all comments received must be in writing. Public hearings, if scheduled in the original notice, will be canceled if there is no interest in holding them; however, anyone can request a hearing. An individual permit will not take effect for 30 days, during which time an aggrieved party who earlier submitted written comments may request an evidentiary hearing. EPA will respond by issuing a finding identifying the qualifying issues to be decided before an adjudicatory law judge. For general permits, notice must be published in the Federal Register and issuance may be challenged for 120 days (40 C.F.R. § 124). A permit will not be issued unless ADEC certifies that the discharge will comply with the applicable provisions of the Clean Water Act. The certification process is addressed in an agreement between EPA and ADEC. Persons wishing to comment on a state consistency determination or 401 certification must submit written comments within the 30-day comment period.
- c. Typical Permit Requirements:** Only pre-approved discharges may be released and each must be emitted in accordance with an effluent limitation designed for that particular emission at that point of discharge. After it is issued, the permit will be modified or revoked if new information justifies different conditions, or if new standards are promulgated that are more stringent than those in the original approval. For example, existing permits prohibit discharges within 1,000 meters of river mouths, and specially designed monitoring programs are required within 1,500 meters of areas considered sensitive. In all cases, mixing zones are established at the discharge point and produced waters are passed through at least one oil separator before discharge. Under certain conditions verification studies may be required of the mixing zone; discharge limitations are then applied as the

emission passes through the mixing zone. Generally, the discharge of floating solids or visible foam is not allowed. Surfactant, dispersant and detergent discharges are minimized, but may be allowed to comply with occupational health and safety requirements. In all cases, deck drainage and wash water must go through an oil/water separator; the effluent is tested and any discharge that would cause a sheen on the receiving waters is prohibited.

The U.S. Army Corps of Engineers (COE):

- a. Review Process:** Upon receipt of an application, the COE solicits comments from the public, federal, state and local agencies as well as other interested parties. They seek comments to assess the impact of the proposed activity on aquatic resources, endangered species, historic properties, water quality, environmental effects and other public interest factors. Most public comment periods last 30 days and a public hearing can be requested. The U.S. Fish and Wildlife Service, National Marine Fisheries Service and ADF&G submit comments to the COE in accordance with the Fish and Wildlife Coordination Act. Their comments address compliance with section 404(b)(1) of the Clean Water Act as well as the measures they consider necessary for the protection of wildlife resources. Under the Endangered Species Act of 1973, endangered species that frequent the area are identified and the effect the proposed activity might have on them or their habitat is considered. In some cases, an environmental assessment or environmental impact statement may be required by the National Environmental Policy Act.
- b. Section 10 of Rivers and Harbors Act of 1899 (33 U.S.C. § 403):** If work is anticipated on or in (or affects) navigable waters, a COE permit is required. A section 10 permit addresses activities that could obstruct navigation. Oil and gas activities requiring this type of permit would be exploration drilling from a backup drill rig, installation of a production platform, or construction of a causeway. The process and concerns are similar to those required for section 404 approval and, at times, both may be required.
- c. General Permits:** Some oil and gas activities undergo individual project reviews. Under this process, projects are evaluated on a case-by-case basis and a public

interest determination is conducted (33 C.F.R. § 320). The COE issues general permits that carry a standard set of stipulations that cover frequent, repetitive and similar activities when, individually and cumulatively, there will be a minimal environmental effect. A general permit describes the activity covered and includes appropriate proposed stipulations and mitigation measures. This type of permit generally has a geographical limitation. There are currently 36 nationwide general permits, and the Alaska District now has 21.

- d. Letters of Permission (LOP):** LOPs are a type of permit that, once approved for issuance after a public review process, undergo individual, but abbreviated reviews. These activities are routine and have been determined to have no significant environmental effect. In Alaska, LOPs are used only for activities that might have an effect on navigable waters under section 10.

The U.S. Coast Guard (USCG): The USCG issues permits for structures over navigable waters and oversees vessels, marine oil spills, and terminal safety.

PUBLIC PROCESS

The updated ANGTS Project Right-of-Way Lease application (ADL 403427) and information contained within the case file constitute the administrative record used in this analysis and proposed decision. Coordinating State agencies, as defined in AS 38.35.230, were furnished copies of the updated ANGTS Project Right-of-Way Lease application. Other state and local government agencies, towns, Native Corporations and tribal governments within the vicinity were made aware of places they could review copies of the updated ANGTS Project Right-of-Way Lease application. Copies were made available to the public at cost. Public notice of the updated application was posted in 28 post offices and letters were sent to cities and towns within the vicinity of the proposed pipeline route. In addition, private parties within the vicinity of the Right-of-Way received individual notice. The public notice was published in the Anchorage Daily News (June 9, 2004), Peninsula Clarion (June 10, 2004), Mukluk News (Tok area, June 17, 2004), Arctic Sounder (June 10,

2004), Valdez Star (June 9, 2004), Delta Wind (June 10, 2004), Cordova Times (June 10, 2004), Fairbanks Daily News Miner (June 9, 2004), and the Juneau Empire (June 9, 2004).

Also, TCPL conducted public meetings in Anaktuvuk Pass, Anchorage, Fairbanks, Delta Junction, Northway and Tok. The purpose of these meetings was to inform local residents about the Project, address social, environmental and technical aspects and answer questions related to the route. The meeting format was an open house style with charts, maps and handouts spread throughout the room addressing the Project scope, descriptions of horizontal drilling, safety concerns, right-of-way, wetlands, environmental impacts, potential impacts to local residents and information on natural gas transportation and usage. Forms were also available for interested individuals to submit additional questions and provide comments about the Project for TCPL to address.

ANALYSIS OF REQUESTED ACTION

This analysis assesses whether the Co-Applicants have the technical and financial capabilities to perform the transportation or other acts proposed in a manner that will be required by the present or future public interest. Information contained within the Co-Applicants' application for the ANGTS Project, and its supporting data and correspondence, were evaluated to prepare this Commissioner's Analysis.

This analysis constitutes the Commissioner's Analysis as required under AS 38.35.080. The ADNR will provide public notice of the availability of copies of this analysis and of the draft right-of-way lease, and of the public's opportunity to provide written comments to the Department during the 60-day comment period, which runs from October 15 to December 15, 2004. Public hearings will be held in Northway, Tok, Delta Junction, Fairbanks, Barrow and Anchorage during November and December, 2004. The Commissioner will consider written comments received within the comment period and oral and written comments from the public hearings.

The ADNR is conducting this process consistent with the provisions of the agreement between the State of Alaska and the Federally recognized sovereign Tribes of Alaska (the “Millennium Agreement” signed April 11, 2001).

The Commissioner will consider public comment and issue a final decision under AS 38.35.100 after the public comment period. This Commissioner’s Analysis will form the basis of the final decision required under AS 38.35.100. It may be amended in response to public comment or within the ADNR’s discretion or, in the event that no changes are made, it will be adopted as the final decision required under AS 38.35.100. Copies of the Commissioner’s final decision, and copies of the right-of-way lease, if one is offered, will be available from the ADNR.

LAND ISSUES ANALYSIS

Land Status

State Patented and Tentatively Approved Lands: The State of Alaska has title to approximately 365.9 miles of the ANGTS Project route, which includes uplands and submerged lands. Lands owned by the University of Alaska, the Mental Health Trust, the Alaska Railroad and other private entities are not included in this right-of-way leasing process. The State land acreage is multiplied by \$42.96 (the estimated rental rate) to determine an estimated rental amount for the construction right-of-way, which will total approximately \$451,080 per year. This will be adjusted based on an actual appraisal to be completed and approved within one year after issuance of the Lease.

State Selected Lands: The State of Alaska has selected lands from the Federal Government and if these lands are transferred to the State, the State will manage the lands under the Federal Grant of Right-of-Way.

Municipal Lands: In accordance with AS 29.18, qualifying boroughs along the ANGTS Project route are eligible to select State land under the Municipal Entitlement Program. As a result, some State lands along the ANGTS Project route have been transferred to boroughs. The North Slope Borough and Fairbanks North Star Borough have municipal selections,

approved conveyances and deeded lands that are adjacent to the ANGTS right-of-way. Lands that have an approved conveyance or have been deeded to the borough exclude a 600 foot right-of-way for the ANGTS Project. A borough does not hold an interest in lands that are under selection. If any selected lands are transferred to the borough(s) prior to issuance of the right-of-way lease, the approved conveyance or deed will exclude the ANGTS right-of-way. The right-of-way may not have been excluded in lands the boroughs have acquired from entities or persons other than the State. Therefore, other authorizations may need to be obtained from the current land owner.

Third Party Interests on State Lands: Third party interests are authorizations held by an entity or individual that may affect the ANGTS Project Right-of-Way Lease. These authorizations may be issued for any of the following:

1. Rights-of-way for roads, trails or utilities, including RS 2477 routes;
2. Right-of-Way Lease for TAPS;
3. Leases for commercial or municipal purposes;
4. Material Sales;
5. Oil and Gas Leases;
6. Mining Claims; and
7. Land sales for subdivisions, agriculture, homesteads, and remote parcels.

An attempt will be made to notify third parties affected by the project. Additional public notice will be published in newspapers of statewide circulation and in newspapers of general circulation in the vicinity of the proposed ANGTS Project.

AS 42.40 was amended in 2004 to allow the Alaska Railroad (ARR) to delineate a proposed transportation corridor between the existing railroad utility corridor of the ARR and the border of Alaska and Canada. The transportation corridor will be 500 feet wide except where, in the ARR's discretion, physical obstacles or private land ownership patterns make a narrower transportation corridor appropriate. The transportation corridor may be designated for a use identified under AS 38.35.020(a) or AS 42.40.350(b) and, subject to section one of AS 42.40, other transportation and utility uses. The ARR may also identify land for use as

rail land that can be developed for terminal, station, and maintenance facilities, switching yards, and other purposes associated with the transportation corridor. ARR is currently considering an extension of the railroad from Fort Wainwright to Fort Greeley (80 miles) to support the US Army Striker Force. This proposal is still in the planning stages and has not gone through the NEPA process nor have they acquired any of the right-of-way. The selection of a railroad corridor is not anticipated to conflict with the ANGTS Project.

The Yukon Pacific Corporation (YPC) holds a Conditional Right-of-Way Lease (ADL 413342) for the Trans-Alaska Gas System (TAGS) that generally follows the TAPS route from Prudhoe Bay to Port Valdez. This conditional lease conveys no interest in land, property or resources of the State, or any preference or priority rights to a particular right-of-way or alignment. The issuance of a conditional lease to YPC does not prevent the Commissioner from issuing other conditional or final leases for the same right-of-way.

Relationship to TAPS

The proposed ANGTS Project is located within the utility corridor established for the TAPS Project. This corridor contains the TAPS oil pipeline and its related facilities and the portions of the conditional State right-of-way for the proposed TAGS Project.

Consistent with Section 8 of the Lease, the ANGTS Project must not interfere with operations of TAPS, including use of State land subject to the TAPS right-of-way, except as may be approved in writing by the Commissioner. The ANGTS Project must be separated by two-hundred (200) feet or more from facilities of the TAPS (except roads, airfields, or other facilities that are neither oil containing or civil works or structures that protect or physically support oil containing facilities). The Commissioner may approve separations of less than 200 feet requested by the Co-Applicants, consistent with any required federal authorization, at crossings of the TAPS and at other locations agreed upon by the owners of the TAPS and the Co-Applicants. Where required to minimize environmental damage or terrain constraints at other locations, requests by the Co-Applicants for separation of less than 200 feet may be approved by the Commissioner, consistent with any required federal authorization, provided that the Commissioner has first determined that the following criteria have been met:

- Stability of foundation and other earth materials will be protected and maintained;
- The integrity of the pipeline will be reasonably protected and maintained;
- Significant damage to the environment (including but not limited to fish and wildlife populations and their habitats) will not be caused;
- Hazards to public health and safety will not be created; and
- TAPS will be reasonably protected from adverse effects of the Co-Applicants activities, including the activities of its agents and contractors, and the employees of each of them.

The Co-Applicants addressed TAPS crossings of the mainline oil pipeline and fuel gas pipeline (FGL) in their application. Each crossing of TAPS will require a site-specific design. The construction drawings will include such items as: insulation requirements, drainage and erosion controls, safety, access, daylighting, ditching, support of foreign pipeline, geometry and separation of pipelines, installation methods and backfill requirements, restoration, ground-water considerations, cathodic protection systems, and signage, as well as other items to ensure the safety and integrity of both pipeline systems

Specific codes and other authorizations that regulate pipeline crossings include:

- Code of Federal Regulations, Title 18 – Conservation of Power and Water Resources
- Code of Federal Regulations, Title 49, Transportation, Part 192, Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards
- Federal Right-of-Way Grant for the Alaska Natural Gas Transportation System Alaska Segment, Serial No. F-24538 (December 1, 1980), as such may be updated and/or amended from time to time.
- Federal Energy Regulatory Commission conditional certificate of public convenience and necessity, issued on December 16, 1977, as such may be amended and finalized.
- State of Alaska Right-of-Way Lease.

State/ Federal Coordination

The State of Alaska is processing the ANGTS Project Right-of-Way Lease, to the extent feasible, to be consistent with terms and conditions of the Federal Grant of Right-of-Way. In order to streamline and clarify the adjudication processes, review and approve pipeline design, and monitor the construction of the pipeline, the State and Federal governments are cooperating to the fullest extent possible.

The State recognizes that, as an interstate natural gas pipeline, the ANGTS Project is subject to the jurisdiction of the FERC in administering the NGA. The Alaska segment of the ANGTS was approved in accordance with the ANGTA of 1976. The State also recognizes that the Co-Applicants have obtained several important and valuable permits and authorizations required under Federal law for the construction, operation and maintenance and termination of the Alaska Segment of the ANGTS Project. Specifically, the Co-Applicants have obtained: a conditional certificate of public convenience and necessity issued by the FERC pursuant to the NGA; a right-of-way grant across Federal lands from the Bureau of Land Management; a Clean Water Act section 404 (wetlands) permit from the COE; and a Clean Water Act section 401 permit and Coastal Zone Management Act/ACMP consistency determination from the State of Alaska in support of the section 404 permit.

The planning, design, construction, operation, maintenance and termination of the ANGTS Project will be subject to regulation and oversight by numerous State and Federal agencies. The parties agree that close coordination between the Federal government and the State in the administration of the Lease, the renewal and administration of the Federal Grant and the issuance and administration of the final FERC certificate of public convenience and necessity, is essential to avoid unnecessary duplication of efforts, and to provide for consistent and efficient State/Federal oversight and monitoring of the pipeline system. It is therefore the intent of the State that the Lease be administered in a manner that, to the extent possible, harmonizes the interpretation and application of the Lease with the requirements of the Federal Grant and the requirements of the FERC certificate of public convenience and necessity. Correspondingly, it is the Co-Applicant's intent to facilitate and support the State's full participation in all federal processes involved with the renewal and/or amendment of the

Federal Grant of Right-of-Way, and with the FERC's issuance of a final certificate of public convenience and necessity for the pipeline system.

In order to facilitate the expeditious construction and initial operation of the pipeline system, the Commissioner will work, in consultation and cooperation with the Co-Applicants and the relevant agencies, to ensure consistency between the terms and conditions of: the Lease; the State's consistency determination for the right-of-way under the ACMP; the Federal Grant of Right-of-Way; the certificate of public convenience and necessity issued by the FERC for the pipeline system, as that certificate may be amended; the permit issued for the pipeline system by the COE under section 404 of the Clean Water Act; the President's Decision under the ANGTA; and FERC regulations and policies.

The State and the Co-Applicants recognize that when commercial arrangements with respect to the ANGTS Project are sufficient to secure financing, the initial capacity of the pipeline and, therefore, the number and location of the compressor stations, as well as other components of the Project, may change or need to be further optimized. Any such updating of the ANGTS Project will require the approval of the FERC, subject to environmental review through the tiering off of existing environmental analysis of the Project. To the extent that any part of the ANGTS Project is to be so modified, the Co-Applicants will provide to the Commissioner copies of relevant applications and supporting materials, contemporaneously with the filing of such documents with the FERC. The Co-Applicants will not commence construction of any such modified components of the ANGTS Project until after they have obtained the approval of the FERC and the Commissioner has reviewed the Co-Applicants' modification request and issued, as appropriate: (i) any amendment to the Lease necessitated by such proposed modification to the Project; and/or (ii) any Notice to Proceed or amendment thereto necessitated by such proposed modification to the Project.

Once construction of the ANGTS Project begins, the ANGTA specified that the Federal Inspector shall:

“establish a joint surveillance and monitoring agreement, approved by the President, with the State of Alaska similar to that in effect during construction of the trans-Alaska oil pipeline to monitor the construction of the approved transportation system within the State of Alaska;”

The State and Federal governments drafted a “Joint Surveillance and Monitoring Agreement” in the early 1980s. The Agreement contained the following categories; I) Principles; II) Authority; III) Administration; IV) Permits and Authorizations; V) Systems and Design Approval, Notices to Proceed; VI) Surveillance, Monitoring, and Enforcement; VII) Consultation and Dispute Resolution; and VIII) Miscellaneous. The State and Federal governments will continue efforts to finalize the Joint Surveillance and Monitoring Agreement prior to the commencement of construction activities.

Pipeline Location

The total proposed length for the Alaska segment of the ANGTS Project is approximately 745 miles. The total length proposed to cross State lands is 365.9 miles, which includes uplands and submerged lands. The total length on State land does not include University of Alaska, Mental Health Trust or Alaska Railroad lands. Legal descriptions for lands crossed by the proposed right-of-way are provided in Lease Exhibits C and D of the Lease.

The selection of the right-of-way route can function as an important mitigation component in a variety of ways. The Co-Applicants used the following general criteria, to the extent reasonably practicable, in the selection of the pipeline route:

- Utilize existing transportation corridors;
- Utilize previously disturbed lands to the extent possible;
- Maximize use of existing facilities such as workpads, highways, access roads, airports, material sites, disposal and communication sites;
- Minimize crossing the TAPS and other pipelines;
- Minimize crossing roads and highways;

- Minimum separation between the proposed natural gas pipeline and TAPS to be at least 200 feet, wherever possible;
- Locate the pipeline downslope of TAPS or the Dalton Highway wherever practical;
- Minimize impacts to cross drainage;
- Reduce the use thaw-unstable slopes as much as possible;
- Minimize traversing areas with frost susceptible soils;
- Avoid bracketing roads and highways between the natural gas pipeline right-of-way and existing rights-of-way;
- Minimize adverse impacts on the environment; avoid sensitive areas;
- Minimize negative socioeconomic impacts to the communities in the pipeline corridor; and
- Maximize route cost effectiveness.

The construction right-of-way for all segments of the pipeline route on lands subject to this analysis is 500 feet, except at river and stream crossings where it will be 600 feet for a segment of pipe not to exceed a distance of 1,500 feet from the ordinary high-water mark on each side of the particular river without written approval of the Commissioner.

The width of the permanent right-of-way on State lands subject to this analysis for operation of the pipeline will be 100 feet, except at specific locations where a wider right-of-way may be requested. For related facilities, the permanent right-of-way width will be 50 feet outside any structure. The Co-Applicants have requested that the lease specifically cover related facilities listed in Table 7 of the application.

The route for the ANGTS Project falls within the Barrow, Fort Gibbon, Rampart and Fairbanks Recording Districts and state lands are generally described in Lease Exhibits C and D.

The ANGTS Project route follows the TAPS oil pipeline route to Delta Junction and then easterly along the Alaska Highway to the Canadian border. The pipeline passes through, or is

proximate to, the following municipalities, regional corporations and unincorporated communities:

1. Municipalities

- a. North Slope Borough
- b. Fairbanks North Star Borough
- c. City of Delta Junction
- d. City of Fairbanks
- e. City of North Pole

2. Regional Corporations

- a. Arctic Slope Regional Corporation
- b. Doyon, Ltd.
- c. AHTNA Inc.

3. Unincorporated Communities

- a. Deadhorse
- b. Wiseman
- c. Coldfoot
- d. Livengood
- e. Fox
- f. Big Delta
- g. Dry Creek
- h. Healy Lake
- i. Dot Lake
- j. Tanacross
- k. Tok
- l. Tetlin Junction
- m. Northway Junction
- n. Alcan

The Co-Applicants recognize that, in the course of constructing the pipeline, additional demands will be placed on public services. They are committed to working closely and cooperatively with the State and its resource agencies to develop ways to mitigate the potential adverse economic, social and environmental effects of the Project. The primary options available to address these potential affects are property and other state and municipal taxes and provisions under the State's Stranded Gas Development Act. If negotiations under the Stranded Gas Development Act are not successful, municipal and local governments will rely on existing state and municipal tax mechanisms to address potential affects.

The development of the ANGTS Project will impact the State of Alaska and local communities on various beneficial levels. Economically, pipeline construction and operation will continuously affect the State's local communities and governments. A joint study by the ADOR in collaboration with Information Insights Inc. (2004) suggest impacts of gas pipeline construction on municipal and village governments could be an aggregate of approximately \$120 million between 2007 and 2013. This study estimates an increase of around 8,000 jobs during the initial Project stages. The September 2004 issue of Alaska Economic Trends, published by the ADOL, contributed a majority of an anticipated increase of 43,000 jobs, between 2002 and 2012, largely due to assumed 2012 construction of the ANGTS Project.

Research completed by ADOR and Information Insights Inc., (2004) concerning the pipeline construction affects on population, assessed potential increases of approximately 11,900 people. Necessary infrastructure adjustments to municipalities and villages during gas pipeline construction could possibly total \$40.8 million, including \$26.3 million in state match for federal aid highway and port projects required in advance of construction. Other relevant economic impacts consist of an increase of around \$20.1 million in law enforcement and emergency services, including \$4.5 million in new state troopers required outside local government service areas. There is an expected increase in demand for health and human services that could total approximately \$4.3 million. State education alterations may include \$13.2 million in local and state support of K-12 institutions. Indirect wage revisions are estimated to rise by about \$12.4 million during gas pipeline construction with the addition of \$1.8 million in other municipal costs.

In April of 2003 the University of Alaska Anchorage's Institute of Social and Economic Research updated its Alaska Citizen's Guide to Budget. An article titled "New Revenues to Fill the Fiscal Gap-Gas Pipeline" included a sensitivity analysis completed by the ADOR proposing a probable scenario of annual state revenues with an assumed \$3/mmbtu (millions of btus). The analysis predicts property taxes will be \$118 million, royalties \$35 million, \$106 million in severance taxes, and state corporate income taxes could total \$340 million. Given the accuracy of this estimate \$599 million dollars of annual state revenues would create nearly \$18 billion during the construction phase and the initial 30-years of operation.

Title

The ANGTS Project, as proposed, traverses State selected, patented and tentatively approved lands along the route from Prudhoe Bay south to Delta Junction and then easterly along the Alaska Highway to the Canadian border.

The Land Ownership Line List: The lists provided in Lease Exhibits C and D provide a basic representation of State land ownership along the Right-of-Way. These lists were created using the State land status plats, Land Administration System records, tentative approval and patent documents, specific case file documents, and the BLM land status plats. This list is subject to refinement or change as the alignment changes or as new information is received by ADNR.

Navigable Waters: The identification and management of the beds of navigable waters is a priority of the State. In 1980, the State established a comprehensive navigability program to respond to federal land conveyances and land management activities under the Alaska Statehood Act, the Alaska Native Claims Settlement Act (ANCSA), and the Alaska National Interest Lands Conservation Act (ANILCA). Pursuant to the provisions of those acts, the federal government has issued navigability determinations for many of the lakes, rivers, and streams throughout the State in an effort to establish State or Federal ownership of the submerged lands. Navigability determinations are also made prior to many State land disposals to ensure that adequate public use easements are reserved.

The basic purpose of the State's program is to protect the public rights associated with navigable waters, including, in particular, the State's title to the submerged lands. Because State and Native land selections and federal conservation units blanket the State, navigability questions have arisen for rivers, lakes, and streams throughout Alaska. Although the navigability of many of those waters has already been established, there are hundreds of others where navigability is not yet determined.

To help resolve any navigability disputes, a major goal of the State's navigability program is to identify the proper criteria for determining title navigability in Alaska and to gather sufficient information about the uses and physical characteristics of individual waterbodies so that accurate navigability determinations can be made as disputes arise. Other important aspects of the program include monitoring federal land conveyance and management programs to identify particular navigability disputes, seeking cooperative resolution of navigability problems through negotiations and legislation, and preparing for statewide navigability litigation.

A State Right-of-Way Lease issued for the ANGTS Project will include the streambeds of all navigable waters, as determined by the State, along the entire route.

Classification

In order for ADNR to issue a final right-of-way lease to the Co-applicants, the ANGTS Project must be compatible with ADNR land classification designations and applicable local planning zoning ordinances.

The proposed ANGTS Project traverses state lands subject to the Tanana Basin Area Plan (TBAP), the Upper Yukon Area Plan (UYAP), the Tanana Valley State Forest Plan (TVSF) and the Site-Specific Plan for Land North and South of Happy Valley and Coldfoot. In order to issue a right-of-way lease within the boundaries of these plans, the proposed action must be consistent with the classification designations outlined by these plans. If the action is not

consistent with the plan, the plan can either be amended, modified, or a special exception can be obtained that would allow the proposed action.

State and Local Land Plan Requirements

Area Plan for State Lands: ADNR has determined that the ANGTS Project is consistent with TBAP, UYAP and the Site-Specific Plan for Land North and South of Happy Valley and Coldfoot land use classifications.

Subunit 2L4, Grapefruit Rocks, of the TBAP contains documented peregrine falcon nesting habitat. The Arctic and American Peregrine Falcon population has been removed from the federally protected endangered species list according to the Tanana Valley State Forest Management Plan Revision completed in 2001. Both the Arctic and American Peregrine Falcons are currently listed by ADF&G as State of Alaska Species of Special Concern. Under this listing, activities in the area are managed to avoid disturbance during the nesting period, disturbance from low-flying aircraft and other noise producing activities, ground level activities, and construction near nest sites during critical nesting times. In addition, activities that could have negative impacts throughout the year (not only during nesting periods) include habitat alterations, construction of permanent facilities, and pesticide use.

Subunit 1E1, Chatanika River Corridor, has high public use values. The Chatanika River is one of the most popular recreational, hunting, and fishing rivers for Fairbanks residents. The river corridor in Subunit 1E1 has been recommended for legislative designation as a State Recreation River. Areas within this subunit are recommended as a high priority for enforcement of state water quality standards because of the potential for water quality problems from mineral development. Wildlife habitat and public recreation are designated as the primary uses in Subunit 1E1. The river is critical-rated habitat for spawning and rearing salmon, and prime-rated habitat for resident fish. The riparian corridor along the river is categorized as an A-2 habitat, special value area. The Chatanika River Corridor is closed to new mineral entry and coal leasing because of conflicts with the important recreation and habitat values. Recreation is an important activity for Fairbanks residents because there are very few clear water streams with developed access in the area. Of these, the Chatanika is the

least developed river close to Fairbanks. Subunit 1E1 will be retained in state ownership and managed to maintain these existing uses.

The construction and operation of the ANGTS pipeline system must be consistent with provisions of the State area plans developed to protect resource values such as fish and wildlife habitats and recreational uses.

State Forest Plan: ADNR has determined that the ANGTS Project is consistent with the TVSF Plan. The TVSF contains six Research Natural Areas within its' boundaries. The purpose of designating a Research Natural Area is to maintain ecologically representative or unique sites in a natural state for observational research, education, and environmental monitoring. The pipeline route does not infringe on any of the six Research Natural Areas identified.

State Wildfire Plan: The ADNR, Division of Forestry's (DOF) fire management planning, preparedness, suppression operations, prescribed fire, and related activities are coordinated on an interagency basis with the full involvement state, federal and local government cooperators.

The DOF, Bureau of Land Management, and the U.S. Forest Service, fight fires within their protection areas on all land ownerships which reduces the duplication of facilities and services. None of the agencies in Alaska have all of the resources required to accomplish the fire protection job on their own. The DOF has cooperative agreements with the Departments of Agriculture and Interior, and numerous local government and volunteer fire departments to help get the job done. The state and federal agencies routinely utilize each other's personnel and resources to both manage and fight fires. This is efficient and cost effective.

In 1984, the State of Alaska adopted the National Interagency Incident Management System Incident Command System concept for managing its fire suppression program. The Incident Command System guiding principles are followed in all wildland fire management operations. All state Departments adopted the Incident Command System in 1996 through the Governor's administrative order.

Lease Stipulation 2.5.1 requires the Co-Applicants to coordinate with the DOF on any necessary modifications to the Interagency Fire Plan.

Local Planning and Zoning: The ANGTS Project Right-of-Way Lease must comply with all applicable local planning and zoning ordinances prior to construction of the Project.

