

AN OVERVIEW OF THE SOCIAL EFFECTS POSSIBLE  
UNDER THE NORTHWEST GAS PIPELINE PROPOSAL

Prepared for the  
Gulf Interstate Corporation

by  
John A. Kruse

Institute of Social, Economic and Government Research  
University of Alaska  
Anchorage-Fairbanks-Juneau

June 10, 1976

The social effects of the Alaska Highway gas pipeline would include changes at the individual, family, and community levels. Our discussion of these effects is based on a breakdown of communities into five categories:

- A. Major support centers (Anchorage, Fairbanks)
- B. Major staging areas (Fairbanks, Whitehorse)
- C. Construction camp locations (Tok, Northway, Delta, and camps located north of Fairbanks)
- D. Communities along the pipeline corridor and major supply corridors (approximately 11 small Native communities, 5 small non-Native communities)
- E. Communities exporting labor (throughout Alaska)

Within each of the above categories the projected social effects would differ by community according to at least the following factors:

1. Extent of experience with the construction phase of the trans-Alaska oil pipeline and other major projects (e.g., OCS exploration, highways, defense).
2. Degree and success of community integration with a regional cash economy.
3. Presence of critical limitations to community growth, such as a lack of private land, potable water, employable local manpower, or highway links with the rest of the state.
4. Conflicts with other sectors at the community resource base, such as the tourist industry and subsistence activities.
5. The timing and occupational characteristics of the manpower required for the sector of the gas pipeline in which a given community is located.

6. The extent to which construction activities are based within camps as opposed to nearby towns.
7. Community attitudes toward social change, including alterations in community size, the social characteristics of its resident population, and alteration in the social characteristics of a community's transient population.
8. Community attitudes towards planning.

We intend to discuss the social effects of the Northwest gas pipeline proposal in the context of the five community categories and eight key factors mentioned above. For a discussion of the alternative routes, we refer the reader to the report submitted to the Bureau of Land Management.<sup>1</sup> All qualifications contained in that report apply here as well.

---

<sup>1</sup>Kruse, John A. A Cursory Comparison of Social Impacts of Alternative Gas Pipeline Routes from Prudhoe Bay, Alaska, Institute of Social, Economic, and Government Research, University of Alaska, December 23, 1975. (Copy attached.)

### A. Major Support Centers

The Anchorage region clearly would provide the bulk of the required support services in Alaska. MAP projections indicate a continued high growth rate for the area, and one can expect continued bottlenecks in the expansion of community services. In addition, the scarcity of large lot, single family housing sites would continue to result in an escalation of land prices, an expansion into the agricultural and rural recreational areas in the Matanuska and Susitna valleys, as well as a further shift to higher density housing.

The incidence of social impacts on the Anchorage population is difficult to project in view of its high turnover rate. Available data for Fairbanks, discussed below, suggest that long-term Anchorage residents are more likely to bear the brunt of social costs, not receive as many of the social and economic benefits, and to prefer the city as it was at an earlier time.

The relatively smooth growth pattern projected for Anchorage is not likely to be observed in Fairbanks due to its heavy dependence on construction employment. Although much of the employment generated by the oil pipeline construction activities is isolated within the construction camps, a substantial portion of the Fairbanks population (22 percent of the households) is currently employed by Alyeska or a subcontractor (see Table 1).<sup>1</sup> The high proportion of construction manpower among Fairbanks households can be seen in Table 2. Most of those working on the pipeline have been residing in the Fairbanks area three years or less (see Table 3). Not surprisingly,

---

<sup>1</sup>Tables 1 through 11 are based on a preliminary analysis of 268 interviews presently completed in a probability sample of 500 Fairbanks households. The results are subject to modification as the study is not yet complete. Kruse, J. A., Institute of Social Economic and Government Research, Spring, 1976.