Mineral Closing Order: ADNR Mineral Closing Order No. 67, as amended, closes a one-mile corridor, one-half mile on either side of the alignment of the ANGTS Project.

Access to and Along Navigable and Public Waters

Access to and Along Navigable and Public Waters: AS 38.05.127 (a) specifies that before the sale, lease, grant, or other disposal of any interest in state land adjacent to a body of water or waterway, the Commissioner shall:

1. determine if the body of water or waterway is navigable water, public water, or neither; and
2. upon finding that the body of water or waterway is navigable or public water, provide for the specific easements or rights-of-way necessary to ensure free access to and along the body of water, unless the Commissioner finds that regulating or limiting access is necessary for other beneficial uses or public purposes.

Since the ANGTS Project is proposed as a buried pipeline along the entire route, with the exception of aerial river crossings and above ground fault crossings, the pipeline should not eliminate access to and along any body of water. There may be restricted security zones to protect the above ground portions of the pipeline. Should restricted security zones be required, ADNR will ensure alternate access that allows continuous access along the water body.

TECHNICAL AND FINANCIAL ANALYSES

Under the provisions of AS 38.35.100, the Commissioner is required to determine whether the applicant is fit, willing and able to construct and operate the pipeline in a manner that will be required by the present or future public interest. If the Commissioner makes the determination favorably, then he may offer a lease. In making the determination, the Commissioner is required to consider the following criteria:

1. Does the proposed use of the right-of-way unreasonably conflict with existing uses of the land involving a superior public interest?
2. Does the applicant have the technical and financial capability to protect state and private property interests?
3. Does the applicant have the technical and financial capability to take action to the extent reasonably practical to prevent any significant adverse environmental impact, including but not limited to, erosion of the surface of the land and damage to fish, wildlife and their habitat?
4. Does the applicant have the technical and financial capability to take action to the extent reasonably practical to undertake any necessary restoration or re-vegetation?
5. Does the applicant have the technical and financial capability to protect the interests of individuals living in the general area of the right-of-way who rely on fish, wildlife and biotic resources of the area for subsistence purposes?
6. Does the applicant have the financial capabilities to pay reasonably foreseeable damages for which they may become liable or claims arising from the construction, operation, maintenance or termination of the pipeline?

The analysis for each of the six criteria is provided below. The discussion of financial capability is consolidated into criteria number six.

CRITERIA 1: Does the proposed use of the right-of-way unreasonably conflict with existing uses of the land involving a superior public interest?

Access to, Along and Across ANGTS

The Co-Applicants propose to access the ANGTS Project by utilizing existing access roads, reactivating old TAPS access roads, and creating new access roads. The Co-Applicants have also indicated that after commissioning of the pipeline they may relinquish roads which are not necessary for access to maintenance points, relief, valves, compressor stations, or for pipeline security. It is the policy of ADNR that the access roads and the right-of-way, including workpads, will be open for the use and enjoyment of the public unless one of the following situations apply:

1. Upon the approval of the Commissioner, the Co-Applicants may restrict or prohibit public access over access roads being used for construction or termination activities (Lease Stipulation 2.13.2);
2. Upon the approval of the Commissioner, the Co-Applicants may regulate or prohibit public access to areas of the Right-of-Way to facilitate operations or to protect the public, wildlife, or livestock from hazards associated with the operation of the pipeline (Lease Stipulation 2.13.2); or
3. Upon approval of the Commissioner, the Co-Applicants may regulate or prohibit public access for reasons related to the security of the pipeline system.

Should ADNR determine that a road is not needed of public access to the adjacent State land after construction, ADNR may require that the road improvement be removed and the area revegetated.

Where the ANGTS Project crosses existing highways, roads and trails, the Co-Applicants will be required to design the pipeline to withstand the expected traffic. During construction of the pipeline, the Co-Applicants shall be required to provide alternative access routes for existing roads and trails that cross the right-of-way, and restore them to their original condition and location.

Description of Resources and Existing Uses Along the ANGTS Project Route

Alaska Coastal Management Program Review: The ACMP jurisdiction in relation to the proposed Project extends inland from Prudhoe Bay to about TAPS milepost 117, just south of TAPS Pump Station 3. This is the only segment of the ANGTS Project considered under the ACMP review process.

The activities in this area are subject to both the North Slope Borough Coastal Management Plan and ACMP. If a project affects or occurs within the coastal zone, a review of the application will be conducted to determine whether the proposed activity is consistent with the standards of the ACMP and the North Slope Borough Coastal Management Plan. Following the review, each reviewing agency will determine whether any alternative measures (changes in the project description) or terms are required prior to approval. The public will be provided the opportunity to participate in the ACMP review of the ANGTS Project. The public review for the ANGTS Project is being coordinated by the OPMP within the ADNR Commissioner's Office. Public notice of the ACMP review period will be issued at the same time as the public notice for the Commissioner's Analysis. This process provides for coordinated agency reviews, public input, and ensures consistency with the ACMP and the North Slope Borough Coastal Management Plan. It is anticipated that the ACMP review process will be completed by December 15, 2004.

Oil and Gas Resources: The North Slope of Alaska is well known for its proven and potential oil and gas resources. In the vicinity of the proposed ANGTS Project route, the North Slope oil fields are currently producing about one million barrels per day (BPD). The North Slope production amounts to approximately 17 percent of the United States domestic crude oil production.

The proposed ANGTS Project originates in the area underlain by the Prudhoe Bay field, and the Project is initially intended to transport approximately 4.5 billion cubic feet per day of natural gas from the North Slope area. Oil and gas potential of the northerly portion of the ANGTS Project route is generally considered moderate southward of a line approximately 12 to 24 miles inland from the coast and is further indicated by the pattern of existing oil and gas

leases and proposed state lease sales. South from the Prudhoe Bay operating area the ANGTS Project route crosses several oil and gas leases.

This discussion focuses on natural gas resources in basins within 100 miles of the proposed ANGTS Project corridor. The supply of conventional natural gas mentioned within each particular basin in this summary is provided by the Pipeline Supply Report created in September 2002 by the ADNR, Division of Oil and Gas. The estimated volumetric distributions are compiled from the footnoted sources and are reported in trillions of cubic feet (tcf). The range of values included and discussed in this short summary are the potential mean, minimum, and maximum amounts of conventional natural gas supplies within the relevant locations.

The mean value pertinent to each area is considered the most probable undiscovered technically recoverable conventional natural gas supply. The North Alaska (onshore) Basin has a recorded conventional natural gas mean value estimation of 63.500 tcf, Central Alaska 2.760 tcf, and the Kandik Basin 0.116 tcf. The provided conservative minimum evaluation of potential natural gas reserves for the North Alaska (onshore) Basin is reported at 23.270 tcf, Central Alaska 0.510 tcf, and a possibility of 0.000 tcf within the Kandik Basin. Maximum supply projections for the North Alaska (onshore) Basin are 124.330 tcf, for Central Alaska 7.310 tcf, and for the Kandik Basin 0.578 tcf. There are no recorded assessments for the Yukon Flats, Nenana/Tanana, or Copper River Basins. There is very little information available for most of Alaska's interior basins. A majority of these locations are too small and too shallow to have generated significant levels of conventional natural gas.

The North Slope Coastal Plain is well known for its proven and potential oil and gas resources. The conventionally accepted volume of technically recoverable reserves for the North Slope is about 35 tcf, most of which is in the Prudhoe Bay field and the yet-to-be developed Point Thomson field. There are no similar estimates available for the other basins.

Cover Types – Vegetation: The North Slope Coastal Plain and Foothill Regions are characterized as arctic tundra with numerous thaw lakes and north-flowing rivers. Habitats on the North Slope can be classified into four major categories: coastal lagoons; nearshore coastal wet tundra (including numerous thaw lakes); river floodplains with accompanying shrub communities; and upland moist tundra.

In the foothills of the Brooks Mountain Range, barren rock and sparse, dry alpine tundra predominate. Mountain valleys typically contain moist tundra along with areas of shrub willow thickets along some river courses and protected valleys.

Along the southern side of the Brooks Mountain Range, the biological communities are more complex. Moist tundra areas are scattered throughout the south facing slopes. Shrub thickets occur in higher elevation floodplains and along gravel moraines. Treeless bogs and wetland areas also occur along major stream and river valleys. Lakes are frequently found in association with the streams and rivers. The northern limit of the boreal forest is found on the south slope of the Brooks Range. Black and white spruce are the primary species with white spruce predominant.

Vegetation communities and landforms along the ANGTS Project corridor have been extensively cataloged and mapped. The classification scheme that has been used follows traditional classification methodologies that parallel methods currently in use. This includes descriptions of six classes of arctic tundra, nine classes of shrub communities, eight classes of boreal forest, and 16 classes of lakes, streams, and rivers. Maps were drawn from interpretation of aerial photographs and verified through field reconnaissance.

Approximately 1,800 square miles of habitat were cover-type mapped along the ANGTS Project corridor to produce 218 maps at a scale of 1:12,000. Major cover types occurring

north of the Brooks Mountain Range included sedge-grass tundra on the Arctic Coastal Plain and sedge-shrub tussock tundra in the foothills region. Throughout the Brooks Range, alpine tundra was common although sedge-shrub tussock tundra, low-shrub upland and conifer forest also occurred. South of the Brooks Range conifer forest, deciduous forest and mixed forest were predominant, with sedge-grass marsh and mixed shrub wetlands predominant in the lower areas. Tall and low shrub riparian types were common along most rivers and streams but low-shrub riparian-willow was predominant north of the Brooks Range. Sedge-shrub tussock tundra was found throughout the southern portion of the pipeline route, especially where permafrost occurred near the surface.

Cover types were classed as “A”, “B”, or “C” based upon the wetlands and rivers jurisdiction of the COE, as well as on the perceived sensitivity of habitat value. The proposed route for the ANGTS Project was then overlain on the cover-type maps to delineate the lineal distance intersected by the proposed pipeline route for each cover type. In total, nearly 687,000 lineal feet of cover types were evaluated.

Category “A” cover types included those types (a few highly productive ponds) that were to be avoided during design. Less than 0.2 percent of the original corridor length was within this class.

Category “B” classes included those for which individual Section 404 permits will be required. This includes over 75,000 lineal feet of the pipeline corridor (11 percent). The most common cover types included in this category are mix shrub wetland (42,000 lineal feet), wet tundra (13,775 lineal feet), and Sedge grass marsh (12,975 lineal feet).

The Category “C” cover types are already permitted under the Section 404 permit listed as Sagavanirktok River 120. Within this category are the remaining wetland types. The most predominant of these are sedge grass tundra (207,000 lineal feet), tussock tundra (177,900 lineal feet) and low shrub riparian (67,250 lineal feet).

Although stream and river crossings were mapped and classified, they were not included in the total lineal distances to be traversed by the pipeline. Lakes and ponds were included in the mapping. All lakes and ponds not excluded as Category “A” were listed under Category

“B” as requiring individual permits from the COE. To date, these permits have not been acquired.

Based upon the classification and mapping that has been conducted, there are relatively few areas that would require additional surveys. These areas are limited to zones that have had major alteration in the past 10 to 20 years, including forest fires and new development. Where the alignment has changed from the original alignment, approximately 30 miles, some new mapping will also need to occur.

Wildlife

Amphibians and Reptiles: No reptiles occur in northern and interior Alaska, but one species of amphibian, the wood frog, is present in the Interior Region and has been found north of the Brooks Range. Wood frogs breed in shallow ponds and other wetlands such as fens and, to a lesser extent, bogs as soon as open water appears in spring. In summer and fall, wood frogs feed on insects in moist wooded areas. Overwintering occurs in leaf litter in forested habitats.

Mammals: A variety of terrestrial and aquatic mammals occur along the ANGTS Project corridor: shrews, little brown bat, wolf, coyote, foxes (arctic and red), lynx, river otter, wolverine, marten, weasels (least and ermine), mink, bears (black, brown, and polar), moose, caribou (barren ground and woodland), bison, muskox, Dall sheep, marmots (Alaska, hoary, and woodchuck), squirrels (arctic ground, red, and northern flying), beaver, muskrat, small rodents, porcupine, collared pika, and hares (snowshoe and Alaska). Distributions of individual species of mammals vary with respect to the ANGTS Project corridor, with some occurring along the length of the corridor and others occurring only in specific locations within the corridor. While the significance of larger herbivores, such as moose and caribou, and of their predators, such as wolves and bears, is apparent, many smaller species play important roles in tundra and taiga ecosystems. For example, herbivorous rodents can be very numerous and are important prey for many birds and mammals and thus play a key role in ecosystem function. Likewise, shrews feed on insects and other small invertebrates, helping check insect populations, and in turn, are prey for a variety of mammalian and avian predators.

Common Shrew: This species may be expected over the entire ANGTS Project corridor south of the Arctic Coastal Plain. Common shrews are solitary and occupy talus slopes, forests, open country, brushland, wet mossy areas, marshes, and other moist areas from the Brooks Range to the Alaska-Yukon border. Common shrews occasionally may occur in the northern foothills of the Brooks Range.

Dusky Shrew: These shrews can be expected to occur within the ANGTS Project corridor between the crest of the Brooks Range and the Alaska-Yukon border. Dusky shrews are solitary and use moist environments including marshes, coniferous forests, and heather from the Brooks Range southward.

Tundra Shrew: These solitary shrews occur in use wet or dry tundra habitats within the ANGTS Project corridor between Prudhoe Bay and Alaska-Yukon border. The occurrence of tundra shrews in the Tetlin National Wildlife Refuge extends their distribution to the upper Tanana River valley.

Water Shrew: This species is listed as occurring in the Tetlin National Wildlife Refuge and thus may occur within the ANGTS Project corridor, at least in the upper Tanana River valley. Water shrews prefer riparian marsh and shrub in willow/graminoid communities but also occur in bogs and moss near flowing water. These shrews often swim in streams within their habitats.

Pygmy Shrew: This species can be expected in the ANGTS Project corridor between the Yukon River and the Alaska-Yukon border but it possibly occurs northward to the south slopes of the Brooks Range, as well. The pygmy shrew does not occur on the North Slope and is poorly documented north of the Yukon River. Pygmy shrews are solitary and prefer drier habitats than other shrews, using both forests and open areas, but also occur in bogs and marshes, possibly in response to seasonally changing moisture preference.

Barrenground Shrew: These shrews potentially occur in the North Slope segment of the ANGTS Project corridor. Barrenground shrews are solitary and use low, wet sedge-grass meadows and shrub habitats on Alaska's North Slope.

Tiny Shrew: This species is known from only a handful of specimens in Alaska, most found in riparian habitats. Recent discoveries of tiny shrews in the Brooks Range and Wrangell Mountains greatly expand the potential range of this species. The known distribution of these shrews does not specifically include the ANGTS Project corridor, but the presence of tiny shrews in the corridor between the Brooks Range and the Alaska-Yukon border now seems probable.

Little Brown Bat: The little brown bat occurs in the southern Interior Region where it is known to occur along the mid-Tanana River and as far north as the Yukon River. No other bat species are present along the ANGTS Project corridor. Little brown bats hunt over water and riparian zones along rivers where they feed on aquatic insects, especially chironomids, as well as moths and beetles. Bats also hunt over forested areas between roost sites and riparian hunting areas. Nursery colonies often are located close to riparian zones. Roosting can occur in caves, hollow trees, or structures. Little brown bats can be expected to occur within the corridor between the Yukon River and upper Tanana River valley, and perhaps to the Alaska-Yukon border, given that bats occur at low density in the Interior, and their distribution is poorly known.

Arctic Fox: The northernmost portion of the ANGTS Project corridor in the vicinity of Prudhoe Bay is within arctic fox habitat. These foxes are common on the Arctic Coastal Plain near the coast where they den in the slopes of pingos and riverbanks in unfrozen soil. Pups remain at or near dens for several months after whelping in May or early June. Although omnivorous, arctic foxes mainly feed on lemmings, tundra voles, birds, eggs, and carrion but will exploit artificial food sources where available. In winter, arctic foxes travel onto sea ice and scavenge seal kills made by polar bears. The arctic fox is susceptible to rabies.

Coyote: The ANGTS Project corridor south of the Yukon River passes through coyote habitat. A few coyotes occur north of the Yukon River, as well. Coyote densities generally are low, especially where wolf populations are not suppressed, because wolves kill coyotes they encounter. Population trends in the late 1990s, based on trapper surveys, indicated that coyote numbers were increasing in the area between the Yukon River and Rosa Pass (west of Big Delta). A snowshoe hare population high in the late 1990s apparently increased coyote

numbers in the region between Robertson River (west of Tanacross) and the Alaska-Yukon border before they declined again by 2000.

Coyotes are less social than wolves, with groups representing family units. Seasonality of whelping and pup numbers are similar to those of wolves. Coyotes have broad ecological tolerances, often favoring shrubby or successional habitats, and are adapted for capture of small prey such as rodents, hares, and birds. In addition, coyotes often occur in close association with human settlements or human-disturbed environments.

Wolf: Wolves occur along the entire ANGTS Project corridor from the North Slope to the Canadian border, except in populated areas near cities and towns. Wolves are widespread on the North Slope in the area traversed by the corridor but occur at low densities estimated at approximately 6 to 8 wolves/1,000 square miles (mi²) with few if any packs resident on the Arctic Coastal Plain. Densities between the crest of the Brooks Range and the Kanuti River appear to vary from 10 to 36 wolves/1,000 mi² with the higher densities occurring in the more southerly survey areas. No density estimates are available for the area between Kanuti River and Rosa Pass (west of Big Delta). Between Rosa Pass and the Alaska-Yukon border, wolf density was estimated at approximately 22 wolves/1,000 mi² in 2001-2002 for populations that have been subjected to nonlethal reduction.

Wolves are highly gregarious and have a highly developed social behavior that centers on the pack. Pack size averages 6 to 7 animals but commonly ranges from 2 to 12 wolves with larger packs of 20 to 30 wolves occasionally observed. Wolves typically whelp 4 to 7 pups in May or early June, using dens excavated in well-drained, unfrozen soil. Pups remain in the vicinity of the natal den until weaned in mid-summer. Caribou, muskox, moose, and Dall sheep are the major prey for wolves but beaver, hares, and small mammals are also taken at times.

Red Fox: Nearly the entire length of the ANGTS Project corridor traverses red fox habitat. Although there is some overlap between the distribution of red foxes and arctic foxes on the Arctic Coastal Plain, arctic foxes mainly occur near the coast and red foxes at more inland locations. Red foxes are common on the North Slope with moderately high populations noted between the Brooks Range and Kanuti River in 2000. Fox numbers in the eastern Interior

increased during the snowshoe hare high in the late 1990s but declined in 2001 following a cyclic hare decline.

Red foxes have broad habitat tolerances but often use habitat mosaics, ecotones, and other areas of diverse habitats where they feed omnivorously on small rodents, hares, squirrels, birds, eggs, insects, vegetation, and carrion. Red foxes excavate dens in slopes where whelping occurs in spring. Pups remain at or near the den for several months. Unlike arctic foxes, which show little fear of humans, red foxes are more wary.

Lynx: The entire ANGTS Project corridor passes through lynx habitat, but forested regions south of the Brooks Range are most significant. Lynx are relatively solitary animals occupying deciduous and coniferous forests, but habitat mosaics, especially those incorporating successional vegetation supporting snowshoe hare, their major prey, are optimal. Other prey species include grouse, ptarmigan, squirrels, and small rodents. Lynx populations tend to track cyclic hare populations and thus fluctuate widely. Female lynx typically give birth to 2 to 4 kittens in natural shelters in May or June. Kittens are weaned after several months but remain with their mother through most of the following winter.

Lynx are an economically important furbearer, similar to marten. Lynx are rarely harvested in the portion of the North Slope traversed by the ANGTS Project corridor, but harvests are substantial (hundreds per Game Management Unit) in some years south of the Brooks Range. A lynx population high may have occurred in the late 1990s in several portions of the corridor, which would indicate that current populations probably are lower.

River Otter: The ANGTS Project corridor crosses otter habitat at larger fish-bearing streams along its length, although few otters appear to be present in eastern North Slope drainages. River otters occupy freshwater streams and lakes, estuaries, and littoral marine waters where they consume fish, crustaceans, aquatic insects, and occasional birds and small mammals. Otters are social and playful and form groups based on family units or bachelor males. Denning occurs in burrows where young are born in spring and remain for about 2 months. River otters often move overland between waterbodies.

Harvest records for the area of the North Slope traversed by the ANGTS Project corridor typically show 0 to 4 river otters per year. River otter numbers were high or increasing between the Brooks Range and Kanuti River in 2000, and harvest records for the area between Kanuti River and Rosa Pass (west of Big Delta) indicate substantial presence of river otters. River otters apparently are not abundant between Rosa Pass and Robertson River, based on harvest records, and are uncommon between Robertson River and the Alaska-Yukon border, based on trapper surveys.

Wolverine: Wolverines occur over the entire length of the ANGTS Project corridor, with the exception of populated areas near cities and villages. Wolverines are solitary animals that exist at low density (e.g., one wolverine/54 mi² for the western North Slope) and range over large distances in forest, mountain, and tundra habitats where they scavenge on the remains of ungulates killed by other predators but also take voles, hares, squirrels, and birds. Kits are born in snow dens in late winter, grow rapidly, and become independent in 5 to 6 months. Harvest records show a wolverine take on the North Slope in the vicinity of the ANGTS Project corridor ranging from 6 to 19 per year during the mid- to late 1990s. Harvest information for Game Management Units traversed by the corridor south of the Brooks Range likewise indicates the presence of wolverines over the remainder of the corridor.

Marten: The ANGTS Project corridor south of the Brooks Range supports marten, an economically important furbearer species of mature mixed or coniferous forest, particularly black spruce, and also of burned habitats. Marten are solitary, sometimes den in squirrel middens in white spruce forest, and primarily feed on voles. Other marten food includes hares, squirrels, berries, birds, eggs, insects, carrion, and vegetation. Between the Brooks Range and Kanuti River, marten populations were increasing in 2000. Marten numbers south of Kanuti River to the eastern Interior appeared to be down in the late 1990s and 2000, according to trapper surveys.

Ermine: This weasel occurs within the ANGTS Project corridor from the Arctic Coastal Plain to the Alaska-Yukon border. Ermine are solitary and feed on voles, lemmings, hares, birds, insects, and fish in a wide variety of habitats. Local distributions of ermine follow prey

distributions. Litters of 3 to 10 young are born in May or June in burrows or other covered shelter and remain at or near the den for about 2 months.

Least Weasel: This species occurs within the ANGTS Project corridor from the Arctic Coastal Plain to approximately Robertson River, but may be absent from the upper Tanana River valley. Like ermine, least weasels are solitary animals that feed on red-backed voles, meadow voles, lemmings, and occasionally hares. Local distributions of least weasel follow prey distributions. Litters of 3 to 10 young are born in May or June in burrows or other covered shelter and remain at or near the den for about 2 months.

Mink: This species occurs throughout the length of the ANGTS Project corridor in appropriate habitats, typically wetlands and shorelines of waterbodies. Mink are solitary animals that feed on voles, lemmings, hares, muskrats, squirrels, birds, eggs, fish, and frogs. Females bear 4 to 10 kits in June in a burrow or hollow log near water. Little information is available on mink numbers, but they occur at low densities and are not economically important furbearers at current fur prices.

Black Bear: Black bears occur along the ANGTS Project corridor south of the Brooks Range, typically occupying deciduous, mixed, and spruce forests with thick understories but also use alpine tundra. Black bear densities in parts of the Interior Region through which the corridor passes have been estimated at 12 to 20 bears/100 mi² of suitable habitat, much higher than brown bear densities in these areas.

Like brown bears, black bears are omnivorous and feed on herbaceous plants, buckbean, fruits, berries, fish, invertebrates, rodents, hares, moose calves, birds, eggs, and carrion as opportunity presents. Black bears emerge from their dens in spring and initially feed on early growth of horsetails in lowlands. In some areas, black bear predation is a significant mortality factor for newborn moose calves. During summer months black bears typically feed on grasses, sedges, and berries where salmon is not available. Berries are particularly important in late summer and early fall when black bears search them out in meadows and alpine tundra before denning. Black bears den in several types of forested habitat around the time of the first significant snowfall but show a preference for willow-alder thickets and an avoidance of heath.

Brown Bear: Brown bears occur over the length of the ANGTS Project corridor. Brown bears are opportunistic omnivores and their habitat use patterns are a reflection of this foraging strategy. Those habitats with abundant food resources are used on an as available basis. In the vicinity of Prudhoe Bay, availability of artificial food sources over many years resulted in a high density of brown bears. Improved waste management practices denied artificial foods to the bears and a number of them subsequently were killed due to human-bear conflicts.

Typically, brown bear density is lower on the Arctic Coastal Plain and higher in the foothills of the Brooks Range. Brown bear density in the Brooks Range west of the corridor has been estimated at 33 bears/1,000 mi² and from the Brooks Range southward to the Kanuti River at 22 to 33 bears/1,000 mi². Brown bear habitat along the ANGTS project corridor between the Kanuti River and Rosa Pass (west of Big Delta) is relatively poor because it contains large amounts of lowland black spruce and experiences significant human activity. Eastward from Rosa Pass, higher elevation terrain provides better brown bear habitat with an estimated brown bear density of approximately 25 to 30 bears/1,000 mi² between Rosa Pass and Robertson River and a density of approximately 47 to 57 bears/1,000 mi² between Robertson River and the Alaska-Yukon border. Density within the immediate corridor likely is lower due to human activity and less favorable low-elevation habitat.

Brown bears generally den in uplands or mountains, emerging in spring to seek out newly green vegetation, often in river valleys. In and adjacent to caribou calving grounds, brown bears prey on caribou calves but also sometimes take adult caribou and scavenge on carrion. Similarly, brown bears are significant predators on moose calves in some areas. In areas where salmon is not available in river valleys, brown bears disperse to higher elevations during the summer months to feed upon various species of horsetail, grasses, and sedges. Brown bears intensively feed on fruits, berries, roots, ground squirrels, and other small mammals in late summer and fall to fatten prior to denning in October.

Polar Bear: The northern terminus of the ANGTS Project corridor is within polar bear habitat. Although polar bears typically spend the open-water season in association with pack ice well north of Prudhoe Bay, polar bears frequent landfast ice and the arctic coast during

winter, and their occurrence at Prudhoe Bay is not uncommon. Some female polar bears den onshore, but the probability of denning activity in the immediate vicinity of the northern terminus of the corridor is low.

Moose: Moose are present throughout the ANGTS Project corridor but occur in only small numbers in the portion north of the Brooks Range. On the North Slope, moose primarily occupy riparian shrub communities in river valleys containing sufficient browse to support them. The Colville and Canning drainages to the west and east of the corridor support concentrations of moose. The Sagavanirktok and upper Kuparuk watersheds, through which the ANGTS Project corridor passes, do not have large numbers of moose, and there is no open season for them in this area.

Moose are widely distributed south of the Brooks Range and throughout the Interior Region to the Alaska-Yukon border. As on the North Slope, riparian shrub vegetation provides important moose habitat. South of the treeline, however, a number of additional vegetation communities become important to moose. These communities include subalpine shrub, post-fire seral deciduous and mixed forest, and palustrine and lacustrine wetlands. Moose frequently make seasonal movements between preferred habitats in response to reproductive and nutritional needs, as well as to environmental conditions such as snow depth.

Cows seek out densely vegetated shrub communities and early successional deciduous forests for calving in late May to early June. Tall deciduous or coniferous cover adjacent to seral or shrub communities add to their value as calving habitat. Moose are not highly social animals, but cow-calf bonds are strong and these pairs frequently are seen together until a subsequent calving, usually one to two years. In summer, moose use riparian shrub communities as well as mixed conifer and deciduous forests but especially seek wetland habitats where they feed on aquatic vegetation, an important source of minerals in moose diets. Moose shift to browsing willow, birch, and aspen twigs in fall and throughout the winter, often moving from established higher elevation summer ranges to lower elevation winter ranges, particularly where snow depths are adverse at higher elevations. Typical wintering areas include riparian floodplains of major rivers, and broad, low valleys. In the Fairbanks area, however, many moose move from summer habitat in wetlands and forests of

the lowland Tanana Flats across the ANGTS Project corridor to riparian and seral winter habitat in upland river valleys north of the Tanana River.

Moose are very important to Alaska subsistence and nonsubsistence hunters using areas traversed by the ANGTS Project corridor, as well as to guided nonresident hunters using areas away from the corridor.