Table 1

FAIRBANKS COMMUNITY SURVEY

PIPELINE COMPANY EMPLOYMENT  
(percentage distribution)

---

	<u>Percent</u>
Presently working for pipeline company	22
Trying, interested, or possibly interested in becoming employed by pipeline company	24
Not employed by pipeline company and not interested	<u>54</u>
Total	100
Number of respondents	265

---

Table 2

FAIRBANKS COMMUNITY SURVEY

OCCUPATION OF HEAD OF HOUSEHOLD  
(percentage distribution)

---

	<u>Percent</u>
Professional-Technical	24
Managerial-Administrative	15
Sales	4
Clerical	6
Craftsman	23
Operatives	11
Transport	8
Laborers	3
Farm	0
Service	<u>6</u>
Total	100
Number of respondents	257

---

Table 3

FAIRBANKS COMMUNITY SURVEY

LENGTH OF RESIDENCE BY PIPELINE COMPANY EMPLOYMENT  
(percentage distribution)

<u>Length of Residence</u>	<u>Working for Pipeline Co. Percent</u>	<u>Trying, Interested or Possibly Interested Percent</u>	<u>Not Employed or Interested Percent</u>
Three years or less	69	45	35
Over three to ten years	12	33	16
Over ten years	<u>19</u>	<u>22</u>	<u>49</u>
Total	100	100	100
Number of respondents	59	64	142

Table 4

FAIRBANKS COMMUNITY SURVEY

LENGTH OF RESIDENCE BY RECEIVING OF BENEFITS OR BEARING COSTS  
(percentage distribution)

<u>Length of Residence</u>	<u>Receiving Benefits Percent</u>	<u>Bearing Costs Percent</u>	<u>Neither or Both Percent</u>
Three years or less	61	32	49
Over three to ten years	13	21	22
Over ten years	<u>26</u>	<u>47</u>	<u>29</u>
Total	100	100	100
Number of respondents	67	121	77

therefore, it is the newcomers that are primarily deriving the benefits of pipeline impact and the long-term residents who are bearing the costs (see Table 4).

In part, the negative impacts caused by rapid community growth would not be repeated during the construction of a gas pipeline. The construction boom recently experienced has resulted in significant capital investments in schools, telephone systems, utilities, and private housing stocks. Some support services, however, were transferred from local to absentee ownership, thus increasing the flow of money out of the community.

A further rise in the cost of living accompanied by shortages of manpower and supplies directed to pipeline construction activities can be expected during another construction boom. While incomes of Fairbanks households have risen over the period of pipeline construction (see Table 5), pipeline employees earn considerably higher salaries (see Table 6) with a resultant drain on manpower and loss in status of professional positions.

Since Fairbanks employment will follow a boom-bust pattern with regard to pipeline construction, post-construction social effects of the oil pipeline will, in large part, depend on the speed at which outmigration will occur. Table 7 indicates that a serious discrepancy may exist between occupational supply and demand. While a substantial 37 percent of those heads of households who are engaged in a professional-technical occupation plan to leave in the next two years, only 21 percent of the blue collar heads of households have similar plans. A comparison with the occupational distribution of Fairbanks residents presently holding pipeline jobs suggests a surplus of blue collar workers (see Table 8). Furthermore, 40 percent of

Table 5

FAIRBANKS COMMUNITY SURVEY

INCOMES OF HOUSEHOLDS  
(percentage distribution)

<u>Income</u> <u>(thousands of \$)</u>	<u>Percent</u> <u>1973</u>	<u>Percent</u> <u>1974</u>	<u>Percent</u> <u>1975</u>	<u>Percent</u> <u>1976</u>
Under 12,000	33	20	15	10
12,000-24,999	43	40	23	21
25,000-39,999	19	30	34	29
Over 39,999	<u>5</u>	<u>10</u>	<u>28</u>	<u>40</u>
Total	100	100	100	100
Number of Respondents	246	253	260	238

Table 6

FAIRBANKS COMMUNITY SURVEY

HOUSEHOLD INCOME BY PIPELINE COMPANY EMPLOYMENT  
(percentage distribution)