Barren-ground Caribou: Alaska's caribou are the barren-ground subspecies, with the exception of the Chisana herd, which is the woodland subspecies. Barren-ground caribou may consist of small, resident herds or larger, migratory herds. Herds usually have discrete calving locations that provide optimum habitat in terms of nutrition, and perhaps predator avoidance, for calving cows. Calving occurs in mid-May or early June, followed by post-calving aggregations when caribou move to areas such as coastlines or mountains to seek relief from insect harassment. During late summer, barren-ground caribou disperse (after insects diminish) and feed on the leaves of willows, sedges, flowering tundra plants, and mushrooms, switching to lichens, dried sedges, and small shrubs during fall. Caribou again aggregate in a fall rut migration, where large herds often travel long distances (up to 400 miles) between summer and winter ranges. Many, but not all, barren-ground caribou herds winter in forested habitats.

Barren-ground caribou of the Central Arctic caribou herd (CAH) are the most prevalent large mammal along the ANGTS Project corridor north of the Brooks Range, numbering nearly 32,000 animals (post-calving) in 2003. The CAH calves near the coast on the Arctic Coastal Plain in early June. Calving is split between locations to the east and west of Prudhoe Bay. Large post-calving aggregations of caribou move to the coastline to alleviate insect harassment on warm, relatively calm days and move inland during cold, windy weather. Later, the CAH disperses over an area of coastal plain roughly between the Canning and Colville rivers and extending about 30 miles inland. The CAH again aggregates and migrates to the northern foothills of the Brooks Range in fall. At the time of the rut in October, caribou are distributed on both sides of the Brooks Range as far south as the Chandalar Shelf. Wintering CAH animals can occur both east and west of the ANGTS Project corridor on both sides of the Brooks Range, but most are to the east of the corridor.

From the Brooks Range to approximately Wiseman, on the Middle Fork Koyukuk River, the ANGTS Project corridor skirts the range of the Western Arctic caribou herd, which lies to the west. The range of the Porcupine caribou herd lies to the east of the corridor from the Brooks Range to about Old Man, on the Kanuti River. Caribou from these herds have a low probability of occurring in the corridor while overwintering south of the Brooks Range. The Ray Mountain caribou herd occupies a small area in the Ray Mountains, north of the Yukon River and west of the ANGTS Project corridor. Caribou of unknown herd affiliation, possibly Ray Mountain or Western Arctic, were present in the corridor around Old Man in 1991.

Between the Yukon River and the Alaska-Yukon border, the ANGTS Project corridor intermittently skirts or crosses the ranges of several barren-ground caribou herds: White Mountain, Fortymile, Delta, Macomb, Nelchina, and Mentasta. These herds generally calve in mid-May. The range of the small, resident White Mountain caribou herd lies to the east of the corridor between Hess Creek and Wickersham Dome, within the former range of the Fortymile caribou herd (FCH). Some calving occurs west of Beaver Creek in this area, and overwintering caribou sometimes use upper Hess Creek and the upper Tolovana River, both of which cross the corridor further downstream. Caribou from this herd have a low probability of occurring within the ANGTS Project corridor at current population levels. Should the FCH regain historic abundance and subsume the White Mountain herd, migratory movements of the combined herd could intersect the corridor in this, and other, areas.

The historic range of the FCH extended to the south of ANGTS corridor from north of Fairbanks to the Alaska-Yukon border and encompassed that area currently occupied by the small, resident White Mountain herd discussed above. Following a decline to less than 10,000 animals in the mid-1970s, the range of the FCH contracted away from the corridor. Management efforts have increased the FCH to more than 40,000 animals, but their current range is generally north of the ANGTS Project corridor during the entire year. Calving occurs in the Yukon-Tanana Uplands in the headwaters of the Fortymile, Seventymile, and Charley rivers. Summer range extends from the Birch Creek drainage in the west to east of the Taylor Highway, with the rut often occurring in the Birch Creek and Middle Fork Chena drainages. Overwintering in Yukon Territory, including in the vicinity of Dawson, has

resumed with herd growth. Although occasional FCH animals are found as far south as the Tetlin National Wildlife Refuge, probability of significant numbers in the corridor is low at this time. As efforts to rebuild the numbers of the FCH continue and the herd's range expands, winter use of the corridor may resume.

The Delta caribou herd (DCH) uses the northern foothills of the central Alaska Range between the Nenana and Delta rivers. Currently, the DCH population is low, estimated at 2,800 in 2002, with a population management objective of 5,000 to 7,000 caribou. Wintering DCH animals at current population levels have used the Donnelly Dome area about 25 miles south of the ANGTS Project corridor. Also, anomalous early snowfall in 1992 caused caribou from this herd to mix with the Denali caribou herd and to shift their winter ranges well to the north into the Fairbanks area, including locations in the Chena and Salcha River drainages. These caribou returned to their normal winter ranges outside the corridor in subsequent years. Although unlikely, wintering DCH animals could occur in the corridor if range expansion occurs as the DCH population objective is met or if anomalous snowfall prompts another shift in winter range.

The small Macomb caribou herd (MACH) uses the eastern Alaska Range between the Delta River on the west and the Mentasta Highway on the east. Calving is on the Macomb Plateau, just east of the Johnson River and south of the Alaska Highway. Wintering MACH caribou use the Tanana River valley and thus can occur in small numbers in the ANGTS Project corridor. A population objective of 600 to 800 caribou for the MCH had not been met in 2001 when numbers were estimated to be 500 to 550. Should the herd increase to desired levels, it is likely that winter use of the corridor by MACH animals would expand to suitable winter range north of the Tanana River where they have occurred in the past.

The Nelchina caribou herd (NCH), numbering about 34,000 animals in 2002, calves in the Talkeetna Mountains and summers in the Nelchina Basin, far from the ANGTS Project corridor. Winter movements, however, have brought portions of the NCH into and through the corridor since 1997. Caribou of the NCH make up the majority of those that pass through or winter along the corridor between Tok and the Alaska-Yukon border at present. Significant numbers of wintering NCH animals can be expected in this area.

The Mentasta caribou herd (MECH) calves on the slopes of Mt. Sanford in the Wrangell Mountains and generally ranges through the northeastern portion of Wrangell-St. Elias National Park, well to the south of the ANGTS Project corridor. In fall and winter, however, caribou from the NCH mix with MECH animals and it is not certain that these herds are distinct. Currently, the MECH population numbers about 540 animals, down from 3,200 in 1987. The proportion of MECH animals moving through the corridor between Tok and the Alaska-Yukon border in company with NCH animals is not clear.

Woodland Caribou: Canada's boreal forests host nearly the entire global population of woodland caribou. Woodland caribou are also found along the eastern and southeastern edge of Alaska and northeastern Washington State, and are listed as vulnerable to endangered across much of their range. This subspecies tends to remain in forested habitats year-round, occur in small groups, and is not generally associated with the long distance migrations defined by large herds of barren-ground caribou. Woodland caribou generally prefer mature or old growth coniferous forests. These forests offer high concentrations of ground and tree lichens, which make up a significant proportion of woodland caribou winter diet. During the winter, woodland caribou tend to use uplands, bogs and south facing slopes. In summer, they prefer areas such as forest edges, marshes and meadows that provide flowering plants and grasses.

Woodland caribou of the Chisana caribou herd (CCH) are unique in Alaska. The CCH occupies the Nutzotin and northern Wrangell mountains in Alaska and Yukon, some distance south of the ANGTS Project corridor. From a high of about 1,900 animals, the CCH declined to an estimated 315 caribou in 2002. Currently, a captive rearing program is underway to protect calves from predation during their initial period of vulnerability in a successful effort to increase recruitment to the herd and check its decline. CCH animals have wintered in the vicinity of Wellesley Lake, about 20 miles south of the corridor. At other times, these caribou winter in the Beaver Creek drainage in Yukon Territory. Although unlikely, it is conceivable that wintering caribou from this herd could occur in the ANGTS Project corridor in the vicinity of the Alaska-Yukon border, if herd recovery efforts are successful and the CCH range concurrently expands.

Bison: The ANGTS Project corridor passes through bison habitat in the vicinity of Delta Junction, roughly between Big Delta and the Gerstle River. Plains bison were introduced to the Delta River area in 1928 and currently number about 360 animals, the pre-calving population management objective. Bison use the Delta River, to the south of the corridor, from late winter through calving, and in summer move to the Delta Junction Bison Range, located to the south of the corridor and east of Delta Junction. This range is managed by ADF&G to attract bison away from adjacent agricultural lands. Bison have continued to use agricultural lands north of the corridor, as well; therefore, bison movement patterns will take them across and along the corridor in the Delta Junction area.

Muskox: Muskoxen were reintroduced to northeast Alaska in 1969 (Barter Island, Arctic National Wildlife Refuge) and 1970 (Kavik River) following their extirpation from the region in the mid-1800s. During the 1980s and 1990s, muskoxen developed a population of 500 to 600 animals in northern Alaska and spread westward beyond the ANGTS Project corridor. More recently, muskox populations have declined in the Arctic National Wildlife Refuge but remain at 250 to 300 animals in Game Management Unit 26B, which encompasses the North Slope portion of the corridor. About 100 of these muskoxen use the area west of the corridor with the remainder to the east.

Muskoxen in the vicinity of the ANGTS Project corridor can move significant distances at irregular intervals, occurring in the coastal area as well as the Brooks Range. A few muskox groups have been seen south of the Brooks Range in the past. Muskoxen occur in mixed-sex herds, typically of 6 to 60 animals in winter and 5 to 20 in summer. Herds are largest in April and October and smallest in August during the rut. Bulls are also found in groups typically ranging in size from 2 to 10 animals. Cows typically occur with younger animals in larger aggregations.

Muskoxen prefer riparian habitats in the summer. Willows are preferred food where available, although sedges and forbs make up a high proportion of the total food intake. Wind-scoured areas such as ridges, plateaus, and bluffs are important winter habitat for muskoxen because they are unable to dig through deep snow to access food. Studies have shown that many herds use traditional areas year after year. Many of these high-use areas are

relatively small, and may contain important habitat components. Movements between areas of high traditional use may also occur along traditional routes.

Dall Sheep: The ANGTS Project corridor intersects or passes adjacent to several areas occupied by Dall sheep in the Brooks Range and the Alaska Range. Slope Mountain, on the north side of the Brooks Range, is the northernmost extent of Dall sheep habitat adjacent to the corridor. From Galbraith Lake southward, Dall sheep occupy higher elevations on both sides of the corridor all the way to Marion Creek, north of Coldfoot, with the last outlier occurring at Cathedral Mountain. Sheep can occur within the corridor between the upper Atigun River valley and the Chandalar Shelf over Atigun Pass and may move through the corridor between adjacent habitats. A number of sensitive lambing areas and mineral licks are adjacent to the corridor in the Brooks Range.

Dall sheep habitat is not present in close proximity to the ANGTS Project corridor south of the Brooks Range until it reaches the vicinity of Cathedral Rapids, between the Robertson River and Tanacross. Mountains of the Alaska Range with elevations above 5,000 feet are present approximately 5 miles south of the corridor in this location, part of the Alaska Department of Fish and Game's Tok Management Area. The remainder of the corridor in Alaska is located well away from sheep habitat.

Dall sheep lamb between mid-May and early June in relatively discrete, steep lambing areas selected for predator avoidance. Ewes and young sheep form bands separate from rams, except during the rut. Sheep travel significant distances to use mineral licks, which are important habitats, in the spring. Dall sheep are most often found at higher elevations browsing in alpine tundra where sedges and grasses form a major part of their diet during the summer months. In fall, Dall sheep migrate to lower elevation south-facing slopes where they spend the winter feeding on frozen grass, sedge, moss, and lichen. The rut occurs in late November to early December.

Alaska Marmot: The ANGTS Project corridor passes through Alaska marmot habitat in the Brooks Range where these marmots occupy the base of talus slopes. Alaska marmots are hibernators, emerging from their colonial hibernation den to feed on grasses, forbs, berries, roots, mosses, and lichens following snowmelt and entering hibernation again in September.

Hoary Marmot: The ANGTS Project corridor passes adjacent to hoary marmot habitat in the Alaska Range in the vicinity of Cathedral Rapids, between Robertson River and Tanacross. Hoary marmots use habitats around the base of talus slopes and are hibernators but, unlike Alaska marmots, occupy individual hibernation burrows.

Woodchuck: These marmots occur in the ANGTS Project corridor between Fairbanks and the Alaska-Yukon border. Woodchucks feed on green vegetation in open woodlands, thickets, fields, and clearings having dry soils suitable for constructing burrows. Woodchucks, like hoary marmots, hibernate in individual burrows.

Arctic Ground Squirrel: These squirrels are hibernators that excavate colonies in well-drained soils in coastal and alpine tundra habitats. Ground squirrels feed heavily on vegetation over the summer to fatten before reentering hibernation. Energy-rich, fat ground squirrels are important prey for brown bears in late summer and fall, and Alaska Natives use ground squirrel (parka squirrel) pelts in making traditional garments. Arctic ground squirrels occur in coastal and alpine tundra over the length of the corridor.

Red Squirrel: These squirrels occur in all segments of the ANGTS Project corridor south of the Brooks Range in mixed and coniferous forests (black and white spruce) where they cut green spruce cones and store them in middens for winter food, as well as feed on seeds, berries, buds, fungi, and insects. Mushrooms are stored for winter food, as well. Red squirrels construct nests of plant material in dense spruce foliage.

Northern Flying Squirrel: These squirrels occur in the ANGTS Project corridor between the Yukon River and the Alaska-Yukon border where deciduous, mixed, and coniferous forests of the central and eastern Interior provide old, tall trees with cavities for shelter and the height needed for their gliding aerial travel. In addition to cavities, northern flying squirrels use witch's broom (a parasitic deformation of spruce tree foliage) or construct balls of vegetation in spruce trees for nesting. Northern flying squirrels feed on fungi, lichens, spruce tips, fruits, vegetation, seeds, and insects and often raid fungi from caches stored by red squirrels.

Beaver: Segments of the ANGTS Project corridor south of the Brooks Range that parallel or intersect rivers and streams with riparian deciduous trees or shrubs are potential beaver habitats. Beavers build dams to impound sufficient water depth for overwintering where natural water depths are insufficient. Denning may occur in riverbanks or in lodges constructed of sticks and mud and usually containing a family group. Beavers feed on the bark of trees they fell as well as on aquatic plants, grass, and roots. Caches of branches are assembled and stored in the water near lodges to provide overwinter food.

Beaver is an economically important furbearer when fur prices are high. Between the Brooks Range and Kanuti River, beaver numbers were high or increasing in 2000. Based on limited information, most areas of the Interior south of Kanuti River appeared to have high beaver populations in 2000, with the exception of the area between Robertson River and the Alaska-Yukon border where adverse weather had depressed numbers in previous years and they remained low in 2000.

Meadow Jumping Mouse: The ANGTS Project corridor between Fairbanks and the Alaska-Yukon border traverses the distribution of the meadow jumping mouse. This species occurs in meadow, marsh, and open woods habitats, as well as in thick riparian and herbaceous vegetation cover in forests of the Tanana River valley. Meadow jumping mice eat green vegetation, seeds, nuts, berries, fungi, and insects.

Northern Red-backed Vole: These voles are nearly ubiquitous in the ANGTS Project corridor, occurring in tundra and forest from the North Slope to the Alaska-Yukon border, and are important prey for many predaceous birds and mammals. Red-backed voles are solitary or live in family groups and feed on grass, seeds, fruits, lichens, fungi, insects, and meat.

Collared Lemming: These lemmings occur within the ANGTS Project corridor from the south side of the Brooks Range north to the arctic coast. Collared lemmings are herbivorous and occupy dry arctic and alpine tundra.

Brown Lemming: This species occurs in appropriate habitats over the length of the ANGTS Project corridor. Brown lemmings use both damp arctic tundra and dry alpine tundra

throughout northern and interior Alaska where they feed on graminoids and non-sphagnum mosses in summer and bark and twigs of shrubs in winter.

Long-tailed Vole: These voles occur in segments of the ANGTS Project corridor between Fairbanks and the Alaska-Yukon border. Long-tailed voles are a colonial species and occupy a variety of habitats ranging from dry, rocky areas to wet spruce woodlands and riparian zones where they consume grasses and seeds.

Singing Vole: These voles occur in the ANGTS Project corridor between Prudhoe Bay and the south slopes of the Brooks Range and adjacent to the corridor where it passes near the Alaska Range at Cathedral Rapids between Robertson River and Tanacross. The Tetlin National Wildlife Refuge lists this species as present in the area. Singing voles are colonial and feed on grasses and seeds, primarily in alpine tundra habitats in the Brooks and Alaska ranges but also in arctic tundra of the North Slope.

Tundra Vole: The entire length of the ANGTS Project corridor is within tundra vole habitat. Tundra voles are colonial and use arctic, alpine, and subalpine tundra as well as sedge meadows and bogs where they consume grasses and seeds.

Meadow Vole: This species occurs in the ANGTS Project corridor between the south slopes of the Brooks Range and the Alaska-Yukon border. Meadow voles are colonial and use moist or wet grassy meadows and shrublands near waterbodies where they consume grasses and seeds.

Yellow-cheeked Vole: These voles occur within the ANGTS Project corridor between the Yukon River and the Alaska-Yukon border, based on being listed as present in the Tetlin National Wildlife Refuge. Yellow-cheeked voles are colonial and occupy black spruce forests, bogs, post-fire successional stands, graminoid lakeshores, and riparian areas where they consume grasses and seeds.

Muskrat: This species occurs in waterbodies, including beaver ponds, and marshes crossed by the ANGTS Project corridor between the south slopes of the Brooks Range and the Alaska-Yukon border. Muskrats excavate bank dens or construct mounds of vegetation in waterbodies or wetlands for denning and feed on aquatic plants, grasses, and aquatic

invertebrates but also can occur more than a mile from water. Between the Brooks Range and Kanuti River, muskrats were in a long-term decline in the 1990s, but populations were stable between Kanuti River and Rosa Pass (west of Big Delta). Muskrat numbers were low between Robertson River and the Alaska-Yukon border in the late 1990s but may have increased in 2000. The Northway-Tetlin Flats south of the corridor in the eastern Interior is a major harvest area for muskrats. Muskrats currently have little economic value, however.

Northern Bog Lemming: These lemmings occur in appropriate habitats within the ANGTS Project corridor between the south slopes of the Brooks Range and the Alaska-Yukon border. Northern bog lemmings use wet tundra, bogs, alpine and subalpine meadows, ericaceous vegetation, sedge meadows, and marshes where they feed on green vegetation and possibly slugs and snails. Northern bog lemmings also have been found near rocky cliffs.

Porcupine: This species is present in forested segments of the ANGTS Project corridor between the south slopes of the Brooks Range and the Alaska-Yukon border. Porcupines feed on the inner bark of spruce, as well as buds and leaves of deciduous vegetation. Lynx, wolves, coyotes, and wolverines sometimes prey upon porcupines, but porcupines have little economic value other than use of quills for craft purposes.

Collared Pika: The ANGTS Project corridor probably does not intersect habitat of the collared pika, a species dwelling in talus and rock piles above treeline in the Interior Region and southward. Because the corridor is below treeline through this region, it will only pass adjacent to pika habitat where mountains are immediately adjacent. One such area exists near Cathedral Rapids, between Robertson River and Tanacross. Pikas are small, colonial herbivores that collect individual piles of vegetation to sustain themselves through the winter.

Snowshoe Hare: These hares use forested segments of the corridor between the Brooks Range and the Alaska-Yukon border. Snowshoe hares feed on grass and leaves, buds, twigs, and bark of deciduous vegetation and prefer areas of brushy understory with or without overstory vegetation. Snowshoe hares experience cyclic population fluctuations and can achieve a density of 600 hares/mi² at a population high. A high in the late 1990s over much of the corridor indicates that current hare populations probably are low. Snowshoe hares are important prey for lynx and other mammalian and avian predators.

Alaska Hare: These hares occur in the ANGTS Project corridor between Prudhoe Bay and the Brooks Range. Alaska hares are larger and more social than snowshoe hares, occur in spottily distributed groups, and feed on willow shoots and other vegetation in upland tundra habitats. Alaska hares are prey for avian and mammalian predators.

Birds: The ANGTS Project corridor provides habitat for more than 150 breeding bird species. The interior Alaska segment of the corridor serves as a major migration route for many of the bird species that are entering or leaving Alaska. Compared to the rest of Alaska, the diversity of land birds is high because the southern sections of the corridor are located within a major migration corridor and a number of species reach their northern range limit here. However, extreme winter weather sends most birds traveling south, leaving only about 25 resident species year round.

Ducks, Geese, and Swans: Waterfowl species occur in appropriate habitats throughout the length of the ANGTS Project corridor. In particular, the Arctic Coastal Plain, Kanuti Flats (west of the corridor), Yukon Flats (east of the corridor), Minto Flats (west of the corridor) and the Tetlin National Wildlife Refuge (south of the corridor) are recognized for their high densities of nesting waterfowl. Most of the corridor passes through habitats with lower densities of nesting waterfowl, but these areas can be important during migration even when they do not support much nesting. In general, waterfowl use is greatest in complexes of lakes, ponds, and marshes, but waterfowl also make use of isolated waterbodies and many nest at significant distance from water.

Waterfowl species most frequently breeding on the Arctic Coastal Plain or barrier islands in the vicinity of Prudhoe Bay at the northern terminus of the corridor include greater white-fronted goose, snow goose (e.g., Howe Island), Canada goose, brant, tundra swan, northern pintail, spectacled eider, king eider, common eider, and long-tailed duck. Waterfowl habitat is limited through the foothills and Brooks Range.

Within or near the ANGTS Project corridor from south of the Brooks Range to the Alaska-Yukon border breeding waterfowl species include greater white-fronted goose, Canada goose, trumpeter swan, gadwall, American wigeon, mallard, blue-

winged teal, northern shoveler, northern pintail, green-winged teal, canvasback, redhead, ring-necked duck, greater scaup, lesser scaup, harlequin duck, surf scoter, white-winged scoter, black scoter, long-tailed duck, bufflehead, common goldeneye, Barrow's goldeneye, common merganser, and red-breasted merganser. The Tanana River valley serves as an important migration route for Canada and greater white-fronted geese, as well for as trumpeter and tundra swans.

Grouse: The ANGTS Project corridor supports or passes near habitat for several species of grouse: ruffed grouse, spruce grouse, willow ptarmigan, rock ptarmigan, white-tailed ptarmigan, and sharp-tailed grouse. Ruffed grouse occur in mixed and deciduous forests south of the Brooks Range to the Alaska-Yukon border. Similarly, spruce grouse occupy mixed and coniferous forests over the same portion of the corridor. Ptarmigan occupy coastal, alpine, and subalpine tundra from the North Slope to the Alaska-Yukon border, but white-tailed ptarmigan do not occur in northern Alaska and the Brooks Range. Sharp-tailed grouse have a much more limited distribution than spruce or ruffed grouse, occurring in open shrub and muskeg habitats in the Tanana River valley segment of the corridor where males aggregate and display to females on specialized mating grounds called leks. Sharp-tailed grouse also occur in the Yukon Flats upriver from the corridor crossing of the Yukon River.

Loons: The ANGTS Project corridor provides nesting habitat for several loon species: red-throated, Pacific, common, and yellow-billed. Red-throated and Pacific loons are common breeders on the Arctic Coastal Plain. Yellow-billed loons nest in the Colville River delta, west of the corridor's northern terminus at Prudhoe Bay, but are uncommon in most areas of the coastal plain. In the Interior, Pacific loons are common breeders, common loons are uncommon to rare breeders, and red-throated loons are rare breeders or accidental, depending on location.

Grebes: The ANGTS Project corridor supports horned and red-necked grebes between the Brooks Range and the Alaska-Yukon border. Both species are common

breeders on freshwater ponds, lakes, and rivers. Grebes are accidental on the North Slope.

Hawks, Eagles, and Allies: The North Slope segment of the ANGTS Project corridor traverses habitats of the northern harrier, rough-legged hawk and golden eagle. Harriers are rare in this region, but rough-legged hawks and golden eagles nest in the Brooks Range and range over adjacent tundra foothills.

The ANGTS Project corridor between the southern slopes of the Brooks Range and the Alaska-Yukon border supports osprey, bald eagle, northern harrier, sharp-shinned hawk, northern goshawk, rough-legged hawk, Swainson's hawk, red-tailed hawk, and golden eagle. Ospreys and bald eagles, respectively rare and uncommon breeders, nest along the Yukon and Tanana rivers. The latter location has the largest concentration of nesting osprey in Alaska. Northern harriers are uncommon breeders that hunt over wetlands and alpine tundra and nest on the ground. Rough-legged hawks do not breed in the Tetlin National Wildlife Refuge in the upper Tanana River valley but are uncommon breeders at Yukon Flats National Wildlife Refuge, upriver from the corridor. Sharp-shinned hawks are common breeders in mixed and coniferous forests; northern goshawks occupy similar habitats but are uncommon breeders. Swainson's hawks are rare breeders in open forests. Red-tailed hawks are common breeders with broad habitat and nesting preferences, using both tree and cliff nests. Golden eagles are common breeders in the Alaska Range. Turkey vultures are accidental visitors

Falcons: The ANGTS Project corridor traverses habitats used by the American kestrel, merlin, gyrfalcon, and peregrine falcon. Kestrels and merlins are respectively common and uncommon breeders in the Interior but do not use the North Slope segments of the corridor. Kestrels feed on insects in open areas of forested landscapes whereas merlins feed on small birds taken on the wing in open forest and muskeg.

Gyrfalcons and peregrine falcons occur in appropriate habitats along the length of the corridor between Prudhoe Bay and the Alaska-Yukon border. Gyrfalcons hunt over

arctic and alpine tundra taking prey, primarily ptarmigan, on the ground. Peregrines prey on waterbirds and songbirds taken on the wing. The arctic subspecies of peregrine falcon nests on river bluffs along arctic rivers, including at Franklin Bluffs and Sagwon along the Sagavanirktok River near the corridor. Likewise, the American subspecies of peregrine falcon nests along the Yukon and Tanana rivers, as well as at some isolated cliffs in upland areas. The American peregrine falcon population has been increasing nation-wide, and it is the only previously endangered species found along the ANGTS Project corridor, having been de-listed in 1999. Recovering peregrine populations have increased their density within their nesting range in the Upper Tanana Valley in the last decade, doubling the number of territories in the last 4 years to 16 presently known above the Robertson River.

Both the Arctic and American Peregrine Falcons are currently listed by ADF&G as State of Alaska Species of Special Concern. Under this listing, activities in the area are managed to avoid disturbance during the nesting period, disturbance from low-flying aircraft and other noise producing activities, ground level activities, and construction near nest sites during critical nesting times. In addition, activities that could have negative impacts throughout the year (not only during nesting periods) include habitat alterations, construction of permanent facilities, and pesticide use.

Rails and Coots: The Upper Tanana Valley is one of the few places in Alaska where sora and American coot are found regularly, but both are rare statewide and rare breeders on the Tetlin National Wildlife Refuge. Coots are occasional non-breeding visitors in Yukon Flats National Wildlife Refuge, upriver from the ANGTS Project corridor.

Sandhill Crane: This species is an uncommon breeder in northern Alaska but is a common breeder in some portions of the Interior. The Tanana River valley is a major migration route for about half the world population of sandhill cranes, with up to 200,000 moving along the ANGTS Project corridor in spring and fall. Roosting cranes frequently use sandbars in the Tanana River as resting areas.

Plovers: The ANGTS corridor provides migratory habitat and some nesting habitat for plovers. Black-bellied plover, American golden-plover, and semipalmated plover breed on the North Slope, with the American golden-plover being most common. American golden-plover and semipalmated plover breed south of the Brooks Range as well, with the semipalmated plover being most numerous.

Sandpipers, Phalaropes, and Allies: Segments of the ANGTS Project corridor crossing the North Slope provide habitat for spotted sandpiper, whimbrel, bar-tailed godwit, ruddy turnstone, semipalmated sandpiper, least sandpiper, white-rumped sandpiper, Baird's sandpiper, pectoral sandpiper, dunlin, stilt sandpiper, buff-breasted sandpiper, long-billed dowitcher, common snipe, red-necked phalarope, and red phalarope. South of the Brooks Range, the corridor supports breeding lesser yellowlegs, solitary sandpiper, wandering tattler, spotted sandpiper, upland sandpiper, whimbrel, semipalmated sandpiper, least sandpiper, long-billed dowitcher, common snipe, and red-necked phalarope. Species composition varies between the Brooks Range and the Alaska-Yukon border, and a number of additional shorebird species use the corridor during migration but do not breed there. Shorebirds are found in a variety of habitats including the alpine zone occupied by American golden plover, upland sandpiper, and whimbrel.

Skuas, Gulls, and Terns: The North Slope segment of the ANGTS Project corridor supports breeding pomarine, parasitic, and long-tailed jaegers, as well as mew gull, glaucous gull, Sabine's gull, and arctic tern. South of the Brooks Range, breeding species of this group include long-tailed jaeger, Bonaparte's gull, mew gull, herring gull, and arctic tern. Bonaparte's gull differs from several other species in that it nests in black spruce forest near lakes and ponds.

Owls: The North Slope segment of the ANGTS Project corridor provides habitat for snowy and short-eared owls. Snowy owls perch and nest on the ground in tundra, often on small mounds, and prey on lemmings as their primary food source during the breeding season. Short-eared owls are common breeders in the Arctic National Wildlife Refuge but may not breed in the corridor. This species occurs regularly in

the corridor, and it feeds on small rodents, similar to the snowy owl. South of the Brooks Range, great horned owl, northern hawk owl, great gray owl, short-eared owl, and boreal owl are breeding species in the corridor. All but the great gray owl rank as common breeders, and the great gray owl ranks as rare. Great horned owl is the most abundant owl in the Interior.

Belted Kingfisher: This species occurs in the ANGTS Project corridor in riparian habitats from south of the Brooks Range to the Alaska-Yukon border as a common to uncommon breeder, depending on location. Kingfishers perch along streams where they dive for small fish.

Woodpeckers: The ANGTS Project corridor supports downy, hairy, American three-toed, and black-backed woodpeckers, as well as the northern flicker in forested regions between the south slopes of the Brooks Range and the Alaska-Yukon border. With the exception of the northern flicker, these species rank as uncommon or rare.

Songbirds: The tundra environment of the ANGTS Project corridor north of the Brooks Range does not support a large number of breeding songbird species. Songbirds breeding on the North Slope include Say's phoebe, northern shrike, common raven, horned lark, cliff swallow, American dipper, arctic warbler, bluethroat, northern wheatear, gray-cheeked thrush, American robin, yellow wagtail, American pipit, yellow warbler, American tree sparrow, Savannah sparrow, fox sparrow, white-crowned sparrow, dark-eyed junco, Lapland longspur, Smith's longspur, snow bunting, rusty blackbird, common redpoll, and hoary redpoll. Only the common raven and American dipper remain on the North Slope through the winter; the remaining songbirds are migrants.

The ANGTS Project corridor between the Brooks Range and the Alaska-Yukon border provides habitat for a large variety of breeding songbirds including olive-sided flycatcher, western wood-pewee, alder flycatcher, Hammond's flycatcher, Say's phoebe, northern shrike, gray jay, black-billed magpie (upper Tanana River valley only), common raven, horned lark, tree swallow, violet-green swallow, bank swallow,

cliff swallow, black-capped chickadee, boreal chickadee, American dipper, ruby-crowned kinglet, arctic warbler, northern wheatear, mountain bluebird (upper Tanana River valley only), Townsend's solitaire, gray-cheeked thrush, Swainson's thrush, hermit thrush, American robin, varied thrush, American pipit, Bohemian waxwing, orange-crowned warbler, yellow warbler, yellow-rumped warbler, Townsend's warbler (upper Tanana River valley only), blackpoll warbler, northern Waterthrush, Wilson's warbler, American tree sparrow, chipping sparrow, Brewer's sparrow (upper Tanana River valley only), Savannah sparrow, fox sparrow, Lincoln's sparrow, white-crowned sparrow, dark-eyed junco, Lapland longspur, Smith's longspur, red-winged blackbird, rusty blackbird, gray-crowned rosy-finch, pine grosbeak, white-winged crossbill, and common redpoll.

In addition to these breeding songbirds, tundra-breeding migrant species also pass through the Interior segment of the ANGTS Project corridor. The most common species captured at a fall migration banding station in the upper Tanana River valley are dark-eyed junco, Swainson's thrush, Wilson's warbler, ruby-crowned kinglet, yellow-rumped warbler, and orange-crowned warbler. The relatively few resident songbird species in the Interior include gray jay, black-billed, common raven, black-capped chickadee, boreal chickadee, and redpolls.

The Tetlin National Wildlife Refuge was established to conserve waterfowl, raptors and other migratory birds, furbearers, moose, and caribou populations and their habitats. Directly adjacent to the ANGTS route, the Refuge is situated along a major bird migration corridor and is home to 143 species of birds that return annually to breed. In the spring, thousands of songbirds, swans, ducks, geese, sandhill cranes and raptors funnel through the refuge. The Refuge has an ever-increasing population of trumpeter swans, which have only been breeding in this region since 1982. In addition, as the easternmost Refuge in interior Alaska, Tetlin has bird species that are rare or absent elsewhere in the state, including red-winged blackbird, sharp-tailed grouse, and blue-winged teal.

The Tetlin Refuge is inhabited by Dall sheep, moose, caribou, wolves, grizzly and black bear. Both subsistence and sport hunters have the opportunity to hunt caribou, moose and waterfowl on the Refuge.

Hunting: The abundance of wildlife throughout the State has long kept Alaska a popular destination for resident and non-resident hunting activity. According to information provided from the ADF&G Wildlife Notebook Series, moose and caribou are the most visible big game in areas along the pipeline route. The wildlife beyond caribou and moose, relevant to the Project area, includes populations of black and grizzly bears, wild bison, sheep, musk ox and wolves. The presence of Interior waterfowl can be found on a number of broad river flats. A wide range of game birds in the discussed area include various species of grouse and ptarmigan.

State revenues have increased since 1993 as a result of increased resident hunting and trapping license fees. The ADF&G states that the economic value of hunting in Alaska annually exceeds \$100 million, excluding the value of subsistence harvests.

Fish

At least 40 species of fish have been documented as inhabiting waters in or near the ANGTS Project corridor. The extensive fish resources of this portion of northern and interior Alaska supports commercial, recreational, and subsistence fisheries. These fishers harvest arctic grayling, lake trout, rainbow trout (stocked), arctic char (stocked and endemic), Dolly Varden, several species of Pacific salmon, several species of whitefish, northern pike, burbot, and arctic cod in waters along the corridor or near its northern terminus. The commercial fishery is relatively small in comparison with the resident and non-resident sport and resident subsistence fisheries, which account for the largest resource use. The majority of the fishery resource utilization along the ANGTS Project corridor occurs within the Alaska Highway corridor, where population and transportation facilities are concentrated, and along the Yukon River, which supports important commercial (when stock numbers permit) and subsistence salmon fisheries.

ANGTS Project Corridor Stream and River Crossings: Stream and river crossing locations referenced in the Right-of-Way Application have been classified and mapped. The section of the alignment from Prudhoe Bay to Delta Junction was classified and field verified as part of the development and maintenance of TAPS. The remaining portion extending from Delta Junction to the Canadian Border was originally investigated in 1981, and limited supplemental studies have occurred since then. Fisheries researchers have investigated all of the streams and rivers along the corridor. These investigations included documentation of seasonal use, species presence, life stages and activities, and channel profiles.

Prudhoe Bay to Brooks Range: The ANGTS Project corridor north of the Brooks Range parallels the Sagavanirktok River and thus crosses a number of tributary streams. Several small tundra rivers (e.g., the Putuligayuk) drain into the Beaufort Sea near the northern terminus of the corridor. Tundra streams typically support ninespine stickleback and, if lakes are present in the system, broad whitefish. Mountain streams originating in the Brooks Range, with groundwater flow and/or deep holes to support overwintering fish, support more species diversity. For example, the Sagavanirktok River contains Dolly Varden, burbot, broad whitefish, slimy sculpin, arctic grayling, round whitefish, chum salmon, pink salmon, and ninespine stickleback. Of these species, arctic grayling and Dolly Varden are most sought after for sport fishing accessed by the Dalton Highway.

Sagavanirktok River tributaries containing more than the usual ninespine stickleback and/or arctic grayling include Mark Creek, Spoiled Mary Creek, Stout Creek, Milke Creek, Happy Valley Camp Creek, Dan Creek, Stump Creek, Arthur Creek, Gustafson Gulch, Polygon Creek, Poison Pipe Creek, Climb Creek, Dennis Creek, Lower Oksrukuyik Creek, Margaret's Marsh, and Upper Oksrukuyik Creek. The additional species include Dolly Varden in most drainages and slimy sculpin, round whitefish, or burbot in others. Isolated populations of arctic char and lake trout can be found in several lakes near the corridor north of the Brooks Range. Burbot also occurs in lakes in this portion of the corridor.

In the vicinity of the Atigun River on the north side of the Brooks Range, the ANGTS Project corridor crosses, among others, Galbraith Lake Inlet, Atigun River, Tee Lake Outlet, Tee Lake Inlet, Vanish Creek, Holden Creek, Mainline Spring, One-One-Three Creek, Roche Moutonee Creek, Trevor Creek, Spike Camp Creek, and the upper Atigun River. These streams typically support Dolly Varden, arctic grayling, and round whitefish, but some have lake trout, burbot, and slimy sculpin, as well.

Brooks Range to Yukon River: The ANGTS Project corridor between the Brooks Range and the Yukon River crosses several major systems with more diverse fisheries than occur on the North Slope. Streams with at least five documented species include Dietrich River, Overwintering Creek, Dietrich River Pit, Middle Fork Koyukuk River, Mary Angel Creek, Slate Creek, South Fork Koyukuk River, Jim River, Prospect Creek, West Fork Bonanza Creek, Fish Creek, Kanuti River, North Fork Ray River, and Yukon River. Typical species composition in the Dietrich River drainage is burbot, slimy sculpin, Dolly Varden, arctic grayling, and round whitefish. Smaller streams in this area support arctic grayling and/or Dolly Varden.

In the Middle Fork Koyukuk River system, which parallels a portion of the corridor, species typically include chinook salmon, chum salmon, Dolly Varden, arctic grayling, round whitefish, slimy sculpin, and longnose sucker. Smaller streams support arctic grayling, sometimes with burbot or round whitefish and slimy sculpin. Moving southward past the South Fork Koyukuk, another diverse system, the Jim River adds northern pike and humpback whitefish to the mix of species listed for the Middle Fork Koyukuk River.

A short distance north of the Yukon River, the Ray River system supports arctic grayling, sheefish (inconnu), burbot, northern pike, slimy sculpin, and whitefishes. The Yukon is too turbid for sport fishing, except for burbot, but subsistence fisheries occur both upstream and downstream of the corridor crossing, and the system supports burbot, slimy sculpin, chum salmon, arctic grayling, sheefish, chinook salmon, least cisco, longnose sucker, northern pike, round whitefish, coho salmon, trout-perch, and whitefishes.

Yukon River to Fairbanks: South of the Yukon River, the ANGTS Project corridor crosses, among others, Hess Creek, Tolovana River, Tatalina River, Chatanika River, and Dome Creek before reaching the Fairbanks area. These drainages support diverse species including burbot, chum salmon, arctic grayling, sheefish, chinook salmon, northern pike and whitefishes, although some of these systems have fewer species. The Chatanika River is particularly important for large runs of several species of whitefish and contains Alaska blackfish, arctic lamprey, and coho salmon in addition to the above-listed fishes.

Fairbanks to Delta Junction: The ANGTS Project corridor crosses several large and medium-sized drainages between Fairbanks and Delta Junction: Chena River, Moose Creek, Bear Lake Outlet, Little Salcha River, Salcha River, Redmond Creek, Shaw Creek, and Tanana River. The Chena River contains arctic lamprey, burbot, slimy sculpin, chum salmon, arctic grayling, sheefish, chinook salmon, northern pike, longnose sucker, coho salmon, and whitefishes, and a similar assemblage is present in the Salcha River. Fewer species occur in Moose Creek, Bear Lake Outlet, Redmond Creek, and the Little Salcha River but the last two streams support chinook salmon. A smaller tannic system closer to Delta Junction, Shaw Creek, has slimy sculpin, chum salmon, arctic grayling, humpback whitefish, lake chub, longnose sucker, northern pike, round whitefish, coho salmon, and burbot in its lower reaches in the vicinity of the ANGTS corridor. The Tanana River contains these species plus sheefish, broad whitefish, and chinook salmon.

Just below the ANGTS Project corridor Tanana River crossing, the Delta River enters from the south. A large, complex spawning area for chum and coho salmon exists in the mouth of the Delta River. Fall-run chum salmon spawn in upwelling areas of the mainstem Tanana in the vicinity of the ANGTS Project Corridor crossing. Upstream of the Tanana River crossing, chinook and chum salmon spawn in the Goodpaster River, and coho salmon spawn in the Delta Clearwater River. The Delta Clearwater River east of Delta Junction attracts a sizable recreational fishery for coho salmon. It should be noted that the corridor does not cross the Delta, Delta Clearwater, or Goodpaster River but does cross the Tanana River at Big Delta.

Delta Junction to Tetlin Junction: Streams flowing northward from the Alaska Range cross the ANGTS Project corridor between Delta Junction and Tetlin Junction. Among those supporting five or more species are Little Gerstle River, Johnson River, Berry Creek, Stonehouse Creek, Bear Creek, Robertson River, East Fork Repeater Creek, and Tok River. The corridor again crosses the Tanana River east of the Tok River. The Tanana has the greatest diversity of the listed streams, with burbot, slimy sculpin, chum salmon, arctic grayling, humpback whitefish, chinook salmon, lake chub, longnose sucker, northern pike, and round whitefish but the Tok and Little Gerstle rivers also support numerous species.

Tetlin Junction to the Alaska-Yukon Border: Streams flowing south and west from the Yukon-Tanana Uplands cross the corridor between Tetlin Junction and the Alaska-Yukon border. Bitters Creek, Bearing Tree Creek, Beaver Creek, Lethe Creek, Silver Creek, Gardiner Creek, Desper Creek, Scottie Creek, and Little Scottie Creek each support several species of fish. Typical species include burbot, arctic grayling, lake chub, longnose sucker, northern pike, round whitefish, and humpback whitefish, although the number of species and species composition varies by creek. Scottie Creek contains chum salmon and slimy sculpin in addition to many of those species listed as typical for larger streams in this segment of the corridor.

Fishery Characteristics: A small commercial fishery exists in the Colville River Delta on the coast of the Beaufort Sea, but this fishery is well removed from the ANGTS Project corridor. Between Prudhoe Bay and the Yukon River, sport fisheries are the major use of fisheries resources. The Yukon River supports large subsistence and commercial fisheries, although these have been reduced by low salmon runs in some recent years. South of the Yukon River to Fairbanks, sport fisheries again dominate in the immediate vicinity of the corridor.

Between Fairbanks and the Alaska-Yukon border, sport and subsistence fisheries are most important. Near Fairbanks, major lakes include Harding and Birch, with Quartz, Volkmar, Healy, George and Tetlin lakes to the east in the upper Tanana River valley.

While the area's fisheries cannot compete with the richness and numbers of those nearer the coast, they do offer some diverse quality fishing opportunities.

Commercial Fisheries: Along the proposed route of the ANGTS corridor are several major rivers that host commercial fisheries. The northern most commercial fishery in Alaska occurs on the Colville River, located approximately 60 miles west of Prudhoe Bay. Local residents from Nuiqsut and outlying areas of the Colville River Delta engage in a small commercial fishery, focusing on anadromous whitefish and arctic char.

The largest commercial fishery in the Arctic-Yukon region is associated with the Yukon River and its principal tributary, the Tanana River, south of the Brooks Range. In this region, as in many other areas of Alaska, salmon production has notably decreased for many stocks. Chinook salmon stocks in the Yukon River have been classified as a Stock of Concern under the guidelines established in the Sustainable Salmon Fisheries Policy for the State of Alaska. Similarly, Yukon River chum salmon have also been classified as a Stock of Concern. Causes for the loss of productivity have been the subject of considerable investigation; however, it is not known whether the observed declines will continue in the future. Commercial fisheries are active mainly during the summer, and other forms of employment normally supplement incomes of individuals holding commercial permits.

The commercial fisheries assessment quantifies the catch for the Yukon River and its associated tributaries including the Tanana River. The 2003 Yukon River commercial salmon harvest totaled 88,000 fish, which was the fourth lowest harvest since statehood in 1959. The total commercial harvest, including the estimated harvest to produce roe, was 40,000 chinook salmon, 22,000 chum salmon, and 25,000 coho salmon for the Alaskan portion of the Yukon River drainage.

Chinook salmon roe sales totaled 30 pounds; no roe was sold from the summer chum salmon harvest. While the 2003 chinook salmon harvest was the best since 1997 and nearly twice the 2002 harvest, it was 52 percent below the recent 10-year average (1993-2002) harvest of 84,000 chinook salmon. The summer chum salmon harvest was 96 percent below the recent 10-year average harvest of 275,000 fish. Due to the lack of markets, the summer chum

salmon harvest occurred incidental to fishing directed at chinook salmon except for two directed chum salmon commercial fishing periods.

During the 2003 Yukon River commercial fishery, a total of 582 permit holders participated in the chinook and summer chum salmon fishery. This represented an 18 percent decrease from the recent 10-year average. Of these permit holders, a majority fish the Lower Yukon River. In the Upper Yukon Area, only 26 permit holders fished during 2003, which was 71 percent below the recent 10-year average of 88 permit holders.

Yukon River fishermen in Alaska received an estimated \$1.9 million for their chinook and summer chum salmon harvest in 2003, approximately 57 percent below the recent 10-year summer season average of \$4.5 million but slightly higher than the value of the 2002 harvest. The exvessel value of the Upper Yukon Area summer season fishery of \$47,000 is 89 percent below the recent 10-year average of \$416,000. The average income for Upper Yukon River fishermen that participated in the 2003 fishery was \$1,781.

Although the runs were lower than prior years, in 2003, the chinook salmon runs were much stronger than anticipated. Due to the unexpected run strength, an estimated commercial surplus of up to 40,000 chinook salmon were likely not harvested. Chinook salmon escapements, throughout the drainage were adequate to meet established goals. The upper end of the chinook salmon escapement goal was exceeded in the Chena and Salcha Rivers. The Canadian escapement objective of 28,000 fish was exceeded with the largest escapement since counts have been occurring totaling nearly 50,000 fish.

The 2003 summer chum salmon run was similar to the previous two years but below preseason expectations. Overall chum salmon escapement appeared to be adequate with counts exceeding 1.2 million fish at Pilot Station in the Lower Yukon River Area.

The 2003 fall commercial fishing season for fall chum and coho salmon has become sporadic with commercial fishing occurring in only five of the past ten years, due to poor run sizes. The total Yukon River Area estimated commercial harvest for fall chum salmon and coho salmon was approximately 77 percent below the recent 10-year average of 48,000 fall chum salmon and 74 percent above the recent 10-year average of 14,000 coho salmon.

The 2003 commercial fall chum and coho salmon season exvessel value for the entire Yukon River Area was \$33,000 (\$24,000 for the Lower Yukon River Area and \$11,000 for the Upper Yukon River Area). The recent 10-year average exvessel value for the Yukon River Area was \$88,000 (\$62,000 for the Lower Yukon River Area and \$22,000 for the Upper Yukon River Area).

During the 10 years prior to 2003, an average of 128 permit holders fished the fall chum and coho salmon fishery (118 for the Lower Yukon River Area and 10 for the Upper Yukon River Area). This is considerably higher than the participation in the 2003 fishery where a total of 82 fishermen were active (75 in the Lower Yukon River Area and 7 in the Upper Yukon River Area).

Commercial Species Life Histories: Chinook, or king salmon are the largest of the five species of commercially harvested Pacific salmon. Chinook salmon spawn in late June or July in interior rivers. Following emergence of fry, young chinooks rear in natal systems for 1 to 2 years before smolt outmigration to marine waters. Chinooks remain at sea for 4 or more years before returning to spawn as adults. Chinook salmon in the mainstem Yukon are a unique stock because they travel more than 1,000 miles from the Bering Sea to above Whitehorse, Yukon Territory. Chinooks in the Tanana River travel large distances, as well.

Chum, or dog salmon return to spawning streams from late June through early September. The two runs in the Yukon River drainage are referred to as summer chums and fall chums. Summer chums have broader spawning tolerances than fall chums. The latter spawn in defined groundwater discharge areas in the Tanana River, a unique habitat near the ANGTS Project corridor. Young emerge from the gravel the following spring and travel directly to sea where they remain from two to four years before returning as adults to spawn.

Coho salmon enter streams in late-September and spawn in mid- to late October. Young emerge the following spring and rear in freshwater for two years before traveling to the ocean at about four inches in length. They usually remain at sea for one or more years before returning as adults to spawn. Coho, or silver salmon occur in several tributaries of the Tanana River; however, large runs occur only in the Delta Clearwater and the Delta Rivers. Like fall

chums, coho salmon spawn in discrete areas of upwelling groundwater, unique habitat in the vicinity of the ANGTS Project corridor.

Recreational Fishing: Recreational fishing opportunities exist near the ANGTS Project corridor between Prudhoe Bay and the Alaska-Yukon border. North of Livengood, the Dalton Highway provides public access to several major river systems, as well as many smaller streams and some lakes all the way to Deadhorse, just south of Prudhoe Bay. The Sagavanirktok River is accessible at several points from Deadhorse approximately 100 miles south to Alyeska Pump Station #3. Tributary streams providing good sport fishing opportunities within this stretch include Happy Valley Creek and Dan Creek. South of Pump Station #3, Oksrukuyik Creek, Kuparuk River, Horizon Lake, Toolik Lake, Island Lake, Galbraith Lake, Tee Lake, and several crossings of the Atigun River support sport fisheries on the north side of the Brooks Range.

South of the Brooks Range, Dietrich River, several crossings of the Middle Fork Koyukuk River, Minnie Creek, Marion Creek, Slate Creek, South Fork Koyukuk River, Grayling Lake, several crossings of the Jim River, Bonanza Creek (both forks), Fish Creek, Kanuti River, North Fork Ray River, Ray River, Yukon River, and Hess Creek provide more fishing opportunities on the Dalton Highway. The Elliott Highway, between Livengood and Fox, near Fairbanks, parallels the ANGTS Project corridor. The Tolovana River, Tatalina River, and Chatanika River, as well as several stocked gravel pits, provide recreational fishing on this highway in reasonable proximity to Fairbanks.

The ANGTS Project corridor between Fairbanks and the Alaska-Yukon border largely parallels the large, glacial Tanana River, formed by the confluence of the Chisana and Nabesna rivers near Northway. Access to the Tanana River and its tributaries is an important component of the sport fishery. Public roads, villages, and towns are located within close proximity to the Tanana River and its tributaries, providing access for sport fishing. Many of the non-glacial tributary streams are accessible directly from public roads, and many of these road-accessible waters have a boat launch accommodating watercraft appropriate to the size and characteristics of the waterbody. Few anglers use non-road accessible waters.

Alaska's largest interior population center, Fairbanks, is within the lower Tanana river drainage where anglers fish at numerous lakes, ponds, and streams. Because the Tanana is glacial-fed, not much sport fishing takes place in the mainstem. Many anglers, however, take advantage of the winter sport fishery for burbot in the Tanana River. Clear water tributaries and sloughs of the Tanana River are the principal areas that are used by sport fishermen in this portion of the drainage. Arctic grayling is the most popular species that anglers seek. Chinook, chum, and coho salmon are found in the Tanana River primarily in tributaries downstream of and including the Goodpaster River.

The upper Tanana River drainage (i.e., upstream of Banner Creek and the Little Delta River) has major tributaries including Shaw Creek and the Delta, Delta Clearwater, Goodpaster, Gerstle, Johnson, Robertson, and Tok rivers below the confluence of the Chisana and Nabesna rivers. The upper Tanana River sport fishery does not support the number of anglers that make use of the lower Tanana River system; however, it does offer anglers a diversity of game fish species. Burbot are caught in river systems, primarily in the Tanana River, with a few lakes supporting burbot populations as well. Northern Pike are found in several lakes throughout the drainage in the lower elevation areas. Dolly Varden are found naturally in the drainage but are few in numbers and found in the upper reaches of tributaries of the Tanana River. Chinook and chum salmon spawn in the Goodpaster River, and coho salmon spawn in the Delta and the Delta Clearwater rivers. The largest sport fishery for salmon along in the Upper Tanana River is the coho fishery in Delta Clearwater River near Delta Junction.

In addition to the native fish, the State of Alaska has attempted to increase opportunities for sport fishing by stocking nearly 50 lakes with rainbow trout, lake trout, arctic char, and arctic grayling. Many stocked lakes along the Alaska and Richardson highways, near the ANGTS Project corridor, provide excellent fishing opportunities. For example, Quartz Lake, just east of Big Delta, contains arctic char, rainbow trout, and landlocked silver salmon and has a boat ramp, campground, and other public facilities maintained by the Alaska Division of Parks.

Sport Fish Life Histories: Arctic grayling is the most popular species people seek. Arctic grayling are voracious feeders during the summer months, eating almost constantly. Arctic grayling are ubiquitous throughout the Tanana River drainage. This species is resident in

streams, and may undertake seasonal migrations for spawning and feeding to different streams within a watershed. Arctic grayling spawn in the spring, usually by age 4 or 5 years, at a length of 11 or 12 inches. Grayling are primarily sight feeders on drifting insects, and are thus a favorite of fly fishers.

Burbot is a slow-growing freshwater cod with excellent flavor and is a favorite of anglers in turbid rivers and clearwater lakes, commonly taken by ice fishing, but also in summer by bait casting. Spawning occurs in February and March, apparently in large concentrations. Burbot feed almost exclusively on fish once they reach a sufficient size at about 5 years of age and begin spawning when they reach about 18 inches in length.

Dolly Varden is a char that has resident and anadromous populations. Spawning occurs from mid-August to November. Dolly Varden in the Sagavanirktok River drainage on the North Slope are largely anadromous, with older fish migrating to the nearshore waters of the Beaufort Sea to feed in spring and early summer before returning to groundwater discharge areas in Sagavanirktok tributaries (e.g., Ivishak and Lupine rivers) to spawn and overwinter. In contrast, the endemic Dolly Varden in the Tanana River drainage is the dwarf resident form. These fish are few in number and occur only in the upper reaches of tributaries of the Tanana River draining from the Alaska Range.

Lake trout is a char found in numerous alpine and some deep lowland (e.g., Harding Lake) lakes along the ANGTS Project corridor. This species is long lived and can reach a large size, however specimens over 10 pounds are seldom taken in this part of Alaska. Lake trout spawn in September and November, generally close to freeze-up, over clean, rocky lake bottom. Food habits of lake trout are broad but older individuals feed almost exclusively on fish when it is available. Commonly, lake trout can be caught in shallows in spring when water temperatures are uniform but must be taken by deep trolling in summer.

Northern pike is found in lakes and slow-moving streams in lower elevation areas in the vicinity of the ANGTS Project corridor south of the Brooks Range including along the Tanana River. This species generally occupies low lying wetland areas and interconnected lakes and sloughs in the lower reaches of these systems, although some populations are found in lakes not connected to river systems. Northern pike are predators, feeding primarily on

other fish. They spawn in weedy shallows soon after ice out in the spring and can live for more than 20 years.

Sheefish, or inconnu, is a large predaceous whitefish occurring in the Yukon River drainage within the ANGTS Project corridor. This species can reach 25 pounds in the Interior but grows much larger in the Kobuk and Selawik River systems. Sheefish populations in the upper Yukon and Minto Flats, near the corridor, are resident rather than migratory. Spawning occurs in September and early October in fast, deep water over mixed gravel substrates. Sheefish begin feeding on fish by 2 years of age. Males begin spawning at 7 to 11 years of age, depending on growth rate. Sheefish are a traditional subsistence food but are increasingly sought by sport anglers.

Whitefish species are found throughout the ANGTS Project corridor. Round whitefish often occurs in the same systems as arctic grayling but is not commonly taken by sport fishers. Broad and humpback whitefish occurs in the Sagavanirktok River system and Yukon drainage within the corridor. These species attain moderately large sizes, are traditional subsistence foods, and enter small commercial fisheries but are not usually sought by sport anglers, except in spear fisheries. The flesh is white and good eating when fresh or smoked. Spawning migrations occur in fall. Broad and humpback whitefish feed on benthic invertebrates. Least cisco and Bering cisco occur in the Yukon drainage in the vicinity of the corridor. The former provided a popular spear fishery in the Chatanika River in past years. Least and Bering ciscoes are fall spawners.

Subsistence Resources

The following information on subsistence use patterns from the North Slope to the Yukon River/Fairbanks is derived from ADF&G, Alaska Habitat Management Guides 1986; ADNR 2001; and Spearman, Pedersen, and Brown 1979. The discussion focuses on rural communities located between the North Slope and the Yukon River/Fairbanks area that conduct subsistence activities in and around this segment of the ANGTS route.

Eight predominantly Native communities make up the resident population of the North Slope: Anaktuvuk Pass, Atqasuk, Barrow, Kaktovik, Nuiqsut, Point Hope, Point Lay, and

Wainwright. The locations of these contemporary communities were at least seasonally occupied historically as communities, camps or trading sites. Atqasuk and Nuiqsut are new communities recently reestablished at historic sites by Inupiat seeking to reestablish traditional ties to the land. Within the North Slope coastal plain and foothills, Nuiqsut lies closest to the ANGTS Project route, which passes through areas used by village residents for subsistence activities. Kaktovik residents, however, also use the Sagavanirktok River corridor for subsistence activities.