<u>Income</u> <u>(thousands of \$)</u>	<u>Working for</u> <u>Pipeline Co.</u> <u>Percent</u>	<u>Trying, Interested</u> <u>or</u> <u>Possibly Interested</u> <u>Percent</u>	<u>Not Employed</u> <u>or Interested</u> <u>Percent</u>
Under 12,000	3	19	17
12,000-24,999	3	22	31
25,000-39,999	35	38	32
Over 39,999	<u>59</u>	<u>21</u>	<u>20</u>
Total	100	100	100
Number of respondents	58	63	136

Table 7

FAIRBANKS COMMUNITY SURVEY

OCCUPATION OF HEAD BY PLANS TO MOVE FROM FAIRBANKS  
(percentage distribution)

<u>Plans to Move Within:</u>	<u>Prof-Tech Percent</u>	<u>Mgr-Sales-Cler-Serv Percent</u>	<u>Crafts-Operat-Trans-Laborers-Farm Percent</u>
Next 6 months	21	9	12
Next 2 years	16	16	9
In the future	21	19	22
No plans to move	<u>42</u>	<u>56</u>	<u>57</u>
Total	100	100	100
Number of respondents	62	78	117

Table 8

FAIRBANKS COMMUNITY SURVEY

OCCUPATION OF HEAD BY PIPELINE EMPLOYMENT  
(percentage distribution)

	<u>Prof-Tech Percent</u>	<u>Mgr-Sales-Cler-Serv Percent</u>	<u>Crafts-Operat-Trans-Laborers-Farm Percent</u>
Presently working for pipeline company	13	17	28
Trying, interested, or possibly interested in becoming employed by pipeline company	28	24	24
Not employed by pipeline company and not interested	<u>59</u>	<u>59</u>	<u>48</u>
Total	100	100	100
Number of respondents	61	76	117

those residents here three years or less have no plans to move from Fairbanks (see Table 9). A trans-Alaska gas pipeline route may <sup>mitigate</sup> delay a manpower surplus, at least temporarily, smoothing the changes in economic activity. A delay in gas pipeline construction might, however, aggravate the negative social impacts by delaying outmigration.

A gas line route passing near Fairbanks is currently favored by 70 percent of the adult population, <sup>surveyed</sup> (see Table 10). This percentage varies by employment status with respect to the pipeline (see Table 11). Many local residents explain their support by saying that the negative impacts of construction have already occurred and it is now important to prevent a serious decline in economic activity.

The long-range social effects of the Northwest gas pipeline construction on the Fairbanks region are likely to include an economic downturn during the post-construction phase which will range in degree from somewhat less to much less than that projected for the period following the oil pipeline, depending on oil and gas activities in the Interior, North Slope, and Outer Continental Shelf.

Table 9

FAIRBANKS COMMUNITY SURVEY

LENGTH OF RESIDENCE BY PLANS TO MOVE FROM FAIRBANKS  
(percentage distribution)

<u>Plans to Move</u>	<u>Length of Residence</u>		
	<u>3 Years or Less Percent</u>	<u>Over 3- 10 Years Percent</u>	<u>Over 10 Years Percent</u>
Within next 6 months	22	8	4
Within next 2 years	20	8	5
In the future	18	23	24
No plans to move	<u>40</u>	<u>61</u>	<u>67</u>
Total	100	100	100
Number of respondents	120	52	96

Table 10

FAIRBANKS COMMUNITY SURVEY

ATTITUDE TOWARD A GAS PIPELINE PASSING NEAR FAIRBANKS  
(percentage distribution)

	<u>Percent</u>
Strongly favor	36
Mildly favor	34
No opinion	8
Mildly oppose	12
Strongly oppose	<u>10</u>
Total	100
Number of respondents	267

Table 11

FAIRBANKS COMMUNITY SURVEY

ATTITUDE OF A GAS PIPELINE PASSING NEAR FAIRBANKS

BY PIPELINE COMPANY EMPLOYMENT  
(percentage distribution)

---

	<u>Working for Pipeline Co. Percent</u>	<u>Trying, Interested or Possibly Interested Percent</u>	<u>Not Employed or Interested Percent</u>
Strongly favor	52	33	29
Mildly favor	36	33	35
No opinion	7	11	7
Mildly oppose	3	9	18
Strongly oppose	<u>2</u>	<u>14</u>	<u>11</u>
Total	100	100	100
Number of respondents	59	64	141

---

B. Major Staging Areas (Fairbanks, Whitehorse)

It is beyond the scope of this report to consider the social effects of the Alaska Highway gas route on Whitehorse. The Canadian portion of the proposed line would be handled as a separate operation. It would be difficult for job seekers from the lower 48 to obtain employment through a Canadian union hiring out of Whitehorse. For this reason, transients can be expected to continue on to Fairbanks, the most probable hiring center.