Spring subsistence activities in Nuiqsut include seal hunting on the sea ice and hunting and trapping inland for furbearers and caribou. No spring whaling is done in the vicinity of Nuiqsut. Some Nuiqsut residents travel to Barrow to participate in spring whaling there. As rivers and lakes become ice-free, grayling, cod, and lake trout are taken with hook and line, and whitefish are taken with nets from camps along Fish Creek and the Colville River. Waterfowl are taken during the spring and summer. Fall is an active season for harvest activities. Caribou and moose are hunted inland along the Colville River and its tributaries. Whitefish are caught in nets prior to freeze-up, and arctic grayling and burbot are jigged through the ice following freeze-up. Bowhead whaling begins in mid- September. Nuiqsut whale crews travel east as far as the Canning River in pursuit of whales, taking seal, waterfowl, polar bear, and caribou out of coastal whale camps. Trapping occurs during the winter months, along with occasional hunts for caribou and moose. Polar bear is taken along the coast. During late winter and early spring, trapping, caribou hunting, and ice fishing activities increase. Bearded seal hunting begins in April.

Kaktovik's geographic setting provides relatively easy access to inland mountain areas for sheep and caribou as well as access to coastal resources such as seal and bowhead whale. Spring subsistence activities in Kaktovik are highlighted by inland trips to mountain and foothill areas where sheep and caribou are hunted along with ptarmigan, ground squirrel, and marmot. Char are caught through the ice by jigging at traditional inland river locations prior to breakup. As overland travel is difficult at breakup, summer subsistence activities are concentrated along the coast, where waterfowl and seal are hunted. Dolly Varden, char, whitefish, and pink salmon are caught with nets and rod and reel at coastal camps. Caribou

are harvested throughout the summer and fall near the coast. The Canning River delta is an especially productive summer caribou hunting and fishing area for Kaktovik residents. Fall whaling takes place in August and September, with whalers traveling far out into the open waters in search of bowhead whales. Seals are also harvested in conjunction with whaling expeditions. Following freeze-up, inland travel by snowmachine resumes. In October and November, trips are made to traditional mountain area camps for sheep and caribou hunting. The Hulahula River is a major corridor for fall and winter land use activities. Fishing through the ice occurs for char, arctic grayling, whitefish, and burbot. Mid-winter is a time of reduced land use activity. Trapping and furbearer hunting is engaged in by some. Polar bears are occasionally hunted near the village. In late winter, inland harvest of fish, caribou, and sheep occur, and moose are occasionally taken when encountered. Inland subsistence activities intensify as breakup approaches and the cycle begins again.

Anaktuvuk Pass residents pursued subsistence activities in the Upper Sagavanirktok and North Fork Koyukuk river vicinity near the pipeline corridor prior to settling in the community but currently use these areas infrequently. Some residents do travel to Itkillik Lake to harvest caribou, sheep, furbearers, and fish, and occasionally go fishing at Galbraith Lake. The community currently focuses its seasonal subsistence activities in the Colville, Itkillik, Killik, Chandler and Anaktuvuk river corridors. Intensive caribou hunting occurs in April and May as animals migrate northward through the Brooks Range, and again in the fall as animals move southward. Sheep, moose, and brown bear are important supplemental sources of meat when caribou are scarce. Fishing for Arctic char, lake trout, and whitefish occurs primarily in the spring and summer months. Wolf, wolverine, and Arctic fox are harvested from November through March, while ground squirrels are taken from May through August. Waterfowl are occasionally hunted but are not commonly found in the central Brooks Range. Berry-picking is an important activity in August and September.

Stevens Village, Rampart, Livengood, and Minto are rural villages in the Southern Interior that conduct subsistence activities near the ANGTS Project route. The communities of Fairbanks, North Pole, Fox, Salcha, and Delta Junction lie within the Fairbanks Nonsubsistence Area, which is closed to subsistence hunting and fishing. However, residents

of these communities are eligible to participate in subsistence activities in areas where such activities are allowed under State regulations. The harvest activities of residents in these communities in rural areas of the ANGTS corridor are not addressed in this analysis.

The following discussion includes examples from various communities in Interior Alaska, not necessarily near the ANGTS Project corridor, but is indicative of subsistence activities by corridor communities.

Throughout the interior region, moose is regarded as one of the most important sources of wild meat. Community studies show that a high percentage of households participate regularly in moose hunting. Moose hunting takes place primarily in September but may continue through fall and winter into March in some locations. Boats are commonly used for fall moose hunts along major rivers, sloughs, and nearby lakes. In the winter, snowmachines are used for trapping activities. Dog teams and airplanes are occasionally used by residents of some interior communities to access moose hunting areas.

Caribou have historically been regarded as an economic mainstay for many inhabitants of the Interior. As such, caribou as a major food source, however, has diminished over much of the interior during the last several decades. Declining caribou populations and shifting migration patterns among some herds have resulted in reduced access or restricted hunting seasons, making it difficult for residents in many communities to obtain caribou meat.

Brown bears are not a major food resource in Interior Alaska. Nuisance brown bears that threaten life or property may be shot and the meat and hide utilized, but brown bears are only occasionally pursued by hunters for food. Black bears are more widely utilized than brown bears throughout the Interior. Black bears are typically hunted in conjunction with other hunting, fishing, or gathering activities, when they pose a threat to property, or when other meat is not available. Black bears are harvested in May at or near den sites and more commonly in late summer or early fall in conjunction with moose hunting, fishing, or berry picking.

The contribution that small game harvests make to the diet and economy of Interior households should not be underestimated. A variety of ducks, geese, several species of grouse, and snowshoe hare are generally available throughout the Interior and are a widely used and highly valued source of wild food. Ptarmigan, porcupine, and arctic ground squirrel are less universally used but important in some locations and to some households.

The waterfowl species most often harvested in the Interior include the Canada and white-fronted goose, mallard, pintail, oldsquaw, common goldeneye, American wigeon, green-winged teal, scaup, and white-winged scoter. Waterfowl hunting occurs in some areas in May, when ducks and geese are highly valued as a source of fresh meat and variety to the local diet. Peak waterfowl harvesting usually occurs in September, frequently in conjunction with fall moose hunting or on trips to lake and wetland areas specifically for waterfowl. Following freeze-up of lakes in the late fall, waterfowl hunting is concentrated along rivers and sloughs.

For most Interior region communities, salmon are an important food source. A high percentage of households participate in salmon fishing activities. Salmon also represent a significant income source for some Interior households through commercial fishing activities on the Yukon and Tanana rivers. Chinook, chum, and coho salmon are the primary species available to Interior Region communities. The importance of salmon as a wild food source is reflected in its almost universal use throughout the region, the extent to which salmon are shared through kinship, community, and intra-community distribution and exchange networks, and the amount of effort some residents expend to obtain it.

In addition to salmon, a variety of other fish species are harvested by Interior residents. Arctic grayling, burbot, northern pike, sheefish, suckers, and whitefish are utilized throughout most of the Interior. Alaska blackfish, Dolly Varden, lake trout, and lamprey are harvested in some locations. Of the non-salmon species, the harvest of whitefish is the most substantial in most communities. In the Upper Tanana region whitefish are more readily available than salmon and are harvested in much larger quantities. Small quantities of the other species are taken and viewed as a welcome but often minor addition to the diet.

The Yukon River drainage harbors some of the most productive furbearer habitat in Alaska. Historically trapping has been a primary winter activity for many Interior residents. This remains true today. Trapping activities commence in November and continue into April for some species. Commonly harvested furbearers include beaver, red fox, lynx, marten, mink, muskrat, land otter, wolf, and wolverine. Marten is perhaps the most commonly trapped species across the region. Target species vary from area to area, from year to year, and among individual trappers.

Although furbearers are harvested primarily for the cash value of their pelts, some pelts are often retained for local use in making hats, mitts, parka ruffs, and handicrafts. In addition, the meat from beaver, lynx, and muskrat is prized as high-quality food for both humans and dogs. Beaver carcasses are often sold or traded as dog food and sometimes command a higher price than the pelt. Aside from providing a source of income, food, and furs for local use, and traditional land use skills associated with trapping make it a valued cultural activity for many Interior residents.

Plant resources provide an important source of food, fuel, and raw materials to Interior residents. Wood is a major source of fuel for home heating across much of the Interior, and firewood cutting is an activity that proceeds year-round. Additionally, berries generally represent the most significant harvest of wild edible plant products. Berries are picked throughout the summer and fall, usually in areas close to villages or fish camps. Some households report traveling 30 to 50 miles to reach especially productive berry areas.

The following information on subsistence use patterns from Delta Junction to the Canadian border is derived from ADF&G and National Park Service reports describing research conducted in the 1980s, and from a draft environmental impact statement prepared for the Pogo Gold Mine Project in 2003. The discussion focuses on Healy Lake, Dot Lake, Tanacross, Tok, Tetlin, and Northway— rural communities located between Delta Junction and the Canadian Border that conduct subsistence activities in and around this segment of the ANGTS route. Although some of the land use information is dated and areas used for

subsistence purposes are subject to change over time, the core areas described below are based on the best available documentation.

Delta Junction lies within the Fairbanks Nonsubsistence Area, which encompasses the Fairbanks North Star Borough and extends eastward to the east bank of the Johnson River. This area is not open to subsistence hunting and fishing; however, residents of non-subsistence areas are eligible to participate in subsistence activities where authorized under the State regulations. The use of rural areas by Delta Junction residents is not addressed.

The seasonal round of harvest activities is similar for all communities along this segment of the right-of-way. Fishing in local lakes and rivers for whitefish, pike, grayling, burbot and other freshwater species begins in the late spring and continues into the fall and winter. Salmon are not abundant locally but are frequently harvested by fishwheels at sites along the Copper River between Slana and Copper Center. Moose and caribou are the primary big game animals taken and are hunted in areas accessed by highway vehicles, off-road vehicles, boats, or by walking. Snowmachines also are used to access caribou hunting areas in the winter. Dall sheep are taken in the mountainous areas of the region in August and September, while the harvest of black and brown bear is incidental to other hunting during the fall and spring. Productive wetland and upland habitat in the region offer excellent hunting for waterfowl, grouse, and ptarmigan. Trapping for beaver, otter, marten, lynx, mink, wolf, and wolverine occurs throughout the region in both road accessible and remote areas. Many households pick berries in the late summer. Firewood is cut year-round along highways, rivers, and trails accessible to motor vehicles. General descriptions of the subsistence harvest areas for each community are as follows:

Healy Lake: Part of the area used by Healy Lake lies within the Fairbanks Nonsubsistence Area, including the Tanana River and Alaska Highway corridors between the Delta River and Johnson River; the Shaw Creek and Goodpaster River areas; and areas west of Mount Harper. Areas around Healy Lake, including the Volkmar River, Healy River, and Middle Fork drainages, and the area between Healy Lake and Dot Lake also are used for seasonal subsistence activities. Through tribal enrollment and kinship ties to other communities in the

Upper Tanana region and northern Copper Basin, Healy Lake residents harvest resources in some areas that overlap with those of other local communities, including the Macomb Plateau, the Tanana River and Alaska Highway corridors from the Johnson River to Tetlin Junction, the Taylor Highway from Tetlin Junction to Chicken, and south on the Tok Cutoff to the Sanford River.

Dot Lake: Hunting areas are concentrated along the Tanana River, as well as the trail- and road-accessible areas in the Alaska Highway corridor between the Gerstle River and Tok. Caribou hunting areas include the Macomb Plateau and valley bottom between the Gerstle River and Yerrick Creek, as well as along the Taylor Highway and in the Fortymile River drainage. Fishing sites and trapping areas are concentrated in the Tanana River valley between the Gerstle and Robertson rivers. Other seasonal activities occur within many of these same areas.

Tanacross: Harvest areas include the Alaska Highway corridor from east of Delta Junction to Midway Lake; the Tok Cutoff south to the Nabesna Road and east to the Nabesna River; the Taylor Highway north to Eagle; the Tanana River corridor and adjoining areas from west of Dot Lake to Tetlin Junction; Lake George and T Lake near the community of Dot Lake; and the Tok River drainage between Tok and Mentasta. Overland areas between Tanacross and Kechumstuk are used, as are Lake Mansfield and nearby lakes, Gardiner Creek and areas along the “Old River Road” (old military road).

Tok: Harvesters travel extensively to access hunting areas by boat, road vehicle and aircraft. The Alaska Highway corridor from Delta Junction to the Canadian border is used, as are areas along the Taylor Highway to Eagle and south along the Tok Cutoff to south of Mentasta. Many rivers and lakes in this general area also are hunted, including the Tanana, Nabesna, Chisana, Tok, and Fortymile river drainages, in addition to the Alaska Range, Mentasta, Nutzotin, and Wrangell Mountains, the Tanana-Yukon Uplands, and the mountain ranges south of Eagle. Trapping areas are found in and around the Alaska Highway and Tanana River corridors from west of the Robertson River to Northway Junction, in the Fortymile and Ladue river drainages and Mosquito Flats, south along the Tok Cutoff to

Mentasta, and in remote areas of Game Management Units 12 and 20(E) accessed by aircraft. Other seasonal activities occur in many of these same areas.

Tetlin: Harvesting often occurs within walking distance of the community or by boat to nearby lakes and rivers, on lands designated in 1930 as the 768,000-acre Tetlin Reserve. Moose are hunted around the Tetlin and Kalutna river corridors, in the Tanana river corridor to the Alaska Highway, and around Tetlin Lake. The availability of caribou fluctuates from year to year, but they are hunted on the Reserve and along the Taylor Highway. Fishing takes place on the Tetlin River upstream and downstream from Tetlin Lake, at Tetlin Lake, and in the Tanana and Kalutna rivers. Trapping areas extend west of Tetlin to the Tok River, north to the Alaska Highway, east to near the Nabesna River, and south to the upper reaches of the Tetlin River. Other seasonal subsistence activities occur within these areas.

Northway: The second largest rural community in the Upper Tanana region, Northway actually consists of the Native village along the Nabesna River at the end of the 7-mile Northway Road, the airport area, the Nabesna Road area between the airport and the Chisana River Bridge, and the area between mileposts 1252 and 1264 of the Alaska Highway. Harvest areas are concentrated: in the Tanana, Nabesna, Chisana, and Tetlin river corridors; in the Northway Flats; along the Alaska Highway from the Canadian border to Dot Lake; on the Taylor Highway to Eagle; south on the Tok Cutoff to the Nabesna Road; along the Nabesna Road; areas north of the Alaska Highway, including Island Lake, Desper Creek, the Beaver Creek drainage, and lakes west of Gardiner Creek; the Nutzotin Mountains in the Wrangell-St. Elias National Preserve; the eastern extent of the Mentasta Mountains; and the northern edge of the Wrangell Mountains.

Timber Resources

There are no timber resources on Alaska's North Slope. The area south of Atigun Pass in the vicinity of Coldfoot is in the boreal forest vegetation zone. The predominant vegetation types of the boreal forest are the evergreen forests of black and white spruce. Extensive areas of deciduous forest also occur in the zone, as well as large areas of shrub and herbaceous

vegetation types. Since most of the timber is located in the riparian zone of the Koyukuk River there is little potential for commercial harvesting of timber occurring in the area.

The proposed ANGTS Project route passes through portions of the Tanana Valley State Forest between the Salcha River and Shaw Creek and is adjacent to another portion of the forest south of the Tolovana River. The current consumption of sawtimber in the Tanana Valley is estimated at over 30 million board feet per year, most of which is imported. Though standing volume of white spruce in the Tanana Valley State Forest totals about 1.8 billion board feet, the yearly sustained yield harvest of spruce is likely to be substantially less than current consumption levels. Therefore, an unlimited market for state sawtimber in the Interior is projected.

The use of timber as fuelwood is important to the local residents in the Tanana Valley. With over 700 million cubic feet of pole-sized timber existing in the Tanana Valley State Forest, sustained yield levels are capable of more than satisfying local demand. The local annual demand in the year 2000 was expected to be 63,000 cords; therefore further development of the Tanana Valley's timber resource will be geared toward increased utilization of the region's substantial hardwood resource.

Land is determined as suitable for timber management if: 1) expected timber revenues can support secondary access development and reforestation cost; 2) topography allows harvest by conventional logging techniques; and 3) primary road development into areas currently not accessed is justified by timber resource value. Sawtimber can be transported economically from up to 246 miles from the mill assuming travel on surfaced roads or up to 82 miles from the mill by dirt or winter roads. It is assumed that a logging road up to a maximum of 10 miles in length can be built off the established paved and dirt roads if there is at least 1 million board feet of timber available at the location. This is currently the case in the Fairbanks area.

Mineral Resources, Mining Activity and Economic Potential

The proposed gas line corridor parallels TAPs to Delta Junction then follows the Alaska Highway to the U.S./Canadian border. Geologically, the route does not cross any coal fields, so the impact on coal should not be a concern. Given the narrow width of the right-of-way, the impact on locatable minerals is also negligible except for claims and prospects adjacent to the corridor in the Koyukuk Mining District and Fairbanks Mining District. Within the Koyukuk District, from milepost 212 south to 266, there are approximately 100 claims (both state and federal) located for placer gold by individuals that are within ½-mile of the corridor. Only a few of the federal claims are adjacent or overlap the corridor, and this is because they were located prior to the mineral closing order for the corridor. Nolan Creek, Silverado's big nugget producer, is about 5 miles west of the corridor at milepost 230. Teck-Cominco has a small claim block on Sukakpak Mountain, which is at milepost 217. These claims, which are about 2 miles east of the corridor, were located a few years ago due to the discovery of a stratabound massive sulfide prospect. Teck-Cominco's exploration plans for these claims is not known. Activity within the corridor should not impact any mineral development potential for this claim area should these claims see further work.

South of the Koyukuk Mining District, at milepost 320 along the corridor there is a tin skarn prospect located along an intrusive contact. This prospect is located about 1 mile west of the corridor. There are no federal or state claims on the prospect, so the economic potential is not being evaluated.

From milepost 320 to the Yukon River and from the river south to milepost 445 there are no known claims, prospects or exploration activity.

From milepost 445 south to 470 the corridor passes through the Fairbanks Mining District several miles south of the True North and Fort Knox Mining properties through claims belonging Fairbanks Gold Mining Inc., plus a few other individual claimants. Most of these claims are state mining claims and exclude the corridor area due to the mineral closure for the corridor.

South of the Fairbanks District in the Richardson District, north of Delta Junction, from milepost 513 to 530, Tri-Valley has a large claim block one mile south of the corridor. Tri-Valley has been exploring their gold property for a number of years and they have indicated there is a 3 million ounce recoverable gold deposit on the claims. The claims are between the Richardson Highway and the corridor.

From milepost 530 southeast to 745 (U.S./Canada border) the corridor is adjacent to the Alaska Highway for most of the distance and there are no mining claims or prospects in close proximity.

Recreation and Tourism

The majority of land along the proposed ANGTS alignment from the Yukon River north to Prudhoe Bay is undeveloped. South of the Yukon River, land use is more varied, although most land remains undeveloped and recreation remains a major land use. Common recreational activities include hiking, sightseeing, car-camping, backpacking, hunting, trapping, sport fishing, river floating, kayaking, canoeing, power boating, nature photography, wildlife viewing, berry picking, plant collecting, dog mushing, snow machining, skiing and mountain biking.

Scenic views are an important resource in Alaska. Sightseeing and car camping are the primary activities along the highways. According to Alaska's Outdoor Recreation Plan, sightseeing is a very popular activity among residents and is the most popular recreation activity of visitors to Alaska (BLM and MMS 1998). The BLM rates sightseeing as a primary activity along the Dalton Highway (BLM 1989) which is a designated State Scenic Byway. Viewing stations that provide information on the history and engineering of TAPS are readily accessible from the Alaska Highway system.

The basis for much of Alaska's tourism industry is its natural resources. Natural resource based tourism includes visits to national and state parks, viewing wildlife and scenery, back country travel, rafting and boating, skiing and winter sports, ship cruises, photography,

fishing and hunting. In addition, Alaska's cultural diversity and history help make it a major tourist attraction.

The number of total arrivals (visitors and residents combined) for October 1, 2002 through September 30, 2003 was approximately 2,531,700 people. Domestic air was the dominant mode of arrival for full-year visitor arrivals, accounting for approximately 51 percent of all visitor arrivals. Cruise ship arrivals were the second largest category, accounting for 40 percent. Highway visitor arrivals accounted for 6 percent, international air for 2 percent and ferry arrivals for 1 percent of all 2003 full-year visitor arrivals. Approximately 84 percent of visitor arrivals for 2003 took place during the summer season – May 1 through September 30.

In 2002, Travel and Tourism Sales (the total spending by and on behalf of travelers) totaled \$2.4 million in the State while the Core Industry (the direct impact of end-providers of goods and services to travelers) generated \$851 million in local value or 3.0 percent of Alaska's Gross State Product. Using the Core Industry definition, Travel and Tourism is the third largest private sector employer and the fourth overall in the State with 25,996 direct full-time equivalency jobs.

Proposed Right-of-Way Related Activities and Potential Effects

There are three phases in the ANGTS Project with different proposed Project activities for each phase. Pre-construction and construction represent the first phase, operation and maintenance comprise the second phase and termination is the third and final phase.

The Co-Applicants will work cooperatively with the State and its resource agencies to develop ways to mitigate the potential adverse environmental, social and economic effects of the ANGTS Project. In this regard, the Co-Applicants will update the significant amounts of environmental data already developed in conjunction with its section 404 permits, the federal right-of-way grant, and previous work on the FERC certificate, and will propose appropriate mitigation to address the impacts of the Project.

Construction activities will create the greatest potential for adverse effects to the environment and to people living in or traveling in the construction area. The season and method of construction for the pipeline have been carefully designed to minimize potential impacts to the environment. Most of the pipeline will be buried and, once the Project is in the operational phase, potential impacts to people and fish and wildlife resources along the Right-of-Way will be greatly reduced from the impacts experienced during construction. Winter construction will be used in much of the Arctic region segments of the pipeline due to the presence of continuous permafrost and extensive wetlands. Winter construction using ice and snow pads to support vehicles and equipment reduces the impacts on the native soils and vegetation. Winter construction will also be used in other regions.

The opportunity for impact will be minimized in part by the relatively short period of time that a construction spread will be working at any single location. As the construction spread moves down-line, the backfilling and cleanup crews will begin the rehabilitation process. For winter construction, revegetation will be initiated the following summer. Where summer construction is performed, the backfilling and cleanup crews will be closely followed by the rehabilitation crews installing permanent erosion control, preparing the soil, and seeding and transplanting.

Construction camps, which will house and feed pipeline workers, will be set up at strategic locations to minimize travel time to work sites. Several of the old TAPS construction sites along the Dalton Highway will be used, as feasible. Buses will be used to transport workers to work sites.

Once the pipeline is operational, there will be only minor activities that provide evidence of its presence, other than the surface structures, such as compressor stations, valves, and metering stations. Compressor stations will be unmanned and visited by maintenance inspectors on a specified regular schedule. The compressor stations will be equipped with low-noise compressor units to reduce the potential impacts to workers and the surrounding environment. Compressor station sites will generally be located in remote areas.

The operation of the pipeline system will involve only a relatively small staff based in Alaska. The effects of the ANGTS Project on Fairbanks, the likely location of the Alaska Operations and Maintenance facility, will be minor during operation of the pipeline system.

Some minor short-term land use conflicts will occur between the existing land uses outlined above and the uses to which the land will be put along the pipeline route, if the proposed pipeline is constructed. However, these conflicts will be short term because the proposed route utilizes existing pipeline and highway corridors to the extent possible.

Since other utilities, pipelines, driveways and other ADOT/PF authorized encroachments are already located within the proposed corridor, the Co-Applicants will be required to take mitigative measures in order to minimize the conflict with these uses during construction. Driveway access to homes, businesses, and recreational and hunting/fishing areas would potentially be temporarily interrupted during placement of the pipeline. Access will be restored to previous condition as required in the ADOT/PF Utility Permits.

SUMMARY FOR CRITERIA 1:

The proposed Alaska portion of the ANGTS Project, as an interstate natural gas pipeline, is subject to federal law and to regulation under the NGA, in addition to any applicable State law requirements. In this regard, the design, construction, operation, maintenance, and termination of the Project must be undertaken in a manner consistent with conditions and stipulations included in various federal permits and authorizations, including a certificate of public and convenience and necessity from FERC, Clean Water Act section 404 (wetlands) permits from the COE, and Clean Water Act section 401 permits and Coastal Zone Management Act / ACMP determinations from the State in support of the section 404 permits. Project activities also must be conducted in a manner consistent with conditions and stipulations included in the State Right-of-Way Lease for the Project, in addition to other State and local requirements.

Based on compliance with the foregoing laws, regulations, and other requirements, the ANGTS Project does not unreasonably conflict with existing uses involving a superior public interest of state land along the proposed route.

CRITERIA 2: Does the applicant have the technical and financial capability to protect state and private property interests?

The Right-of-Way Leasing Act requires consideration of the applicant's technical capability to protect state and private property interests. As noted elsewhere in this analysis, the state property interests at stake in this application are the state transportation system and lands over which the pipeline will pass. The most significant manner in which the Co-Applicants will protect such state property interests is through the design, construction, operation and maintenance of a safe pipeline system.

TCPL's Background in Pipeline Construction and Operation

TCPL is a leading North American energy company. Created in 1951, TCPL is focused on natural gas transmission and power services, and employs experts in these fields. TCPL's network of approximately 24,200 miles of pipeline transports the majority of Western Canada's natural gas production to the fastest growing markets in Canada and the United States. TCPL owns, controls or is constructing nearly 4,700 megawatts of power – an equal amount of power can meet the needs of about 4.7 million average households.

ANNGTC is a partnership that was formed on January 31, 1978 and is organized under the laws of the State of New York. The partnership was formed for the purpose of constructing and operating a natural gas pipeline and related facilities from Prudhoe Bay, Alaska to the Alaskan-Canadian border as part of the ANGTS Project to transport Alaskan natural gas for use in the lower 48 states. The pipeline segment in Alaska is referred to as the "Alaskan Segment" of ANGTS Project.

ANNGTC holds the conditional certificate of public convenience issued by FERC for the ANGTS Project. The partnership's role is to plan, design, finance, construct and place the

line in service as soon as practicable, and subsequently to own and operate it safely and efficiently. The current partners of ANNGTC are two wholly-owned subsidiaries of TCPL: United Alaska Fuels Corporation and TransCanada PipeLine USA, Ltd.

TCPL, through its subsidiaries, has worked for more than 25 years to further the development of Alaska's stranded gas reserves by developing the Alaskan Segment. Until now, these efforts have been hampered by unfavorable economics related to the remote location of Alaskan gas supplies relative to other North American natural gas supplies. However, recent lower-than-expected production performances in the lower-48 and Canadian natural gas basins, combined with significant growth in natural gas demand over the last decade, have created favorable market conditions for the commercialization of ANS natural gas. TCPL's network of pipeline assets provides Alaskan gas with access to growing markets across the continent: the Pacific Northwest and California; the U.S. Midwest, including the Chicago hub; eastern Canada; and the U.S. Northeast, including New England and New York City.⁶

Below are brief descriptions of TCPL's natural gas transmission assets in North America (Alaska Stranded Gas Development Act Application, June 1, 2004):

- **Alberta System** – TCPL's 100 percent owned natural gas transmission system in Alberta gathers natural gas for use within the province and delivers it to provincial boundary points for connection with the Canadian Mainline, BC System, Foothills System and other pipelines. The 14,100-mile system is one of the largest carriers of natural gas in North America.
- **Canadian Mainline** – TCPL's 100 percent owned natural gas transmission system in Canada extends 9,300 miles from the Alberta/ Saskatchewan border east to Québec/Vermont and connects with other natural gas pipelines in Canada and the U.S.

⁶ TransCanada's recent agreement to acquire National Energy & Gas Transmission's Gas Transmission Northwest Corporation (formerly Pacific Gas Transmission), which is anticipated to close in Fall of 2004, provides shippers with access to the robust markets of the Pacific Northwest and northern California.

- **British Columbia System** – TCPL’s 100 percent owned natural gas transmission system extends 125 miles from Alberta’s western border through B.C. to the U.S. border, serving markets in B.C. as well as the Pacific Northwest and California.
- **Foothills System** – TCPL’s 100 percent owned 650-mile natural gas transmission system in western Canada carries natural gas for export from central Alberta to the U.S. border to serve markets in the U.S. Midwest, Pacific Northwest and California. These are the Canadian ANGTS Prebuild facilities.
- **Ventures LP** – Ventures LP, 100 percent owned by TCPL, owns a 75-mile pipeline and related facilities which supply natural gas to the oil sands region of northern Alberta, and a 17-mile pipeline which supplies natural gas to a petrochemical complex at Joffre, Alberta.
- **Great Lakes Gas Transmission** – Great Lakes connects with the Canadian Mainline at Emerson, Manitoba and serves markets in central Canada and the eastern and Midwestern U.S. TCPL has a 50 percent ownership interest in this 2,100-mile pipeline system.
- **Trans Québec and Maritimes Pipeline** – TQM is a 360-mile natural gas pipeline system which connects with the Canadian Mainline and transports natural gas from Montréal to Québec City and to the Portland system. TCPL holds a 50 percent ownership interest in TQM and is the operator of these facilities.
- **Iroquois Gas Transmission** – Iroquois connects with the Canadian Mainline near Waddington, New York and delivers natural gas to customers in the northeastern U.S. TCPL has a 41 percent ownership interest in this 420-mile pipeline system.
- **Portland Natural Gas Transmission System** – Portland operates a 300-mile pipeline that connects with TQM near East Hereford, Québec and delivers natural gas to customers in the northeastern U.S. As of December 31, 2003, TCPL has a 61.7 percent ownership interest in Portland.
- **Gas Transmission Northwest Corporation (GTN)** – GTN, formerly known as Pacific Gas Transmission, connects with TCPL’s system in British Columbia and runs 1,356 miles south to the Oregon-California border. It also includes the North Baja pipeline system, an 80-mile system that operates in Arizona and California,

connecting with a system in Mexico. TCPL's recent agreement to acquire GTN is expected to close no later than the fourth quarter of 2004.

- **Northern Border Pipeline** – Northern Border is a 1,250-mile natural gas pipeline system which serves the U.S. Midwest from a connection with the Foothills System. TCPL indirectly owns approximately 10 percent of Northern Border through its 33.4 percent ownership interest in TC PipeLines, LP.
- **Tuscarora** – Tuscarora operates a 240-mile pipeline system transporting natural gas from Malin, Oregon to Wadsworth, Nevada with delivery points in northeastern California. TCPL owns an aggregate 17.4 percent interest in Tuscarora, of which 16.4 percent is held through TCPL's interest in TC PipeLines, LP.
- **CrossAlta** – CrossAlta Gas Storage & Services Ltd. (CrossAlta) is an underground natural gas storage facility connected to the Alberta System and is located near Crossfield, Alberta. CrossAlta has a working natural gas capacity of 40 billion cubic feet (Bcf) with a maximum deliverability capability of 410 million cubic feet per day (MMcfd). TCPL holds a 60 percent ownership interest in CrossAlta.

In the United States, TCPL pipelines are regulated by the FERC and the USDOT Office of Pipeline Safety (OPS), as well as state energy regulators in the northern part of the country. In Canada, the company is regulated by the Northern Pipeline Agency, National Energy Board ("NEB"), the Alberta Energy Utilities Board ("EUB"), and other provincial and territorial energy regulators.

The Co-Applicants, through their parent company TCPL, therefore have demonstrated an extensive history of pipeline construction and operation in the U.S. and Canada, including pipeline construction and operation in northern environments.

Prior to initiating construction activities, the Co-Applicants will be required (pursuant to Lease Stipulation 2.5.1) to submit 25 final, Project-specific plans developed to meet all of the specific performance standards set out in the Lease Stipulations regarding protection and management of land, water and air resources that may be potentially affected by the construction and operation of the pipeline for State review and approval (Lease Exhibit A).

Several of the required plans have been submitted and tentatively approved during earlier application review periods, but would be subject to revision, updating and final approval prior to initiation of construction to ensure compliance with any revised regulatory standards in effect at that time. All remaining plans, and updates of the tentatively approved plans, will be prepared and submitted as a part of the final design and construction planning process.

In addition to complying with State and Federal requirements, the Co-Applicants must develop the following plans to meet specific performance standards for State approval pursuant to Lease Stipulation 2.5.1:

(1) Air Quality

Plan Purpose and Objective: This plan will provide the criteria and basic methodology and serve as the basis for the detailed planning and design work for the mitigation of potential air quality impacts associated with the construction and operation of a natural gas transportation pipeline through Alaska.

Performance Standard: The lessee shall implement this plan to avoid where practical or minimize potential adverse air quality impacts and to ensure that air emissions are in accordance with applicable State and Federal standards.

(2) Blasting

Plan Purpose and Objective: This plan will provide the criteria and methodology for any blasting that will be undertaken in connection with construction. The plan will provide environmental as well as technical criteria including, but not limited to, environmental protection, mitigation, and restoration methodology; public safety; and TAPS protection, if applicable.

Performance Standard: The lessee's blasting activities shall be conducted in a manner to protect employees and members of the public, avoid where practical or minimize impacts to the fish and wildlife resources, and protect public and private structures including TAPS.

(3) Camps

Plan Purpose and Objective: This plan will provide the criteria and basic methodology and serve as the basis for the detailed design, construction, and operation of the temporary construction camps and airfields required during the construction of natural gas transportation pipeline facilities. The plan will include a description of camp demobilization.

Performance Standard: the lessee shall construct camps in accordance with all applicable State, Federal and local codes and standards, and conditions of the lease. The lessee shall utilize existing camp locations used during taps or highway construction to the extent feasible, subject to section 20 of the lease.

(4) Clearing

Plan Purpose and Objective: This plan will provide the criteria used to determine the clearing boundaries, method of disposal, use or storage of overburden, slash, timber and other vegetation.

Performance Standard: the lessee shall provide a clearing plan detailing clearing methods for pre-construction, construction, operation and maintenance activities. The plan shall include methods addressing disposal, utilization or storage of slash and overburden, timber and other vegetation. In addition, buffer zones and visual effects shall be addressed. The plan shall also include brushing methods for the operational phase of the pipeline system.

(5) Corrosion Control

Plan Purpose and Objective: This plan will serve as the basis for the integrity program and will describe the methods to be used for early detection of corrosion.

Performance Standard: the lessee shall have an approved integrity management program, which shall include corrosion protection, mitigation, assessment, and repair, and be based upon best practicable industry practices, applicable laws, regulations and NACE standards.

(6) *Cultural Resource Preservation*

Plan Purpose and Objective: This plan will show how cultural resources will be protected during the construction, operation and maintenance or other activities.

Performance Standard: The lessee shall develop, establish and maintain a Cultural Resource Protection Program to preclude negative impacts to significant cultural resources by avoidance or, if this is not possible, to preserve significant data. The lessee will coordinate with the Alaska State Historic Preservation Office in the development of a project-specific Programmatic Agreement for Cultural Resource Protection.

(7) *Environmental Briefings*

Plan Purpose and Objective: This plan will provide a continuing education program for management and the labor force to ensure that environmental concerns are properly addressed.

Performance Standard: The lessee shall ensure that all employees will be provided with the knowledge to perform work in a manner that complies with all State and Federal statutes, regulations and policies pertaining to the protection of fish, wildlife and other environmental resources; lease stipulations; and permit conditions required by regulatory agencies.

(8) *Erosion and Sedimentation Control*

Plan Purpose and Objective: This plan will provide the criteria and basic methodology for developing detailed designs and procedures to control

erosion and sedimentation during construction and operation of a natural gas transportation pipeline project.

Performance Standard: The lessee shall implement methods described in this plan to minimize project-related erosion and sedimentation in streams, rivers and wetlands.

(9) *Fire Control*

Plan Purpose and Objective: This plan will identify methods that will be used to prevent and suppress fires near the right-of-way and related facilities.

Performance Standard: The lessee shall utilize approved measures described in this plan to prevent and suppress fires on or near the right-of-way and its related facilities. The lessee shall coordinate with the DOF on necessary modifications to the Interagency Fire Plan.

(10) *Liquid Waste Management*

Plan Purpose and Objective: This plan will provide the criteria and basic methodology and serve as the basis for the detailed planning and design work for the collection, transportation, management, and disposal of wastes generated by construction and operations of a natural gas transportation pipeline.

Performance Standard: The lessee shall develop, establish and maintain a liquid waste management program to implement the prevention, minimization, and the proper collection, handling, transport and disposal of the liquid waste produced by all phases of the project including pre-construction, construction, operation and maintenance, and termination. The plan shall provide the methods used to manage point source and non-point source liquid waste in accordance with applicable State, Federal, and local government codes and standards.

(11) Material Exploration and Extraction

Plan Purpose and Objective: This plan will provide a comprehensive discussion of the criteria and methodology for siting, developing, operating, and restoring material sites needed for the project and for spoil disposal from the sites.

Performance Standard: The lessee's plan shall describe the criteria and methodology for siting, developing, operating, and restoring material sites needed for the project and disposal of spoil from the sites in a manner that minimizes environmental and social impacts.

(12) Oil and Hazardous Substances Control, Cleanup and Disposal

Plan Purpose and Objective: This plan will provide the detailed procedures for assessment and cleanup of oil and hazardous substance contamination that may be encountered during any field activity, and will provide the criteria and basic methodology for a comprehensive management program to control, cleanup, and dispose of oil and hazardous substances used in the construction and operation of a natural gas transmission pipeline.

Performance Standard: The lessee shall develop, establish and maintain a comprehensive oil and hazardous substance Contamination Program, providing the methods to be used to integrate the assessment, prevention, minimization, collection, handling, transport and disposal of oil and hazardous substances in accordance with all applicable State and Federal requirements during the construction, operation and maintenance and termination of the pipeline system.

(13) Overburden and Excess Material Disposal

Plan Purpose and Objective: This plan will ensure that overburden and excess materials are disposed of in a manner that protects the environment and that overburden to be used for restoration purposes is properly stored.

Performance Standard: The lessee shall dispose of spoil material within the right-of-way construction zone to the extent practical. The placement of the spoil material shall utilize techniques to avoid or minimize environmental disturbance, such as impacts to vegetation. If the spoil material cannot be completely distributed within the right-of-way, the lessee shall develop approved spoil disposal sites. Mineral and organic materials useable for rehabilitation and restoration purposes shall be segregated from other materials and stored for future use.

(14) *Pesticides, Herbicides, Chemicals*

Plan Purpose and Objective: This plan will provide the criteria and basic methodology to develop a comprehensive management program for the control, use, cleanup, and disposal of pesticides, herbicides, and chemicals used in the construction and operation of a natural gas transportation pipeline.

Performance Standard: The lessee shall use only non-persistent and immobile types of pesticides, herbicides and other chemicals currently registered by the Environmental Protection Agency and the State. Each chemical to be used and its application constraint shall comply with applicable State regulation. All applications will be conducted by a certified pesticide applicator in the category of "Right of Way" or any other appropriate category or supervised on site by a certified pesticide applicator. Pesticides should be transported, stored and disposed of according to the label and applicable laws and regulations.

(15) *Pipeline Contingency*

Plan Purpose and Objective: This plan will describe measures to plan and prepare for pipeline failures.

Performance Standard: the lessee shall develop plan(s) to address uncontrollable events that could have a significant adverse impact on the operation or integrity of the pipeline and its appurtenances, or that could be hazardous to persons or property. the lessee shall include provisions for natural gas control, specify that the action agencies responsible for contingency plans in Alaska shall be among the first to be notified in the event of any pipeline failure resulting in an natural gas release, provide for immediate corrective action including control of the release and restoration of the affected resource, and allow for approval of any disposal sites or techniques selected to handle disposal of materials.

(16) Quality Assurance/Quality Control

Plan Purpose and objective: This plan will ensure that the lessee (including sub-contractors and vendors) pipeline activities comply with all State, Federal, and local government laws and other requirements, industry codes and standards and internal policy and programmatic requirements.

Performance Standard: In accordance with Stipulation 2.6, the lessee's quality assurance/control program shall be comprehensive and designed to assure that the applicable requirements of 49 CFR Part 192 and the environmental and technical stipulations of the lease will be incorporated in the final design and complied with throughout all phases of pre-construction, construction, operation and maintenance and termination of the pipeline system. The quality assurance/control program shall document compliance with the lease.

(17) Restoration

Plan Purpose and Objective: This plan will describe the practicable methodologies to return disturbed lands to a natural condition.

Performance Standard: Upon completion of use, the lessee shall restore disturbed areas to an acceptable condition as outlined in the approved plan and in accordance with Stipulation 6.1 to the satisfaction of the Commissioner.

(18) *River Training Structures*

Plan Purpose and Objective: This plan will develop a process to monitor rivers and streams along the right-of-way for bank erosion. The plan shall also include a description of the river training structures.

Performance Standard: The lessee shall implement measures to protect the pipeline from river and stream bank erosion in accordance with all applicable State and Federal requirements and Stipulation 2.15.4. Bank protection and river training structures shall be used when required to stabilize eroding banks and to control the flow along a pre-selected alignment. In addition to those described in the approved plan, the following structure types are suitable for use in arctic and sub-arctic streams: revetments, channel stabilization aprons, spurs, guide banks, dike plugs, biological stabilization techniques, and stabilization using natural materials.

(19) *Solid Waste Management*

Purpose and Objective: This plan will provide the detailed procedures for safe disposal of solid WASTES generated during any field activity.

Performance Standard: The lessee shall develop, establish and maintain a comprehensive Waste Management Program pursuant to all applicable State, Federal and local requirements for the prevention, minimization, and the proper collection, handling, transport and disposal of the wastes produced

during all phases of the project including construction, operation and maintenance, and termination.

(20) *Stream, River and Floodplain Crossings*

Plan Purpose and Objective: This plan will provide design criteria and basic methodologies for the various crossing structures that will be used in pipeline construction to minimize impacts to fish passage, water quality, sedimentation and erosion by maintaining natural flow regimes.

Performance Standard: The lessee's stream and river flood plain crossings shall not significantly alter the natural flow regime of those waterbodies, except during construction and maintenance of these structures. Construction and maintenance-related disturbance to streambanks shall be stabilized to prevent project-related erosion and rehabilitated as required. Installation of structures in fish streams shall be approved by the Commissioner.

(21) *Surveillance and Maintenance*

Plan Purpose and Objective: This plan will describe the lessee's program to surveil and maintain the pipeline system and right-of-way.

Performance Standard: The lessee shall conduct a surveillance and maintenance program applicable to the sub-arctic and arctic environment. This program shall be designed in accordance with Stipulation 2.14 to protect public health and safety; prevent damage to natural resources; prevent project-related erosion; and maintain pipeline integrity.

(22) *Visual Resources*

Plan Purpose and Objective: This plan will describe how visual resources will be protected or mitigated during construction, operation and maintenance, and termination of the pipeline system.

Performance Standard: The lessee shall prevent or mitigate, to the extent practicable, impacts to visual resources during pre-construction, construction, operation and maintenance, and termination activities.

(23) Wetlands Construction

Plan Purpose and Objective: This plan will describe methodologies that will be used to minimize impacts to wetlands habitats.

Performance Standard: The lessee shall minimize the alteration of drainage patterns in wetlands. The effects of frost bulb growth on groundwater flow in sensitive wetlands shall be minimized or avoided. Clearing of trees, brush and tall vegetation shall also be minimized to reduce impacts to wetlands.

Construction in wetlands shall, to the extent possible, be scheduled when the ground is frozen. For wetland construction, the Notice To Proceed package shall include relevant information on the following: cross drainage control, erosion control, siltation control, clearing, re-grading, and revegetation.

(24) Seismic

Plan Purpose and Objective: This plan will describe the measures to be employed to protect the pipeline system from seismic activity.

Performance Standard: The pipeline system shall be designed, where technically feasible and practicable, by appropriate application of modern, state-of-the-art seismic design procedures to prevent any natural gas leakage from the effects (including seismic shaking, ground deformation and earthquake-induced mass movements) of earthquakes along the route as provided in Stipulation 2.17.2 Environmental damage from a leak shall be minimized by special design provisions that shall include, but not be limited to: a network of ground-motion detectors that continuously monitor, record and instantaneously signal the occurrence of ground motion in the vicinity of the pipeline reaching the operational design level; and rapid programmed

shutdown of the pipeline and prompt close inspection of system integrity in the event of ground motion reaching the contingency design level. Prior to applying for a notice to proceed for any construction segment, the lessee shall satisfy the Commissioner that all recognizable or reasonably inferred faults or fault zones along the alignment within that segment have been identified and delineated, and that the risk of natural gas leakage resulting from fault movement and ground deformation has been adequately assessed and provided for in the design of the pipeline for that segment. Evaluation of said risk shall be based on geologic, geomorphic, geodetic, seismic, and other appropriate scientific evidence of past or present fault behavior and shall be compatible with design earthquakes tabulated above and with observed relationships between earthquake magnitude and extent and amount of deformation and fault slip within the fault zone.

(25) *Human/Carnivore Interaction*

Plan Purpose and Objective: This plan will provide design criteria and basic methodologies for various pipeline activities that will be used to minimize human/carnivore interactions and will describe the measures to be employed to provide employees with adequate training and knowledge to deal with the potential dangers associated with interactions between humans and bears and other carnivores.

Performance Standard: The lessee shall minimize the occurrence of human-carnivore interactions during pre-construction, construction, operation and maintenance, and termination activities by taking measures to prevent interactions between humans and carnivores. This plan shall contain personnel safety guidelines developed in consultation with the ADF&G.

Once the final design is approved, additional or supplementary plans may be required in the event that the plans submitted in accordance with Lease Stipulation 2.5.1 do not provide the detailed and/or site-specific data required to support the final design required in Lease

Stipulation 2.4, or to guide the conduct of the construction, operation, maintenance and termination of the pipeline system.

Lease Stipulation 2.5.1 plans, or other plans as required, would set forth the array of methods available to meet the performance standards. The selection of a specific method would depend on geographic region and site-specific conditions or circumstances. The Notice to Proceed (NTP) procedures described in Lease Stipulation 2.18 set forth the State approval process:

2.18 NOTICE TO PROCEED and Other Written Authorizations

2.18.1 The procedures set out under Stipulation 2.18 provide for an umbrella process that is intended to ensure that, for each FIELD ACTIVITY proposed to be undertaken, all regulatory reviews, public processes, and permits are in place prior to the start of such FIELD ACTIVITY. Pursuant to these procedures, certain significant FIELD ACTIVITIES (e.g., major activities involving CONSTRUCTION of the PIPELINE SYSTEM) will require a NOTICE TO PROCEED from the COMMISSIONER, while other more minor FIELD ACTIVITIES may require other written authorizations from the COMMISSIONER. Certain FIELD ACTIVITIES may require written authorizations by other State and Federal agencies under State or Federal statutes or regulation, either alone or in addition to an authorization from the COMMISSIONER.

2.18.1.1 The COMMISSIONER shall have the discretion to determine whether an activity or change to the PIPELINE SYSTEM is significant and will require the NOTICE TO PROCEED process, or whether the FIELD ACTIVITY or change may be initiated and undertaken pursuant to some other appropriate written authorization by the COMMISSIONER. Except for de minimis activities, the LESSEE shall obtain a NOTICE TO PROCEED from the COMMISSIONER for the following:

- (1) Activities associated with CONSTRUCTION of the PIPELINE SYSTEM.*

- (2) *Any change to a critical system. A critical systems list shall be developed and maintained by the LESSEE and approved by the COMMISSIONER.*
- (3) *Any significant change to the PIPELINE SYSTEM, as determined by the LESSEE's management of change or hazards analysis procedures.*
- (4) *An amendment to the RIGHT-OF-WAY LEASE or new rights-of-way associated with the PIPELINE SYSTEM.*
- (5) *TERMINATION-related activities.*

2.18.1.2 *The LESSEE shall not initiate a proposed FIELD ACTIVITY on STATE LANDS pursuant to this LEASE without a NOTICE TO PROCEED or other appropriate written authorization for such activity issued by the COMMISSIONER. Any NOTICE TO PROCEED or other written authorization shall permit FIELD ACTIVITIES only as therein expressly stated and only for the particular FIELD ACTIVITIES therein described. A NOTICE TO PROCEED or other written authorization may contain such site-specific terms and conditions as the COMMISSIONER deems necessary to implement this LEASE, including the stipulations hereto, and the LESSEE will comply with such terms and conditions, consistent with applicable State and Federal statutes, regulations, and orders or permits thereunder.*

2.18.1.3 *Following appropriate consultation with the LESSEE, and when other enforcement actions are inadequate or have not been successful, the COMMISSIONER may, by written order, revoke or suspend in whole or in part any NOTICE TO PROCEED or other written authorization which has been issued by the COMMISSIONER when, in the COMMISSIONER's judgment, unforeseen conditions later arising require alterations in the NOTICE TO PROCEED or other written authorization in order to:*

- (1) *remove hazards to public health and safety;*
- (2) *protect or maintain integrity of the PIPELINE SYSTEM;*

- (3) *control or prevent significant damage to the environment, including but not limited to fish and wildlife populations and their habitats;*
- (4) *protect or maintain stability of foundation and earth materials; or*
- (5) *prevent avoidable conflict with the human community along the PIPELINE route.*

The COMMISSIONER shall within three (3) days follow his revocation or suspension order with a more detailed written statement of the reason for this action.

2.18.2 Procedures Governing NOTICES TO PROCEED

2.18.2.1 *Unless clearly inapplicable, all CONSTRUCTION of the PIPELINE conducted on STATE LANDS undertaken by the LESSEE, its agents, and contractors, and the employees of each of them, shall comply in all respects with the provisions of the specific NOTICE TO PROCEED that is issued by the COMMISSIONER as provided in this section, to the extent the provision of the specific NOTICE TO PROCEED is consistent with applicable State and Federal statutes, regulations, and orders or permits thereunder.*

2.18.2.2 *Prior to submission of an application for a NOTICE TO PROCEED, the LESSEE and the COMMISSIONER will agree to a schedule for the submission, review, and approval of such applications and on the scope of information to be contained therein. The schedule shall allow the COMMISSIONER thirty (30) days for review of each complete application for a NOTICE TO PROCEED unless the COMMISSIONER gives written notice that either more or less time is needed.*

2.18.2.3 *Each application for a NOTICE TO PROCEED shall be supported by:*
(1) a FINAL DESIGN for the CONSTRUCTION SEGMENT or FIELD ACTIVITIES to be covered by the NOTICE TO PROCEED, with detailed and/or site-specific plans as indicated in Stipulation 2.5.1 and computations, as may be requested by the COMMISSIONER, supporting the design;
(2) all applicable reports and results of socioeconomic and environmental studies and land use impact analyses for the alignment and siting of RELATED FACILITIES on STATE LANDS, if requested by the COMMISSIONER;

(3) all requirements stated in Stipulation 2.4.1 with respect to the CONSTRUCTION SEGMENT or FIELD ACTIVITIES to be covered by the NOTICE TO PROCEED;

(4) a map or maps, prepared in such manner as shall be acceptable to the COMMISSIONER, depicting the proposed location of:

- (a) the boundaries of all associated temporary use areas;*
- (b) all improvements, buried or aboveground, that are to be constructed;*
- (c) the relative location of any part of a HIGHWAY or the TAPS that is proximate to the proposed improvements; and*
- (d) the relative location of resident populations including property, habitations, transportation and public facilities that are proximate to the proposed improvements.*

(5) justification statements for all proposed design features or activities which may not be in conformance with the LEASE stipulations; and

(6) an analysis which addresses the effects, if any, of PIPELINE SYSTEM design and proposed activities on the HIGHWAY or TAPS and other existing facilities and, where necessary, which describes systems designed to ensure protection of the HIGHWAY, TAPS and other existing facilities from damage arising from the CONSTRUCTION, operation, maintenance and TERMINATION of the PIPELINE SYSTEM.

2.18.2.4 The COMMISSIONER shall review each application for a NOTICE TO PROCEED and all data submitted in connection therewith in accordance with schedules agreed to pursuant to Stipulation 2.18.3.1.

2.18.2.5 The COMMISSIONER shall issue a NOTICE TO PROCEED only when, in the COMMISSIONER's judgment, applicable FINAL DESIGNS and other submissions required by Stipulations 2.5.1 and 2.5.3 conform to this section or are otherwise justified under Stipulation 2.18.2.3.

2.18.2.6 Where appropriate, a NOTICE TO PROCEED will contain specific provisions that must be satisfied prior to initiation of surface disturbing activities. When a NOTICE TO PROCEED contains such provisions (e.g., field approval), the initiation

of surface disturbing FIELD ACTIVITIES will be prohibited prior to written field verification by the COMMISSIONER.

2.18.2.7 Before applying for a NOTICE TO PROCEED for a CONSTRUCTION SEGMENT, the LESSEE shall locate and clearly mark on the ground the proposed centerline of the line of pipe in such manner as shall be acceptable to the COMMISSIONER, the location of all relevant RELATED FACILITIES and, where applicable, clearing limits and the location of temporary use areas in the proposed work area. When the LESSEE is engaged in activities proximate to the HIGHWAY or TAPS or, in any event, when such activities could pose a threat to the integrity of the HIGHWAY or TAPS, the LESSEE shall arrange with the owners of the TAPS or the DOT&PF, as the case may be, in accordance with industry practice, to survey and clearly mark on the ground relevant parts of the HIGHWAY or TAPS, including RELATED FACILITIES.

2.18.3 Procedures Governing Other Written Authorizations by the COMMISSIONER

2.18.3.1 Promptly after the COMMISSIONER determines, pursuant to Stipulation 2.18.1.1, that an activity or change may be initiated and undertaken pursuant to a written authorization from the COMMISSIONER other than a NOTICE TO PROCEED, the LESSEE and the COMMISSIONER will agree to a schedule for the submission, review, and approval of the request for such authorization, and on the scope of information to be contained therein. Such agreement may be reached verbally or in writing. The schedule shall allow the COMMISSIONER a reasonable time for review of the request, while ensuring a prompt decision on the request.

2.18.4 Procedures Governing Written Authorization by Other State and Federal Agencies Required by Statute or Regulation

2.18.4.1 In addition to authorizations by the COMMISSIONER addressed in Stipulations 2.18.1, 2.18.2 and 2.18.3, written authorization by other State and Federal agencies may be required under State or Federal statutes or regulations to authorize a particular FIELD ACTIVITY. The procedures for obtaining such written authorizations shall be those applicable to the particular statutory or regulatory authorities.

Lease Stipulation 2.18 also specifies that the Co-Applicants may not initiate any field activity pursuant to the authorization of which the Lease Stipulations are a part without prior specific written permission, if required by the Commissioner. Permission for field activities subject Stipulation 2.18 would be given by a NTP and field approval, if required, or other appropriate written authorization issued by the Commissioner or State Field Representative. A NTP and field approval, if required, or other written authorization would permit activities only as therein expressly stated and only for the particular activities therein described. A NTP and field approval, if required, or other written authorization may contain such site-specific terms and conditions that the Commissioner deems necessary to implement Lease requirements.

Pre-construction land use activities, such as fish and wildlife investigations, surveys and right-of-way clearing already performed by the Co-Applicants as part of the ANGTS Project, are permitted or authorized under AS 38.05.

The Co-Applicants have indicated their plans to protect State and private property interests and to avoid, abate and diminish problems that may arise from this Project through the implementation of a comprehensive program to ensure that the effects of construction, operation, and maintenance activities on public or private property within or adjacent to the pipeline corridor are minimized, consistent with Lease Stipulations.

The first component of this program is the Project planning and impact assessment process. During the final planning phase of the Project, the Co-Applicants will take steps to ensure pipeline system integrity and to prevent leaks, establish procedures to monitor performance to ensure continued integrity, develop a plan for response, and ensure the construction area is rehabilitated in accordance with permit conditions.

A major component of the program will be to ensure compliance with applicable pipeline design and operation standards, including:

- 49 CFR Part 190, “Pipeline Safety Programs and Rulemaking Procedures;”
- 49 CFR Part 191, “Transportation of Natural and Other Gas by Pipeline; Annual Reports, Incident Reports, and Safety-related Condition Reports;” and
- 49 CFR Part 192, “Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards.”

The proposed construction techniques are specifically designed to avoid or minimize impacts to public and private lands and the environment. Work in sensitive habitat will be conducted in a manner that minimizes damage to the underlying vegetation and inclusive wildlife. Design and construction measures will be employed to prevent, minimize, or repair any damage to Project area vegetation. The Co-Applicants have committed to work cooperatively with the State and its resource agencies to develop ways to mitigate the potential adverse environmental, social and economic effects of the ANGTS Project and to protect State and private property interests.

Physical Resources

The ANGTS Project may impact the physical environment through erosion, sedimentation, ice formation, mass wasting, thawing of permafrost areas, and the disruption of surface and ground water flow. The Co-Applicants will address these concerns through detailed design review and implementation of plans required by the lease stipulations. It is the intention of the State to minimize impacts to the physical environment.

The location of the ANGTS Project facilities has been selected specifically to minimize impacts through selection of a route that parallels existing transportation corridors (Dalton Highway and Alaska Highway). In addition, Lease Stipulation 2.12 requires the Co-Applicants to use existing facilities to the maximum extent feasible. This reduces the need to extend new roads to create access to construct and operate the pipeline and compressor stations. Existing right-of-way terrain, TAPS, and other pipelines and roads limit specific route locations within these corridors to some extent in certain locations.