We have previously given a brief overview of the social effects of a gas pipeline on Fairbanks in its role as a support center. Fairbanks is also the major staging area as plans call for pipe to be landed at Seward, transferred by rail to Fairbanks, double-jointed there, and distributed by truck. The distinction between support and staging activities is somewhat arbitrary since the support activities will primarily involve the management of construction. Operations management is likely to primarily occur in Anchorage.

The demands created by oil pipeline construction activities have resulted in heavy capital investments in warehousing, equipment, and service facilities. The high local construction employment generated overlapped with employment demands for the pipeline construction activities and may have resulted in an over-dependence on the construction sector. Since these facilities would be used for the construction phase of the gas pipeline, it is possible that construction employment will not peak (and later fall) to the degree observed for the oil pipeline. Alternatively, a shift in construction may occur whereby

the management and service potential of the Fairbanks area may be realized. The latter would be risky not only because it would involve another local construction boom but also because it is less certain that a large management operation can continue to be supported in Fairbanks.

The employment picture is critical to an evaluation of the social effects of the proposed gas line on the Fairbanks area. Dramatic shifts in employment opportunities have set in motion a chain of effects ranging from the arrival of new families possessing no money, few skills, and little chance of obtaining housing on the one hand to the departure of long-term residents in the face of rising costs and a changing town where a stranger is more frequently seen than a friend. Other residents appear to have personally experienced few of these social effects. Research is now underway to assess the scope and distribution of social effects on the Fairbanks population.<sup>3</sup>

---

<sup>3</sup>Kruse, J. A. and Kleinfeld, J. K., Institute of Social, Economic and Government Research. A household survey based on a probability sample of 500 Fairbanks households was 60% complete as of June 6, 1976. Results will be reported in the fall of 1976.

C. Major Camp Locations (Tok, Delta, Northway)

Construction camps north of Fairbanks are relatively isolated and will not directly effect existing communities. For this reason, our discussion is directed to the existing camp at Delta and the proposed camps at Tok and Northway. Two Alyeska construction camps from south of Delta are to be moved to locations at Tok and Northway. Peak employment at each camp might reach 1,000-1,500 in the summer. The planned construction season would occur between March and late November. Civil work is planned to commence in March, 1978.

The communities of Tok, Delta, and Northway possess widely divergent social characteristics.<sup>4</sup> Tok is a small, primarily non-Native highway community service as a tourist stop and sub-regional commercial and service center. The Tok community has already experienced the effects of pipeline construction in the form of increased truck traffic, increased volume of transient job seekers, a lack of available local manpower, decreased tourist activity, housing shortages, as well as rising family incomes. The population of Tok has increased from 214 in 1970 to an estimated 450 in 1975.<sup>5</sup> In part, this population increase is due to construction and transportation workers who have decided to use Tok as a home base.

A construction camp located near Tok is likely to draw on the skills of residents in the blue-collar trades. Continued growth in permanent and transient populations may further erode the community potential for tourist trade and strain local services .

---

<sup>4</sup> Alan Epps, University of Alaska Cooperative Extension Service provided much of the background information on the communities between Fairbanks and the Canadian border.

<sup>5</sup> Fairbanks Town and Village Association for Development, Inc., Community Facilities Summary, October, 1975.