Biological Resources

The ANGTS Project may have varying impacts on the biological environment including:

1. Anadromous and Resident Fish;
2. Wildlife, including Threatened, Endangered, or State Species of Special Concern;
and
3. Vegetation/Wetlands.

1. Anadromous and Resident Fish: Activities that pose a potential to impact anadromous and resident fish resources have been identified by ADF&G and OHMP. ADF&G and OHMP are involved in the various stages of the ANGTS Project and will continue to be involved in the design review, construction, and monitoring phases of the Project.

ADF&G and OHMP are concerned about the effect of the pipeline on groundwater, maintenance of fish passage, and sedimentation at or near known salmon spawning areas. The environmental plans required by the Lease Stipulation 2.5 (Design Criteria, Plans and Programs) are intended to address sedimentation and erosion, groundwater flow, stream and river crossings, and water quality as they affect anadromous and resident fish. In addition, Lease Stipulation 2.15.5 (Fish and Wildlife Protection) provides for specific fish and wildlife protection measures.

2. Wildlife may be affected in the following ways:

- a. Direct mortality from collisions with vehicles, shooting (hunting and destruction of nuisance animals), and stress (exhaustion) from harassment;
- b. Passive or active disturbance caused by human activities, especially during critical periods or seasons (calving, denning, nesting, breeding, winter);
- c. Indirect loss of habitat through displacement of animals or disruption of movements and migrations;
- d. Direct habitat loss through physical alteration;
- e. Attraction to artificial food sources; and
- f. Contact with and contamination of food by pollutants, especially fuel and oil spills.

The above effects to wildlife may occur along the entire pipeline route during construction and operation of the ANGTS Project. It is expected that the majority of any impacts would occur during construction. These potential impacts will be addressed in the plans and detailed design review required by the Lease Stipulation 2.5 (Design Criteria, Plans and Programs) and in Lease Stipulation 2.15.5 (Fish and Wildlife Protection).

The ADF&G or appropriate federal agency will address species listed as threatened or endangered under the Federal Endangered Species Act and the State administered Species of Special Concern program. Lease Stipulation 2.15.5.2 (Zones of Restricted Activity) provides the Commissioner a mechanism for the protection of such species. Currently, there are no federally listed species along the proposed ANGTS Project route; however, the Peregrine Falcon remains on the State of Alaska Species of Special Concern list, maintained by the Commissioner of ADF&G. This classification still requires the avoidance of nesting period disturbance from low-flying aircraft, other noisy activities, ground level activities, and construction near nest sites during critical nesting times. In addition, activities that could have negative impacts throughout the year (not only during nesting periods) include habitat alterations, construction of permanent facilities, and pesticide use.

The ANGTS Project will remove some fish and wildlife habitat from production through wetland fills, construction of gravel workpads, and development of mineral material sites. Such losses will be greatest in the short term and will be mitigated as restoration and revegetation occurs following construction. Some habitat losses will persist for the life of the Project or longer, such as areas covered by permanent facilities and certain drainage structures. Additional losses may occur from accidents such as large fuel spills or from construction activities resulting in the siltation of aquatic habitat. Finally, habitat may become unavailable as a result of Project-related activities that may disturb or displace wildlife or block fish migration. Habitat losses or reduced availability of habitat to fish and wildlife populations ultimately may adversely affect subsistence uses of such populations.

Some animals may suffer direct mortality as a result of the ANGTS Project from vehicle-animal collisions, fuel spills, stress, defense of life and property, or other mechanisms. However, such losses most likely will be small in relation to population size. Lease

Stipulation 2.15.5.4 (Hunting, Fishing and Trapping) requires the Co-Applicants to inform their employees, agents, contractors, subcontractors and their employees of applicable laws and regulations relating to hunting, fishing, trapping and feeding of animals.

The operational phase of the pipeline is not expected to result in significant wildlife behavioral changes. Wildlife could be disturbed during pipeline maintenance activities, but these impacts would be minimal and short-term.

3. Vegetation/Wetlands: The ANGTS Project will require the clearing of a construction zone on State land along the pipeline route. The width of the construction zone will vary depending on the topography, construction method, and the facilities to be placed on State land. The clearing of vegetation from the construction zone is one of the primary impacts during construction. In addition, the pipeline right-of-way lease parcel will experience compaction of the organic layers that may result in additional seasonal thawing. The vegetation removed will be burned, buried, chipped or hauled to a designated disposal site. Marketable timber will be cut and stacked along the route and made available to the public as firewood. The method of disposal will depend upon the location being cleared and the method being used. The improper disposal of the slash could result in insect infestations that could damage the adjacent forested areas.

The Lease contains several stipulations related to vegetation including Stipulation 4.4.1 (Buffer Strips), Stipulation 2.17.4.2 (Erosion), Stipulation 4.4.4 (Erosion and Sedimentation Control), Stipulation 4.4.2 (Purchase of Materials and Timber), Stipulation 4.4.5 (Clearing), Stipulation 2.15.8 (Visual Resources) and Stipulation 2.15.10 (Stabilization, Revegetation and Restoration of Disturbed Areas). The Lease requires the Co-Applicants to take advantage of opportunities to minimize injury to vegetation through the use of special construction methods, including the use of ice and snow pads to support working equipment and to provide access roads to haul pipe and equipment. The application of this and other construction methods will be determined by applying specific criteria as described in the application. In addition, the Project will take advantage of the natural protections provided to vegetation during winter dormancy. Rehabilitation of areas that are disturbed by construction

of the Project will be performed according to the criteria and methodologies described in the application, and the plans submitted and approved by the Commissioner in accordance with Stipulation 2.5.1 of the Lease. The rehabilitation program will integrate other programs such as drainage and erosion control, visual resource protection, and fish and wildlife protection, among others, in the selection of site-specific rehabilitation methods.

The Co-Applicants have received and maintained the COE 404 Permits for class “C” wetland construction activities associated with ANGTS Project. Impacts to wetlands will be minimized through the use of construction techniques and design measures that would minimize altering the characteristics of the wetlands.

Evaluation of the pipeline mode will be an element of the final design review process. The current construction mode for the gas pipeline is buried with the possible exception of some major river crossings (e.g., Tanana River). Over the past several decades, there has been the need for increased activity associated with buried pipelines north of Fairbanks, particularly TAPS. Corrosion digs to inspect and repair pipelines, restoration in area of thermal degradation, and remedial work at streams. As part of the final design review process, a complete evaluation of whether the gas pipeline should be buried for its entire length or whether there are areas (e.g., ice rich soils, unstable soils, ground water aquifers) where the gas pipeline should be elevated. It should be noted that reestablishment of cross pipeline water flow (sheet flow, surface flow, ground water) in permafrost soils after the area has been trenched may be very difficult. The end result of design review just prior to construction could result in portions of the pipeline being elevated to ensure the protection of the environment.

Public Safety

The ANGTS Project has the potential to affect public safety along the pipeline route. The Co-Applicants, in designing the Project, and the state and federal governments, in reviewing and monitoring design and construction, are interested in making the Project as safe as possible. In doing so, the State will focus its attention on fire protection, high-pressure relief and emergency venting, spills or leaks, shutdown systems, physical environmental

considerations, noise control, adherence to applicable design codes and regulations, personnel training, and quality assurance/quality control.

The pipeline component of the ANGTS Project is also a potential risk to public safety. The pipeline may be subject to gas leaks as a result of seismic activity, frost heave, and ground settlement. To reduce this potential risk, the Co-Applicants will be required to prepare environmental plans that address those areas. In addition, the Co-Applicants have indicated that block valves will be installed at intervals of 20 miles, or as required to shut down the pipeline in emergency situations or for routine repairs. Although most of the pipeline will be buried, the Co-Applicants have indicated that the above-ground portions of the pipeline, such as compressor stations, may have restricted access to reduce the potential for tampering and improve public safety. The pipeline will be designed with a system to reduce corrosion due to a chemical reaction between the soil and the carbon steel pipe. The pipeline features will be identified by signage as required by USDOT regulations. Additional security for the pipeline and public would be established through aerial and ground reconnaissance, in accordance with the Lease Stipulations.

The other major locations for public safety concerns are the compressor stations. The compressor stations are a potential source of gas leak related incidents. In order to reduce the potential for these occurrences, the compressor stations will be equipped with gas and fire detection systems, communication facilities, and utility systems. Each compressor station will be automated with monitoring and control equipment to provide for safe and efficient unattended operation. A compressor station operator will not be required to monitor and supervise the compressor station control system during normal operation. A local programmable logic controller based station control panel controls the compressor station. The station control panel will be capable of monitoring and controlling all the critical station functions and accepting control set points from the Supervisory Control and Data Acquisition System (SCADA) when the station is in "remote" mode or from the station human-machine interface when the station is in "local" mode. Lease Stipulation 2.8 requires the Co-Applicants to take measures necessary to protect the health and safety of all persons directly affected by activities performed by the Co-Applicants in the general vicinity of the right-of-

way or permit area in connection with construction, operation, maintenance or termination of the pipeline system, and to immediately abate any health or safety hazards.

After construction, a pipeline surveillance and maintenance program will be implemented by the Co-Applicants and approved by the Commissioner, as required by Stipulation 2.14 of the Lease. The goals of this program are to ensure pipeline operating integrity and safety, and also prevent, identify, and respond to any situations that could cause significant damage to the environment. This ongoing pipeline Surveillance and Maintenance Program will address potential adverse habitat or water-quality impacts resulting from unplanned events with pipeline performance.

The Co-Applicant will be required to mark and protect all land and geodetic survey monuments encountered during construction, operation, maintenance, and termination of the pipeline system. These monuments are not to be disturbed; however, if disturbance becomes necessary, the Co-Applicants will be required to notify the Commissioner in writing before any such disturbance occurs and the Commissioner will provide instructions. Lease stipulations will require the Co-Applicants to protect survey monuments. The Lease will also require the Co-Applicants to employ a qualified land surveyor to re-establish or restore damaged or disturbed survey monuments. The Commissioner may require additional measures to protect monuments and corners.

The State has reviewed the proposed design of the ANGTS Project and has determined that such design, subject to the Department of Transportation regulations in 49 CFR 192, "Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards," and other applicable standards and codes would perform safely and would withstand the conditions to which it will be subjected, so long as it is maintained adequately. The State has further determined that the pipeline will be properly maintained provided the Co-Applicants perform all pre-construction, construction, operation and maintenance, and termination activities of the pipeline system in accordance with all applicable State and Federal requirements, codes and standards, and lease conditions and stipulations.

Subsistence

Because most of the ANGTS Project will be buried, there should be little impact to subsistence resources other than temporary access issues to areas adjacent to the existing rights-of-way. The primary areas of concern would be river and stream crossings where subsistence fishing occurs. Design criteria and construction and operation procedures have been designed to minimize the negative impact to individuals using the area for subsistence purposes. These measures, which are also designed to protect the overall environment, include scheduling to minimize wildlife disturbance, route selection, and design to minimize adverse impacts to the environment. Increased access may impact subsistence users and is discussed below.

- **Access:** The ANGTS may make some subsistence resources more available through the use of new access roads. Likewise, wages earned as a result of the ANGTS Project may increase the availability of ATV's, snowmobiles, boats, and motors to local residents and allow them greater mobility during conduct of subsistence activities. These effects could increase the use of subsistence resources and the competition for subsistence resources.
- **Competition for Subsistence Resources:** A possible population increase as a result of ANGTS Project construction may increase pressure on, and competition for, fish and wildlife resources. In part, elimination of sport hunting and fishing seasons on depressed populations can protect subsistence harvests at the expense of urban users of those resources. Nevertheless, that portion of the ANGTS Project-related increase in human population that permanently resides in rural areas and becomes eligible to participate in subsistence harvests may increase competition for subsistence resources. All Alaska residents currently qualify to be subsistence users under state regulations, in areas where subsistence uses are authorized. The rural priority is present only in federal law and applies only to federal public lands, which are absent from a portion of the pipeline corridor. Eliminating or restricting state sport fishing and non-resident hunting seasons may not adequately protect subsistence uses and users. Increasing demand on a depressed population or in other instances where

demand outweighs supply could require imposition of state Tier II regulations. In areas involving federal public lands, uses by urban residents and other non-federally qualified subsistence users would be eliminated first, if necessary to protect opportunities for federally-qualified subsistence users. In both instances, local residents of the affected area generally will have priority access to fish and wildlife resources, but the state and federal regulatory bodies use different mechanisms to provide that preference.

- **Loss of Traditional Harvest Activities:** For those rural residents employed by the ANGTS Project, or employed indirectly by the ANGTS Project, opportunities to participate in traditional harvest activities may be diminished. Wage employment most likely will occur at locations away from local communities, and even where such employment occurs in or near an area of traditional subsistence use, employers are not likely to accommodate subsistence activities that take employees off their jobs. There are precedents in other large-scale projects for accommodating subsistence harvest activities by local residents working on the project, however, this subject to negotiation between the employer and local residents who might be employed during the construction and/or operational phase of the pipeline system.
- **Economic Impact:** Subsistence-oriented communities may experience economic impacts if the ANGTS Project reduces the availability of subsistence resources or reduces the local residents' ability to harvest those resources. Cash outlays for transportation, equipment, and store-bought food may increase to compensate for reduced harvest levels or the need to allocate additional time and effort to maintain previous harvest levels. Wage income may partially offset these economic impacts, but only to the extent that rural residents are able to obtain a significant number of jobs on the ANGTS Project.
- **Social and Cultural Impacts:** "Disruptions of traditional patterns of subsistence activity occurring as a result of the ANGTS Project may impact cultural identity and status, alter traditional diets, and aggravate social problems such as depression and

substance abuse. Such disruptions may occur as direct effects of the ANGTS Project on rural communities, which could be perceived as short-term impacts, but permanent state-wide population growth and economic development spurred by the Project likely could produce long-term socioeconomic changes in Alaska that will further diminish subsistence practices in rural communities.

- **Cumulative Impacts:** Rural communities will experience not only the effects of the ANGTS Project but also those generated by the spectrum of economic development that extends from past and existing projects to reasonable foreseeable future projects. These cumulative impacts on subsistence activities are particularly apparent on Alaska's North Slope where oil and gas exploration and development already extends from the Colville River to the Canning River, both onshore and offshore, and where future activity may include the Arctic National Wildlife Refuge, extensive areas south of Prudhoe Bay. The near- and long-term effects of these projects must be considered in concert with the incremental effects of the ANGTS Project on subsistence resources.

The Co-Applicants will develop, implement and maintain a Subsistence Users Protection (SUP) Program pursuant to Lease Stipulation 4.4.6.2. The purpose of the SUP Program will be to establish the criteria and methodologies to protect subsistence users during the design, construction and operation of the Project. The Project will implement the SUP through plans and procedures that are developed specifically to protect the interests of individuals living in the general area of the Project right-of-way who rely on fish, wildlife and biotic resources of the area for subsistence purposes.

Protection of subsistence users will require an understanding of which communities along the Project route rely on natural resources for subsistence, which resources are used for subsistence, the extent of associated subsistence use (both in harvest amounts and geographic use area, if available), the primary seasons of use, relevant socioeconomic information, issues of concern in rural communities along the proposed corridor, and the nature of the potential

effects the Project could have on those users. In order to protect subsistence users and/or mitigate potentially adverse Project-related effects, this basic information is necessary.

The SUP will be developed in cooperation with the State, local communities, Native organizations and affected individuals along the proposed right-of-way. The Commissioner, in consultation with ADF&G Subsistence Division, must approve the SUP prior to the start of construction activities.

Cultural Resources

On October 7, 1980, the Office of Federal Inspector submitted a proposal to the Advisory Council on Historic Preservation (ACHP) for a Memorandum of Agreement (MOA) pursuant to §106 of the National Historic Preservation Act of 1966 and 36 CFR Part 800.4(d). The MOA was approved by representatives of the Department of Interior, Bureau of Land Management and Bureau of Indian Affairs, SHPO, and U.S. Fish and Wildlife Service. ANNGTC initiated informal consultation with the SHPO in March 2002 and learned of SHPO's desire to develop a Programmatic Agreement (PA) to replace the old 1982 MOA.

Lease Stipulation 2.16 (Cultural Resources) requires the Co-Applicants to undertake the affirmative responsibility to protect any cultural, historic, prehistoric and archeological resources that may be impacted while conducting pipeline activities. The Alaska Historic Preservation Act prohibits the appropriation, excavation, removal, injury or destruction of any state-owned historic, prehistoric (paleontological) or archaeological site without a permit from the Commissioner. The Co-Applicants will be required to take the affirmative responsibility to require their employees, agents, contractors, subcontractors and their employees to comply with the Alaska Historic Preservation Act. If any sites are discovered during the course of pipeline construction, maintenance, operations, or termination activities, the activity will cease and the SHPO and the appropriate coastal district will be notified immediately.

The Co-Applicants' actions that have the potential for affecting cultural resources include construction of the pipeline, and its associated temporary and permanent facilities. This

includes compressor stations, construction camps, material sites, storage yards, airports and other ancillary facilities.

The primary objective for the Project design phase is to ensure that the areas involved with the Project are surveyed to identify significant cultural resources. ANNGTC expended considerable effort and resources during the years 1978 through 1981 in not only conducting extensive summer field data collection programs, but in clearing, prior to field entry, any land disturbing activities. Over 50 percent of the pipeline centerline route has been cleared, in addition to the anticipated material sites and many access roads. Subsequently, in 2001, Foothills Pipe Lines Alaska, Inc. coordinated with SHPO and obtained updated Alaska Heritage Resource Survey (AHRs) files of archaeological and historic site location data for the entire right-of-way. Other permanent and temporary facilities constructed or activities outside of the pipeline right-of-way that are part of the Project will be surveyed and cleared for cultural resources prior to construction.

Mining

ADNR closed the ANGTS Project pipeline route to mineral entry under Mineral Closure Order 67. The order closed state land to entry for one-half mile on either side of the ANGTS Project route.

Pipeline Termination Activities

Impacts from pipeline termination activities would be short-term and similar to those described during construction.

SUMMARY FOR CRITERIA 2:

The Co-Applicants have demonstrated an extensive history of pipeline construction and operation in the U.S. and Canada, including pipeline construction and operation in northern environments. Many of the measures and precautions pertaining to safeguarding the health and safety of the public will also protect property located adjacent to the Project. The technical capabilities of the Co-Applicants to protect private property are the same as those that are relevant to protect public property. The Commissioner has determined that the Co-

Applicants proposed measures to protect State and private property and that compliance with the requirements of Lease will ensure protection of State and private property. The Commissioner is therefore satisfied that the Co-Applicants have the technical capability to protect State and private property interests.

In addition, as presented in the Summary for Criteria 6, from the financial records submitted, the Commissioner has found that the Co-Applicants, through TCPL, have the financial resources to pay all reasonably foreseeable damages for claims arising from construction, operation, maintenance, and/or termination of the ANGTS Project, for which the Co-Applicants may become liable.

The book value of the TCPL's equity is approximately \$4.6 billion dollars, and the current market value of TCPL is approximately \$9.5 billion dollars. Both the book and market values far exceed the Alaska Stranded Gas Act's financial requirements for consideration of the Co-Applicants as the sponsor for the proposed Project.

CRITERIA 3: Does the applicant have the technical and financial capability to take action to the extent reasonably practical to prevent any significant adverse environmental impact, including but not limited to, erosion of the surface of the land and damage to fish, wildlife and their habitat?

The Commissioner will require that the Co-Applicants Quality Assurance Program be approved concurrent with the final design approval. The Quality Assurance Program shall include the documented, planned and systematic actions necessary to provide evidence that the Co-Applicants are satisfying the right-of-way lease requirements for maintaining or protecting pipeline integrity, health, safety, and the environment. The Co-Applicants Quality Assurance Program shall require that audits be performed to ensure and document compliance with lease and other commitments. The Right-of-Way lease will require the Co-Applicants to submit a Construction Plan that addresses the work schedule and other information related to the construction of the ANGTS Project. The Construction Plan will be used by the state to develop a comprehensive construction oversight strategy. Prior to natural

gas being transported through the pipeline, the Co-Applicants shall develop and submit a Surveillance and Maintenance Program to detect and abate situations that endanger health, safety, the environment or the integrity of the pipeline.

The Quality Assurance Program will continue to be used as the tool for monitoring commitments made by the Co-Applicants in the application and the design of the ANGTS Project during the maintenance, operation, and termination of the pipeline. The Co-Applicants, their contractors and subcontractors are required to comply with the Quality Assurance Program, which must be approved by the Commissioner prior to issuance of the right-of-way lease. The Lease will require that any amendment to the Quality Assurance Program be approved by the Commissioner.

The Co-Applicants must specifically plan and design, construct, operate and maintain, and terminate the pipeline system in a manner to prevent serious and irreparable harm or damages to fish and wildlife resources, and consistent with federal and state conditions and stipulations. The Co-Applicants overall approach for protecting fish and wildlife resources is presented in their application.

Following is a summary of the information provided by the Co-Applicants in their application. Prevention of harm or damage to fish and wildlife resources will provide the primary level of protection, and involves two key steps: 1). Identification of the fish and wildlife resources in the area of the Project and their sensitivities to Project activities or facilities; and 2). Applications of appropriate environmental protection criteria in the planning and design phases of the Project.

The fish and wildlife resources in the area of the proposed Lease were previously studied and the sensitive time periods and locations were determined from research and field studies done in coordination with and state and federal resource agencies. The documents that resulted from this work include:

- Project's Environmental Master Guide;

- List of Sensitive Environmental Areas and Activity Restrictions; and
- List of Stream Crossings and Activity Restrictions

These documents are described further in the application. The Co-Applicants will continue to coordinate with state and federal resource agencies to evaluate and update the baseline fish and wildlife information and associated activity restrictions.

The prevention of damage to fish and wildlife resources in the planning and design phase of the Project involves selection of several key Project elements, including:

- Pipeline route and facility locations;
- Pipeline system design;
- Construction methods;
- Construction schedules;
- Rehabilitation methods; and
- Right-of-way maintenance methods.

The pipeline route was selected to reduce, to the extent reasonably practicable, harm to fish and wildlife resources by exclusively utilizing two existing transportation corridors, the Dalton, Elliott, and Richardson Highways from Prudhoe Bay to Delta Junction and the Alaska Highway from Delta Junction to the U.S.-Canadian border. This early Project planning has reduced the need to extend new access roads to construct and operate the pipeline and compressor stations. Alternative pipeline routings would involve substantial habitat alteration and destruction to create road access into otherwise inaccessible areas. In addition, Lease Stipulation 2.12 requires the Co-Applicants to, subject to existing rights vested in other parties, use existing facilities to the maximum extent feasible.

The State and the Co-Applicants intend that the Co-Applicants' liability arising from or in connection with the release or threatened release of existing contamination at a site shall be limited to liability for those releases or threatened releases of existing contamination on, at, or in the vicinity of a site only to the extent caused by the Co-Applicants, its agents or

contractors, subcontractors, employees servants, representatives, parent companies, affiliates, subsidiaries, officers, directors, any entity acting at the direction of Co-Applicants, or their agents or employees during or after the Co-Applicant's initial field activity on the site. The Co-Applicants will not be liable for failing to prevent the passive leaching or migration of existing contamination at a site into the air, land, or water. The limitation on Co-Applicant's liability is subject to the conditions set forth in Lease Section 20.

Compressor station sites were selected to minimize, to the extent reasonably practicable, harm to fish and wildlife resources by applying the Project's baseline fish and wildlife information and the associated activity restrictions as criteria. The proposed number and location of the compressor stations is subject to final design approval. The other permanent Project facilities would be located in existing developed areas including maintenance facilities at Fairbanks.

Inherent in the Project design are key features that will help prevent, to the extent reasonably practicable, harm to fish and wildlife resources, including:

- The pipeline will be buried entirely except at compressor stations, certain large river crossings, and at major fault crossings in compliance with pipeline safety regulations;
- The buried design will avoid creating a potential obstruction to ungulate and other large mammal movements across the Right-of-Way (as opposed to the aboveground portions of TAPS). Wildlife will have unobstructed access across the Right-of-Way;
- Permanent work pads and access roads are not necessary throughout the system for spill response (as is the case with TAPS). Instead, native vegetation will be allowed to colonize and establish in the Right-of-Way; and
- Compressor stations will not be occupied, reducing the amount of human activity and the potential for interactions with wildlife at the stations. Overall, there will be very little human activity along the Right-of-Way associated with the Project operation.

Construction of the pipeline system will take advantage of reasonably available opportunities to minimize harm to fish and wildlife habitat through the use of special methods, including

the use of ice and snow pads to support working equipment and to provide access roads to haul pipe and equipment. This is a proven method for minimizing damage to tundra vegetation on the North Slope. The construction methods are described in the application.

Construction methods for pipeline crossings of rivers, streams and wetlands have been identified to minimize, to the extent reasonably practicable, harm to fish and fish habitat as described in the application. The approach includes categorization of crossing types and selection of appropriate methods by applying specific selection criteria.

The construction schedule selected for the Project contributes substantially toward reducing impacts to fish and wildlife resources. By avoiding, when practicable, the seasons when most fish and wildlife species are present and active, the opportunity for direct impacts to most organisms will be minimized. The conditions of frozen soil and dormant vegetation in the winter will provide natural protections to the habitat during construction.

Rehabilitation of fish and wildlife habitat that may be disturbed by construction of the pipeline system will be performed according to the criteria and methodologies described in the application. The rehabilitation program will integrate other programs such as drainage and erosion control, visual resource protection, and water resource protection, among others, in the selection of site-specific rehabilitation methods. The rehabilitation program will apply specific criteria for creating conditions that are suitable for colonization of the disturbed areas by adjacent native plants, including important wildlife browse and cover species.

The Co-Applicants will develop, establish, and maintain environmental protection programs pursuant to Lease Stipulation 2.5.1 that will be integrated into the planning and design, construction, and operation phases. These include programs directed specifically at fish and wildlife protection and others that are directed at habitat protection, including:

- Air Quality Protection;
- Waste Management;
- Oil and Hazardous Materials Management;

- Water Resources Protection;
- Contaminated Sites Management; and
- Noise Control.

A key component of the Project's approach for protecting fish and wildlife resources is the training and education of construction managers, supervisors, and workers through a Briefings, Orientation and Education Program.

Integration of fish and wildlife protection and other environmental protection approaches into the overall Project organization will be accomplished through a Project Environmental Management System (PEMS) as described in the application. The PEMS will focus on achieving a high level of environmental protection and ensuring compliance with regulatory requirements.

Monitoring of fish and wildlife protection during all phases of the Project will be accomplished through the inspection program initiated under the Quality Management Program. The inspection program will be integrated with the PEMS to provide a comprehensive Project-wide system, implemented through all Project phases, to detect and abate conditions that could cause serious and irreparable harm or damage to fish and wildlife resources.

SUMMARY FOR CRITERIA 3:

As discussed under Criteria 2, the Co-Applicants, through their parent company TCPL, have extensive history of pipeline construction and operation in the United States and Canada, including work in northern environments. The State has reviewed the Co-Applicants' proposed measures to prevent erosion of the surface of the land and damage to fish, wildlife and their habitat and determined them to be acceptable. The Commissioner is therefore satisfied that Co-Applicants have the technical capabilities to prevent, to the extent reasonably practical, any significant adverse environmental impact, including but not limited to, erosion of the surface of the land and damage to fish, wildlife and their habitat.

In addition, as presented in the Summary for Criteria 6, from the financial records submitted, the Commissioner has found that the Co-Applicants, through TCPL, have the financial resources to pay all reasonably foreseeable damages for claims arising from construction, operation, maintenance, and/or termination of the ANGTS Project, for which the Co-Applicants may become liable.

The book value of the TCPL's equity is approximately \$4.6 billion dollars, and the current market value of TCPL is approximately \$9.5 billion dollars. Both the book and market values far exceed the Alaska Stranded Gas Act's financial requirements for consideration of the Co-Applicants as the sponsor for the proposed Project.

CRITERIA 4: Does the applicant have the technical and financial capability to take action to the extent reasonably practical to undertake any necessary restoration or re-vegetation?

The Co-Applicants will plan and design, construct, operate and maintain, and terminate the pipeline in a manner to prevent serious and irreparable harm or damages to vegetation and timber, and in compliance with the state conditions and stipulations.

The Co-Applicants will prevent unnecessary damage to vegetation by applying appropriate environmental criteria in the planning and design phases. This includes the selection of key Project elements:

- Pipeline route and facility locations;
- Construction methods;
- Construction schedules;
- Rehabilitation methods; and
- Right-of-Way maintenance methods.