The community of Glennallen provides a useful comparative case in view of the oil pipeline construction camp located there and its similar size and highway orientation. Glennallen has experienced significant personal income gains, improvement of housing stock, and a growth in community infrastructure.<sup>6</sup> The ability of Glennallen to respond to growth pressures has been limited by a severe lack of private land and high construction costs. While private land holdings are plentiful in the Tok area (although much is owned by non-residents), high construction costs may continue to result in a deficit in low to moderate cost housing.

Both Tok and Glennallen residents share a strong antipathy to government interference. Tok residents, however, appear more willing to provide community services for themselves and may be able to respond to growth pressures in that sector. Non-resident control of the local power utility, a scarcity of good water supplies, and a lack of solid waste disposal sites may become problems in the Tok area.

A recent opinion poll of Tok residents indicates a level of support among adult residents for a gas line corridor nearby that is similar to the support found in Fairbanks (70 percent).<sup>7</sup> There is some evidence, however, that there is less support among high school age youth in the Tok area. Both age groups rank a pipeline construction center as the least preferable alternative on which to establish a community economic base (the other alternatives being: tourism, federal and state programs, resource development, regional supply and service center, transportation).

---

<sup>6</sup>Institute of Social, Economic and Government Research, Copper River-Wrangell Mountains Region Socio-Economic Profile (working draft), March 30, 1976.

<sup>7</sup>Morgan, Ray and Epps, Alan, Cooperative Extension Service, University of Alaska, Tok, Alaska Opinion Poll, May, 1976, mail questionnaire of 107 residents.

The construction camp at Delta would continue to be used under the Northwest gas pipeline proposal. Delta has experienced similar effects to those outlined for Tok (truck traffic, transients, local manpower deficit, drop in tourist activity, housing shortages) due to its highway orientation. The effect of the construction camp itself has been not only to magnify the actual extent of change but also to generate local fears concerning the occurrence of problems. Such expectations have led to decreased use of local commercial facilities and an increase in confrontations between pipeline workers and local residents. The location of the camp at Delta has also led to an influx of families of pipeline workers.

In contrast to Tok, where many residents are engaged in the construction trades, Delta residents are primarily oriented toward nearby Fort Greely. A large contingency of retired military live in Delta and the community's economy has traditionally been dependent on the military base. <sup>Delta</sup> Tok also has a comparatively successful farming community by Alaska standards and caters to the summer tourist trade. The farming community has benefitted from a demand for hay in connection with oil spills but has been hurt, as well, by an escalation of land prices and resultant subdivision of agricultural land. Land speculation, in general, is more salient in Delta than in Tok.

The community of Delta has not been able to successfully respond to a need to expand community services. An unstable political situation has resulted in a deterioration of community services which would be intensified by continued use of the Delta construction camp.

The community of Northway, located on a side road about seven miles off the Alaska Highway, is populated by both Natives and non-Natives, the latter being primarily employed by the FAA and the local lodge and gas facilities.

The Native community suffers from a poor adjustment to high levels of western contact and is reported to have relatively high rates of alcoholism, broken homes, and welfare cases. The location of a large construction camp nearby is not likely to result in the relatively successful community response projected for Tok. Labor participation rates would be low and contacts between construction workers and village residents would probably aggravate existing social problems. Physical disruption and contact with transients in the village itself should be less than for those communities located on the Alaska Highway itself. The residents of Northway engage in subsistence activities but it is not known to what extent these activities would be disrupted by the construction of a gas line.

D. Communities Along the Proposed Pipeline Corridor

The communities along the pipeline corridor north of Fairbanks have already experienced some of the social effects of the oil pipeline. Only Wiseman and Livengood are located near the pipeline and these communities would probably not be additionally changed by a gas pipeline. The major social effects for the remainder of the communities north of Fairbanks have been related to changes in employment opportunities for persons willing to leave their community. These communities can be thus more appropriately discussed under the heading of communities which export labor.

Present plans call for the pipeline to closely follow the highway between Delta and the border. Communities located close to the road (including Dot Lake and, to a lesser extent, Tanacross) are vulnerable to severe physical disruption. The extent of the social impacts range from the need to physically remove existing structures to the temporary inconveniences incurred by the movement of materials and equipment. A more precise estimate can only be made when the engineering for the route has been completed.