The ANGTS Project route was selected to reduce any negative impacts to vegetation and timber resources by exclusively utilizing two existing transportation corridors, the Dalton Highway from Prudhoe Bay to Delta Junction and the Alaska Highway from Delta Junction to the U.S.-Canadian border. This early Project planning reduces the need to extend new

access roads to construct and operate the pipeline and compressor stations. Alternative pipeline routings would involve substantial damage to vegetation and timber to create road access into otherwise inaccessible areas.

The Co-Applicants previously completed the first step in addressing the protection of vegetation and timber resources along the selected pipeline route by identifying and mapping the mosaic of vegetation community types along the entire 745-mile pipeline right-of-way.

The Co-Applicants will take advantage of opportunities to minimize injury to vegetation through the use of special construction methods, including the use of ice and snow pads to support working equipment and to provide access roads to haul pipe and equipment. This is a proven method to minimize damage to tundra vegetation on the North Slope. The application of this and other construction methods will be determined by applying specific criteria as described in the application. In addition, the Project will take advantage of the natural protections provided to vegetation during winter dormancy.

Rehabilitation of areas that are disturbed by construction of the Project will be performed according to the criteria and methodologies described in the application, and the plans submitted in accordance with Stipulation 2.5.1 of the Lease. The rehabilitation program will integrate other programs such as drainage and erosion control, visual resource protection, and fish and wildlife protection, among others, in the selection of site-specific rehabilitation methods. The revegetation program will focus on creating conditions that are suitable for colonization of the disturbed areas by adjacent native plants, including timber-producing species. Native vegetation, including timber-producing species, will be allowed to colonize and establish in the right-of-way. Within the permanent right-of-way, some clearing of invading trees and brush will be necessary to allow aerial inspection and maintenance in accordance with company policies, specifications and procedures, and federal pipeline safety regulations. The pipeline right-of-way will cross approximately 17 miles of the Tanana Valley State Forest between MP 510 and MP 527 located about 40 miles southeast of Fairbanks. Timber within the Forest will be cleared and managed in accordance with applicable laws, regulations, and Forest policies.

Operation and routine maintenance of the pipeline system will impact vegetation and timber within the right-of-way. Routine brushing to allow for access and surveillance will be necessary along portions of the right-of-way. Major maintenance work such as the replacement of pipe sections, valves, or other buried components of the system may impact vegetation and timber that have colonized the right-of-way. Clearing and grading necessary to provide access to and clearing for work pads could impact the vegetation and timber.

The pipeline will have an expected life of at least 50 years. Any decommissioning of the pipeline facilities would be subject to approval by the appropriate state and federal agencies, including FERC abandonment approval under section 7(b) of the NGA.

Areas disturbed by construction of the pipeline system will be rehabilitated to restore the natural functions of vegetation and timber production, as well as erosion control, wildlife habitat, visual resources, and other relevant resource functions, in compliance with State conditions and stipulations.

Cleanup and erosion control work will be applied to all areas used or disturbed during the construction of the pipeline system. This includes the pipeline construction zones, access roads, material sites, temporary storage areas, disposal sites, and campsites. Temporary structures and debris will be removed. Large rock fragments will be used for riprap material or will be blended into the surrounding terrain within the right-of-way. Materials that cannot be used for revegetation will be disposed of in approved sites. All waterways will be cleared of temporary structures placed during construction and will be rehabilitated to prevent interference with fish migrations and natural drainage patterns.

Revegetation will include seeding and planting of all disturbed areas suitable for vegetation, in accordance with written recommendations from the local soil conservation authority or the State. The revegetation program will focus on creating conditions that are suitable for colonization of the disturbed areas by adjacent native plants, including timber-producing species. Revegetation will be used as appropriate for controlling erosion. Planting schedules

will be planned for optimum seasonal growth periods. Seeding of the final grade of the construction zone, material sites, and disposal sites will be done with conventional equipment and methods including aerial seeding and hydroseeding. Fertilizer, mulches, and soil stabilizers may be used appropriately to enhance growth and prevent erosion

Native vegetation, including timber-producing species, will be allowed to colonize and establish in the right-of-way. Within the permanent right-of-way, some clearing of invading trees and brush will be necessary to allow aerial inspection and maintenance in accordance with company policies, specifications and procedures, and federal pipeline safety regulations. Methods for restoring areas of vegetation harmed during operation and maintenance and termination activities will be the same as those described for construction.

The Right-of-Way Leasing Act requires consideration of the applicant's technical capability to undertake any necessary restoration and revegetation. Review of the application and the Co-Applicants' qualifications demonstrate that they have the requisite technical capability.

SUMMARY FOR CRITERIA 4:

As discussed under Criteria 2, based on their extensive history of pipeline construction and operation, including work in northern environments, the Co-Applicants exhibit the technical capabilities, to take action, to the extent reasonably practical and consistent with Lease terms, to undertake any necessary restoration, rehabilitation or revegetation. The State has reviewed the Co-Applicants' proposed measures to undertake any necessary restoration, rehabilitation or revegetation and determined them to be acceptable. The Commissioner is therefore satisfied that Co-Applicants have the technical capabilities to take action, to the extent reasonably practical, to undertake any necessary restoration, rehabilitation or revegetation.

In addition, as presented in the Summary for Criteria 6, from the financial records submitted, the Commissioner has found that the Co-Applicants, through TCPL, have the financial resources to pay all reasonably foreseeable damages for claims arising from construction, operation, maintenance, and/or termination of the ANGTS Project, for which the Co-Applicants may become liable.

The book value of the TCPL's equity is approximately \$4.6 billion dollars, and the current market value of TCPL is approximately \$9.5 billion dollars. Both the book and market values far exceed the Alaska Stranded Gas Act's financial requirements for consideration of the Co-Applicants as the sponsor for the proposed Project.

CRITERIA 5: Does the applicant have the technical and financial capability to protect the interests of individuals living in the general area of the right-of-way who rely on fish, wildlife and biotic resources of the area for subsistence purposes?

With the Commissioner's approval under Lease Stipulation 4.4.6.2, the Co-Applicants will develop, implement and maintain a Subsistence Users Protection (SUP) Program. The purpose of the SUP Program is to establish the criteria and methodologies to protect subsistence users during the design, construction and operation of the Project. The Project will implement the SUP through plans and procedures that are developed specifically to protect the interests of individuals living in the general area of the Project right-of-way who rely on fish, wildlife and biotic resources of the area for subsistence purposes.

Protection of subsistence users will require an understanding of which communities along the Project route rely on natural resources for subsistence, which resources are used for subsistence, the extent of associated subsistence use (both in harvest amounts and geographic use area, if available), the primary seasons of use, relevant socioeconomic information, issues of concern in rural communities along the proposed corridor, and the nature of the potential effects the Project could have on those users. In order to protect subsistence users and/or mitigate potentially adverse Project-related effects, this basic information is necessary.

The Commissioner, in consultation with the ADF&G, Division of Subsistence, shall approve the SUP Program prior to the start of construction activities.

SUMMARY FOR CRITERIA 5:

The State has reviewed the Co-Applicants' proposed measures to protect the interests of individuals living in the general area of the right-of-way who rely on fish, wildlife and biotic resources of the area for subsistence purposes and has determined them to be acceptable. Based on the implementation of these protective measures as approved by the Commissioner under Lease Stipulation 4.4.6.2, including consultation with ADF&G, Subsistence Division, the Commissioner is satisfied that Co-Applicants have the technical capabilities to protect the interests of individuals living in the general area of the right-of-way who rely on fish, wildlife and biotic resources of the area for subsistence purposes.

In addition, as presented in the Summary for Criteria 6, from the financial records submitted, the Commissioner has found that the Co-Applicants, through TCPL, have the financial resources to pay all reasonably foreseeable damages for claims arising from construction, operation, maintenance, and/or termination of the ANGTS Project, for which the Co-Applicants may become liable.

The book value of the TCPL's equity is approximately \$4.6 billion dollars, and the current market value of TCPL is approximately \$9.5 billion dollars. Both the book and market values far exceed the Alaska Stranded Gas Act's financial requirements for consideration of the Co-Applicants as the sponsor for the proposed Project.

CRITERIA 6: Does the applicant have the financial capabilities to pay reasonably foreseeable damages for which they may become liable or claims arising from the construction, operation, maintenance or termination of the pipeline?

AS 38.35.100 requires the applicant to have financial capability to protect State and private property interests and to take action to the extent possible: to prevent any significant adverse environmental impact; to restore or re-vegetate disturbed areas; to protect the interests of individuals in the general area who rely on fish, wildlife, and biotic resources for subsistence purposes; and to pay reasonably foreseeable damages for which the applicant may become liable on claims arising from the construction, operation, maintenance, and termination of the pipeline.

The book value of the TCPL's equity is approximately 4.6 billion, and the current market value of TCPL is approximately 9.5 billion, which far exceeds 10 percent of the estimated 6.8 billion dollar (2004) capital cost of the Project. Evidence of TCPL's net worth can be found in their first quarter 2004 Quarterly Report to Shareholders and the 2003 audited Annual Report.

Pursuant to AS 38.35.120(a)(14), if the Commissioner determines that the net assets of the Co-Applicants are insufficient to protect the public from damage arising out the construction or operation of the pipeline for which the Co-Applicants may be liable, the Commissioner may require that the Co-Applicants obtain and furnish liability and property damage insurance from a company licensed to do business in the state or furnish other security or undertaking upon the terms and conditions the Commissioner considers necessary.

Considering the financial capability of the Co-Applicants, the Commissioner will require that parent company TCPL execute an unconditional guaranty to construct, operate, maintain, and terminate the ANGTS Project.

From the financial records submitted, the Commissioner finds that TCPL, as the Guarantor for the Co-Applicants, has current financial resources sufficient to unconditionally guarantee the construction, operation, maintenance, and termination of the ANGTS Project consistent with the terms of the lease and all applicable laws and regulations. The requirement and form of the guarantee is set forth in Lease Section 21.

The Co-Applicants will be required to observe and abide by the stipulations contained in the Right-of-Way Lease for the ANGTS Project. These stipulations provide for: safeguards and plans to prevent damage to persons, the public and the environment; prevention of erosion and damage to fish and wildlife habitat; restoration and re-vegetation; protection of subsistence rights of the people who live in the general area of the right-of-way; and the protection of the public health and safety.

SUMMARY FOR CRITERIA 6:

The State has reviewed the Co-Applicants' financial resources with respect to the capability to pay all reasonably foreseeable damages for which the Co-Applicants may become liable on claims arising from construction, operation, maintenance, and/or termination of the ANGTS Project. TCPL will guarantee the Co-Applicants' commitments made under this Lease. The book value of the TCPL's equity is approximately \$4.6 billion dollars, and the current market value of TCPL is approximately \$9.5 billion dollars. Both the book and market values exceed the financial requirements for consideration of the Co-Applicants as Project sponsor for the proposed pipeline. While the ultimate financing of the construction of a \$6.8 billion pipeline will not be determined and obtained by any potential builder/carrier until terms and commitments for the long term shipment of natural gas through the completed system are consummated, TCPL's capitalization -- combined with its industry leading expertise in construction and operation of major natural gas pipeline systems in northern latitudes, and extensive portfolio of required permits and certificates already held -- establishes that TCPL and its Co-Applicants have the financial and technical capabilities to construct and operate the proposed ANGTS Project.

In addition, the State will not issue a NTP or other written authorization for the Co-Applicants to initiate any construction activity under the Lease, prior to the State's receipt from the Co-Applicants of an unconditional guarantee, meeting all requirements of Lease Section 21, guaranteeing the performance of all of Co-Applicants' duties and obligations under and by virtue of the Lease. If the Co-Applicants at the time of the initial request for construction authorization are a subsidiary of TCPL, then the guarantee shall be executed by TCPL. If an assignment of the Lease to an entity that is not a subsidiary of TCPL has been approved by the Commissioner prior to the initial request for construction authorization, the guarantee shall be executed by the assignee's guarantor as approved by the Commissioner under Section 23 of the Lease. The precise form of the guarantee the Commissioner may require will be finalized as the Project is developed, permitted and financed.

From the financial records submitted, the Commissioner finds that the Co-Applicants, through their Guarantor TCPL, have current financial resources sufficient to unconditionally guarantee the construction, operation, maintenance, and termination of the ANGTS Project

consistent with the terms of the lease and all applicable laws and regulations. The Lease provides a continuing right of the Commissioner to review the Lessees'/guarantors' financial resources throughout the Lease term.

PROPOSED DECISION AND ACTION

Transportation of hydrocarbons results in significant contributions to the general welfare of the people of Alaska. It is State policy that the development, use, and control of a pipeline transportation system be directed to make the maximum contribution to the development of the human resources of this state, increase the standard of living for all its residents, advance existing and potential sectors of its economy, strengthen free competition in its private enterprise system, and protect its incomparable natural environment.

The ADOR estimates that benefits from construction of the ANGTS Project for which this State Right-of-Way Lease application has been submitted to the State would include: \$6.8 billion spent on pipeline construction costs in Alaska; approximately 8,000 jobs during the peak of construction; approximately 105 permanent jobs; and at least \$18 billion in State revenues from royalty, severance, income taxes and property taxes during the construction phase and the initial 30 years of operation.

The ANGTS Project, as an interstate natural gas pipeline regulated by FERC, will be subject to the NGA requirements for accepting natural gas from other sources for transportation to market. Previously uneconomical or undeveloped gas fields in the State may become economically viable with the construction of the pipeline, as pipelines are the only viable means to transport the natural gas to market. Tie-ins to the main line for distribution of natural gas to the communities in the vicinity of ANGTS Project by a public utility in the future are possible, subject to approval by FERC and the Commissioner. The Co-Applicants will cooperate and provide interested parties information related to interconnection with the pipeline system. Currently, there are provisions for six intermediate gas take-off points along the pipeline. For planning purposes, these points are located in Anaktuvuk Pass, Fairbanks, Delta Junction, Dot Lake, Tok, and Northway.

The ANGTS Project will also directly and indirectly benefit local governments and the State through payment of royalty, severance, income tax and property tax. The ANGTS Project will also result in capital expenditures being distributed into local economies. Gas-related employment includes direct and indirect employment in the oil and gas and construction industries. In addition, vendors will provide gas supplies and services and private and public sector jobs are generated throughout a stimulated economy.

The ANGTS Project will utilize air, truck, and existing roads to support the Project. The increases in each form of transportation will have benefits and impacts. Benefits include increased revenues and employment. Any impact would be localized and of short duration. No long lasting effects are anticipated.

The State is encouraging the Co-Applicants to fill jobs with residents to the extent practical and possible. The Co-Applicants shall comply with, and shall require contractors and subcontractors to comply with, applicable laws and regulations regarding the hiring of residents of the State. Approximately 8,000 workers are expected to be employed at the peak of construction activity. The Co-Applicants have committed to take all appropriate steps to enhance employment and training opportunities for Alaska contractors and businesses, and their subsequent hiring of Alaskans. This will include sufficient notice time to Alaska businesses of the Co-Applicants' needs, so that Alaska firms may collaborate or compete with non-Alaska firms if so desired.

The ANGTS Project is the only natural gas transportation project currently authorized under U.S. and Canadian statutes to transport ANS gas to the lower-48 states. The comprehensive statutory and regulatory foundation for the ANGTS Project — including the ANGTA of 1976 in the U.S., the Northern Pipeline Act in Canada, and the Agreement between the United States and Canada on Principles Applicable to a Northern Natural Gas Pipeline (Agreement on Principles) — provides unique and streamlined procedures for expediting pipeline permitting and construction that are applicable only to the ANGTS Project. ANNGTC, as a Lease Co-Applicant, was selected and designated by the President, the

United States Congress, and the FERC to construct and operate the Alaska segment of the ANGTS Project. As such, the Co-Applicants are holders of the conditional FERC certificate of public convenience and necessity issued for the Project, the grantees of a right-of-way for the Project across federal lands in Alaska, and the holders of Clean Water Act Section 401 and Section 404 and Coastal Zone Management Act/ACMP Determinations for the ANGTS Project.

AS 38.35.100 requires that the Commissioner determine whether an applicant is fit, willing, and able to perform the transportation or other acts proposed in a pipeline Right-of-Way Lease application in a manner that is required by the present or future public interest. This Commissioner's Analysis has reviewed and considered the Co-Applicants' proposals and commitments, as set out in their application for the ANGTS Project, under the statutory requirements of the Alaska Right-of-Way Leasing Act (AS 38.35). Based upon this Analysis, and subject to my further consideration of any and all comments and submissions that may be submitted during the course of the public comment and hearing process for this Lease application, I make the following determinations:

1. The proposed ANGTS Project does not unreasonably conflict with existing uses of the land involving a superior public interest. The ANGTS Project will not unreasonably interfere with free access to navigable or public waters, nor will it unreasonably interfere with subsistence harvests or access to subsistence areas. The ANGTS Project, as proposed, will not conflict with state statutes, regulations, or ADNR policy. Stipulations to ensure protection of the public, fish, wildlife, and the environment are incorporated into the right-of-way Lease.
2. The Co-Applicants have the technical and financial capability to protect State and private property interests.
 - a. The Co-Applicants are technically and financially capable to design, construct, operate, maintain, and terminate the proposed pipeline. TCPL owns and operates one of the largest, and most sophisticated natural gas pipeline networks in the world, including over 24,000 miles of gas pipeline that transports the majority of Western Canada's natural gas

production. TCPL and its subsidiaries have accumulated a significant base of knowledge and information pertaining to building and operating a gas transportation system through Alaska and northern Canada, and have in place (with currently operating pipeline systems) the essential policies and management systems necessary to construct and operate the ANGTS Project and shall provide this expertise to the Co-Applicants throughout the Project.

b. The Co-Applicants, through TCPL, have the financial resources to pay all reasonably foreseeable damages for claims arising from construction, operation, maintenance, and/or termination of the ANGTS Project, for which the Co-Applicants may become liable. The book value of the TCPL's equity is approximately \$4.6 billion dollars, and the current market value of TCPL is approximately \$9.5 billion dollars. Both the book and market values far exceed the Alaska Stranded Gas Act's financial requirements for consideration of the Co-Applicants as the sponsor for the proposed Project. While the ultimate financing of the construction of a \$6.8 billion pipeline will not be determined and obtained by any potential builder/carrier until terms and commitments for long term shipment of natural gas through the completed system are consummated, TCPL's capitalization -- combined with its industry leading expertise in construction and operation of major natural gas pipeline systems in northern latitudes, and extensive portfolio of required permits and certificates already held -- establishes that TCPL and its Co-Applicants have the financial and technical capabilities to construct and operate the proposed ANGTS Project.

c. Issuance of a NTP or other written authorization for the Co-Applicants to initiate any construction activity under the Lease will be contingent upon the Co-Applicants providing an unconditional guarantee from TCPL (the "Guarantor"), guaranteeing the performance of all of Co-Applicants' duties and obligations under and by virtue of the Lease. The precise form of the guarantee the Commissioner may require will be finalized as the Project is developed, permitted and financed. If the Commissioner determines at any time, in the Commissioner's sole discretion, that the Guarantor's guarantee is insufficient to satisfactorily guarantee the performance of all the Co-Applicants' duties, obligations, and potential liabilities under and by virtue of the Lease, the Commissioner may require the substitution and delivery of a supplementary guarantee from the Co-Applicants or from a substitute guarantor or insurer, with any provisions the Commissioner reasonably finds necessary. The Co-Applicants shall submit, on an annual basis, the Guarantor's annual financial statement and balance sheet, or

such financial documentation of any required substitute guarantor, that the Commissioner requests.

d. If the Co-Applicants, at their option or as required by the Commissioner under (c) of this section, obtain commercially available insurance coverage for the Lease and the Co-Applicants' activities in, on or related to the Lease, the Co-Applicants shall cause the State to be named as an additional insured on all such insurance policies obtained and maintained by the Co-Applicants, except that such insurance coverage shall not cover or apply where the sole proximate cause of the injury or damage is the willful misconduct by the State or anyone acting on behalf of the State. Any commercially available insurance purchased by Co-Applicants under this section will not be construed to limit in any way the Co-Applicants' liabilities or responsibilities under the Lease.

3. The Co-Applicants, through TCPL, have the technical and financial capability to: take action to the extent reasonably practical to prevent any significant adverse environmental impact, including erosion of the surface of the land and damage to fish and wildlife and their habitat; undertake any necessary restoration or re-vegetation; and protect the interests of individuals living in the general area of the ANGTS Project who rely on fish, wildlife, and biotic resources of the area for subsistence purposes.

a. The ANGTS Project Lease application proposes to utilize proven natural gas pipeline construction design. The USDOT Research and Special Programs Administration (RSPA), acting through the Office of Pipeline Safety (OPS), administers the USDOT's national pipeline safety regulatory program, pursuant 49 USC 601 to assure safe transportation of natural gas, petroleum and other hazardous materials by pipeline. The USDOT/ OPS is the primary governmental authority responsible for ensuring the ANGTS Project design is compliant with 49 CFR 192. The State Right-of-Way Lease therefore relies on final USDOT/OPS compliance verification of the ANGTS Project technical design as a condition precedent to initiation of pipeline construction activities.

b. Prior to initiating construction activities, the Co-Applicants are required (pursuant to Lease Stipulation 2.5) to submit 25 final, Project-specific plans developed to meet all of the specific performance standards set out in the Lease Stipulations regarding protection and management of land, water and air resources that are potentially affected by the construction

and operation of the pipeline for State review and approval. Several of the required plans have been submitted and tentatively approved -- subject to revision/updating/final approval prior to initiation of construction to ensure compliance with any revised regulatory standards in effect at that time. All remaining plans, and updates of the tentatively approved plans, will be prepared and submitted as a part of the final design and construction planning process.

c. Prior to initiating construction activities, the Co-Applicants are required to submit for State and Federal review and approval: a Construction Plan and Summary Network Analysis that outlines and describes work schedules; all permits or authorizations required prior to initiation of specific construction activities and their interrelationship; construction sequencing, including maps depicting the boundaries of the construction zones; and providing for the following: public awareness programs; notice and scheduling of disturbance to public and private improvements; air quality; blasting; camps; clearing; corrosion control; cultural resource preservation; environmental briefings; erosion and sedimentation control; fire control; liquid waste management; material exploration and extraction; oil and hazardous substance contamination management; oil and hazardous substances control, cleanup and disposal; overburden and excess material disposal; pesticides, herbicides and chemicals; pipeline contingency; quality assurance/quality control; restoration; river training structures; solid waste management; surveillance and maintenance; visual resources; wetland construction; seismic; and human/carnivore interaction. The Co-Applicants are not authorized to initiate any construction activity until the Construction Plan is reviewed and approved by the Commissioner.

d. Prior to any construction of the ANGTS Project, the Co-Applicants are required to enter into an agreement with the State DOT/PF which shall include: compensation for costs of increased maintenance or repair of facilities and highways; permits; costs of permits, design/plan reviews, on-site inspections; insurance, indemnification and defense of 3rd party claims; safety issues; use of Yukon River Bridge; conflicts with existing permit holder or utility uses; relocation of highways or utilities; security measures; environmental protection, clean-up or mitigation during construction; use of airports and airport facilities; Atigun Pass issues; traffic Controls; encroachments; highway integrity, repair and maintenance; mineral/material removal and use; DOT/PF access to construction sites; coordination and Scheduling of construction activities; coordination with approvals by other affected agencies

or jurisdictions; potential off-set of existing DOT/PF state highway rights-of-way; and other issues relating to Co-Applicants' use of the DOT/PF rights-of-way, transportation facilities or state highways or impacts related to construction (Lease Stipulation 3.1).

e. Prior to final design approval, the Co-Applicants are required to submit for State and Federal review and approval a Quality Assurance Program. The Quality Assurance Program shall include the documented, planned and systematic actions necessary to provide evidence that the Co-Applicants are satisfying the right-of-way lease requirements for maintaining or protecting pipeline integrity, health, safety, and the environment. The Co-Applicants' Quality Assurance Program shall require that audits and assessments be performed to ensure and document compliance with the lease and other commitments. The Quality Assurance Program will continue to be used as the tool for monitoring commitments made by the Co-Applicants in the application and the design of the ANGTS Project during the maintenance, operation, and termination of the pipeline.

f. Prior to natural gas being transported through the pipeline, the Co-Applicants are required to develop and submit a Surveillance and Maintenance Program (Lease Stipulation 2.14), providing for detection and abatement of situations that endanger health, safety, the environment or the integrity of the pipeline for review and approval by the Commissioner. This program will be implemented in all maintenance, operations, and termination activities of the ANGTS Project. The Co-Applicants will, as part of the Annual Report provided under Lease Stipulation 2.7, submit to the Commissioner a written analysis of changes in conditions as documented by records gathered from this Surveillance and Maintenance Program. This annual report will document cumulative changes and changes from the previous year, effects of the changes, and the proposed actions to be taken related to the noted changes.

g. prior to construction, the Co-Applicants are required to develop a Subsistence Users Protection (SUP) Program (Lease Stipulation 4.4.6.2). The Commissioner, in consultation with the ADF&G, Division of Subsistence, shall approve the SUP Program.

5. The Co-Applicants shall agree in the Lease that, in the construction, maintenance, operation, and termination of the ANGTS Project, they will comply with, and require contractors and their subcontractors to comply with, all applicable and valid laws and

regulations regarding the hiring of residents of the state. The right-of-way lease encourages the Co-Applicants, contractors and subcontractors to employ local and Alaska residents and contractors for work performed on the leased area.

6. Failure of the Co-Applicants to begin construction of the pipeline system within four (4) years after commercial arrangements sufficient to secure financing for construction are available to the Co-Applicants or to the Guarantor, subject to possible extension by the Commissioner, in the Commissioner's sole discretion, for good cause upon the Co-Applicants' request to the Commissioner, shall be grounds for forfeiture of the Lease in an action brought by the Commissioner in the Superior Court of Alaska.

CONCLUSION

Based on the foregoing, and supported by all information contained in and considered by this Analysis, I reach the preliminary conclusion that the Co-Applicants are fit, willing and able to construct, operate, maintain and terminate the proposed ANGTS Project as presented and described in their application for State Right-of-Way Lease, and direct that the following three actions be taken:

1. The Department of Natural Resources shall make copies of this Commissioner's Analysis, copies of the Lease application and its supporting documents, and copies of the draft ANGTS Project Right-of-Way Lease available at cost to any member of the public requesting copies.
2. The Department shall solicit written comments and provide for public hearings regarding the leasing of state land for the ANGTS Project, as depicted in the application (ADL 403427), the Commissioner's Analysis, and the draft ANGTS Project Right-of-Way Lease. To solicit public comments, ADNDR will place public notices in newspapers of general circulation and public buildings in Anchorage, Fairbanks, Tok, Northway, Barrow, Delta Junction, and Salcha. Public hearings will be held in Anchorage, Barrow, Fairbanks, Delta Junction, Tok, and Northway between November 16 and December 10, 2004. The North Slope and Fairbanks North Star Boroughs, local governments, and local ANCSA

corporations, and Native Tribal governments will be notified. Written comments must be received by the Alaska Department of Natural Resources, State Pipeline Coordinator's Office, 411 West Fourth Avenue, Suite 2C, Anchorage, Alaska 99501, on or before 5:00 p.m. on December 15, 2004.

3. The Co-Applicants shall provide to the ADNR a corporate resolution authorizing a particular individual to represent and sign for the Co-Applicants in the execution of the lease on behalf of the Co-Applicants.

Following completion of the public comment and hearing process, and consideration of all comments received, I will make a final determination on the application under AS 38.35.100. The Commissioner of the Department of Natural Resources is charged under AS 38.35.100 with the duty to make the determinations required by this statute. On the basis of the entire record developed before and during the public comment period, I will determine whether the applicant is "fit, willing, and able" to perform all of the acts proposed by the ANGTS Project Right-of-Way Lease application in a manner required by the present or future interest as set forth in AS 38.35.100. For this Analysis I have reviewed all of the required areas of AS 38.35.100, and this Analysis will form the basis of my decision under AS 38.35.100. If I do not alter my Analysis following the period of public comment and if the Co-Applicants meet all of the conditions precedent, then this Analysis shall constitute the Commissioner's Final Decision and I will offer the Co-Applicants the Right-of-Way Lease. The ANGTS Project Right-of-Way Lease will include covenants and stipulations determined necessary to protect the interests of the residents of the State of Alaska.

Within one year from the date that natural gas is transported through the pipeline system, the Co-Applicants are required to provide to ADNR an approved survey of the pipeline depicting the as-built location of the pipeline and a request to relinquish the construction portion of the Right-of-Way.

/s/ Tom Irwin
Tom Irwin, Commissioner
Alaska Department of Natural Resources

October 13, 2004
Date

REFERENCES

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ATTACHMENT A

RIGHT-OF-WAY LEASE FOR THE
ALASKA NATURAL GAS TRANSPORTATION SYSTEM
ADL 403427