The communities of May Creek, Dot Lake, Tanacross, and Tetlin are located along the proposed corridor and have not been previously discussed. Proceeding southeast from Delta along the Alaska Highway, the first community is May Creek, a religious settlement of about 200 located somewhat off the main highway. Community residents wish to remain isolated and as self-sufficient as possible, growing their own food and fiber. The youth of the settlement have at times obtained employment outside the community and may take advantage of local employment opportunities provided by pipeline construction or fill jobs vacated by others. In view of the purpose for which

May Creek was established, a major construction effort would require careful planning to avoid a serious disruption of the community.

Dot Lake is the next community to the southeast. It is reported to have a current population of 24 non-Natives and 45 Natives, an increase of 60 percent over the 1970 population.<sup>8</sup> The Dot Lake Native community is active in the regional Native corporation, Doyon, and its non-profit counterpart, the Tanana Chiefs Conference. The community has been relatively successful in adapting to western cultural influences. Residents of Dot Lake work for the government, on road or other construction, and recently have been employed on the pipeline. Hunting and trapping activities occur in winter. Residents are likely to participate in employment opportunities provided by the gas pipeline.

The community of Tanacross is primarily Native, has shared in the exposure to western culture experienced by other highway communities, and has adjusted to such influences with a level of success intermediate to Dot Lake and Northway. Tanacross, as with other Native communities in the area, faces the challenge of mixing subsistence pursuits with rising material expectations. Seasonal trapping and carpentry, highway construction, and fire fighting work have, in part, met the increasing need and/or desire for a cash income. The construction of a gas pipeline near the community would be likely to create a salient alternative source of seasonal employment. Acting against this incentive is the possible necessity of having to travel to Fairbanks to participate in the union call, or worse, being transferred to a construction

---

<sup>8</sup>Fairbanks Town and Village Associa, Op Cit.

camp away from home. In any case, Native participation in pipeline employment opportunities will largely depend on the existence of a policy to hire Natives coupled with a means to disseminate employment information and actively recruit Native manpower. The long-range effects of the pipeline should not be expected to include a stable economic base and, in most cases, it appears that job opportunities are correctly perceived as a temporary source of seasonal employment.

The final community to be discussed under the category of communities located along the proposed pipeline corridor is Tetlin. Presently unconnected by road to the state highway system, the residents of Tetlin have enjoyed the ability to better control the degree of contact with other cultures. This is not to say Tetlin residents have not sought employment outside the community. The lack of easy access not only limits unsolicited outside contact it also makes it expensive to leave the community to seek employment or to obtain food and fuel.<sup>9</sup>

Under optimum circumstances, a gas pipeline constructed along the Alaska Highway will provide employment opportunities for Tetlin residents without imposing unwelcome outside pressures on the community. Even under these conditions, the dependence on locally available subsistence resources may be jeopardized by construction activities, or more likely, increased use of the area by non-resident hunters. The latter pressure has already been reported.<sup>10</sup>

---

<sup>9</sup>Fairbanks Town and Village Association for Development, Inc., Rural Pipeline Impact Information Program, Report on Questionnaire Surveys, June, 1975.

<sup>10</sup>Ibid.

E. Communities Exporting Labor

The pattern of village participation in pipeline employment opportunities is at this point unclear. Residents of villages throughout Alaska have been employed on the pipeline but some villages have exported a substantially higher percentage of their manpower than others. Some of the factors which probably influence village participation are:

1. A village orientation toward seasonal jobs, particularly in construction.
2. Inexpensive, convenient transportation connections to hiring centers.
3. A village age/sex distribution weighted toward young males.
4. Saliency of the employment opportunities either by proximity to construction sites and/or an active dissemination of employment information.
5. An effective recruitment program by government agencies and Native organizations.
6. A lack of time conflicts between traditional local job and subsistence activities.

One prevalent hypothesis is that villages which have successfully adapted to non-Native contacts in the past are more likely to contribute manpower.

This statement is, of course, nearly a tautology in the absence of a detailed discussion of the factors related to successful adaptation. Such an integrated perspective has yet to be prepared. It is significant to note, however, that villages currently suffering from a deterioration of traditional lifestyles and an inability to incorporate successful new lifestyles may not be helped by pipeline employment opportunities. These com-

munities may continue to have high rates of alcoholism and accidental death and a heavy dependence on welfare while more successful communities take advantage of the additional employment opportunities.

Village Natives who do take pipeline jobs do not necessarily achieve a net gain in total well-being, either for themselves or for their village. The necessity of coming through Fairbanks or Anchorage on their way to and from a pipeline job poses a problem for those not acquainted with city life. If temporary housing cannot be found, the streets must be used and some spend their earnings before they ever reach home. Meanwhile, the village may experience a scarcity of local manpower and leadership, forcing women to take on heavy work and community projects to be postponed. There have been some reports that the discrepancy between pipeline and local wage rates has deterred village youth from working at all.

Since distance to the construction site is only one factor influencing village manpower participation, the projected social impacts for this category of communities should be proportional to the projected manpower demand and Native hire policies of each of the proposed routes.

### Summary

The discussion of social impacts presented in the previous section has focussed on the community level. Such a perspective is necessary, given variations in community functions and characteristics. Which ever gas route becomes a reality, social impacts will be felt in a wide range of Alaskan communities. Employment opportunities and the redistribution of state revenues from gas production and transportation are two forces operating to diffuse impacts.

We have not dealt extensively with the social impact of changes in subsistence resource availability. While many communities have noted decreases in the availability of game, it is not clear whether natural migration changes, over-hunting, mismanagement, lack of time spent hunting, or actual effects of the pipeline are primary limiting factors. It is possible, however, that the development incentives provided by the pipeline would cause major disruptions to subsistence over the long term. Recreation hunting access, for example, has resulted in competition for subsistence resources in the Copper River region.

Also of major concern are changes in the social desirability of subsistence activities, particularly among young people. Evidence of numerous changing attitudes are present in the remarks of many village elders. Village activities which depend on volunteer or low salary labor are rejected by teenagers who are well aware of the high paying jobs available. The construction of a gas line will aggravate the conflict between self-interest and village welfare.

The proposed pipeline route will become a salient force against traditional lifestyles in an expanded number of communities. While some communities may currently desire wage incomes, it is our observation that such attitudes may shift back and forth over time. The process of cultural change cannot be documented by an undimensional change in attitudes; rather, it is an interplay between adaptation and consolidation. The use of small villages as major supply depots would prevent the community from maintaining elements of its traditional lifestyle.

The optimum employment opportunity for a village resident with strong family ties and who depends on subsistence opportunities is one which is near home and is temporary. Adverse social impacts increase when employment is only available far away from home or is so near home that it is related to a decrease in subsistence opportunities and provides the only source of income. Obviously, no route can take such an alignment with respect to every Alaskan village. We believe that the Fairbanks-Alaska Highway route is comparable to, or better than, other trans-Alaska pipeline alternatives.

Incoming population groups may not share the same cultural background of long-term residents, White or Native. Should the original village population become the minority, it is possible that new interest and activities will supplant old ones. In some cases this process may threaten efforts to preserve Native cultures. The unique lifestyles and perspectives held in small Alaskan communities represent a reservoir of diversity that massive population increases could overwhelm.

The social impacts of a gas pipeline cannot be predicted in detail without a substantial research effort involving communities likely to be affected. In addition, the presence or absence of a number of mitigating measures is also a prerequisite for assessment:

1. Will the builder provide funds for short-term dislocations that result from direct and induced activities?
2. Will the builder be required to consult with local communities with regard to local hire, the types or training that would become a long-term regional resource, and the local time and space requirements for all phases of living?
3. Will the community have continued access to the builder in order that unanticipated impacts can be dealt with?
4. Will the builder be liable for long-term changes of a drastic nature, such as the loss of subsistence resources?
5. Will the builder be held to previous impact projections, such as for population increases?

These and other issues should be formally addressed in the environmental impact statement.