

ALASKA LEGISLATURE SPECIAL COMMITTEE / SUBJECT FILES 86/2

381 SCOMM10: LOCAL GOVERNMENT STUDY 1979

HOUSING GOALS

1. TO PROVIDE SAFE, EFFICIENT, HOUSING AT REASONABLE COST FOR NANA RESIDENTS.

Objectives:

- a) Secure housing which is energy efficient in design;
- b) Provide flexibility in choice of building materials and fuel source;
- c) For prospective public housing residents, increase information about monthly costs associated with those homes;
- d) Assure that the distribution of low-income housing is equitable among villages in the NANA Region;
- e) Provide new housing to those in most need;
- f) Ensure that comments of local people are included in developing housing projects in their community.

The regional goals and objectives will be used as the basis for regional development policies. Draft development policies will be developed this winter to guide the actions of agencies during the strategy preparation phase, so they follow community preferences.

Regional development policies will be submitted to communities for review, and will be modified as necessary for the final strategy. Policies may change in the future, as goals and objectives change and will be updated as needed.

One example in which the emerging policies have already been applied is in the development of a sewer and water development project for Selawik by the U.S. Public Health Service. The mayor and vice-mayor of Selawik met with the Public Health Service and the State Department of Environmental Conservation staff to express the community's preferences that the life-cycle costs of the system (operation and maintenance) be considered in the design. Mauneluk was invited to attend and incorporate the results into the Regional Strategy.

Selawik residents have noted the high sewer and water costs, and difficult repair problems faced by other communities after they had accepted "free" facilities. Selawik residents said they were willing to forego some of the convenience of expense and technologically sophisticated systems if they could keep the operation and maintenance costs down, and make sure the system could be repaired locally rather than requiring specialized repair services. Mauneluk helped by leading staff support including citing the support of the Regional Strategy project, and advocating that the Public Health Service incorporate Selawik's concerns explicitly into the design process, by establishing them as primary design criteria.

Several alternative design concepts were suggested by Selawik, and the Public Health Service agreed to provide cost projections for each design alternative. A public meeting was set so PHS could explain each option to the community along with the costs and benefits of each. The regional development policies will encourage the use of this planning approach by agencies for meeting community development needs and conditions in this region. The Selawik example by PHS exemplifies a cooperative attitude, flexible design and operation policies, and a public process.

The goals formulation process has been followed up with requests to participating agencies to provide lists of their goals and philosophies. The work of the Alaska Cooperative Land Manager's Task Force coordinated by the Alaska Federation of Natives and the Department of the Interior are helpful in this regard.

Mameluk Association itself has undertaken a review of its organizational goals and is considering a re-organization for better program delivery and planning.

2. Issues Identification

Development issues were identified during public meetings over the last several years. Those issues are derived from residents' statements, planning documents, survey review, and official statements. Planning documents reviewed included those by the State, North Slope Borough, and others, which might indicate development pressures which could infringe on the region from adjacent geographic areas. An example of this is a pipeline which has been suggested for taking the oil from the National Petroleum Reserve across the NANA Region to Nome. The infringement comes with the bisecting of the region's normal transportation and caribou

migration routes. Outer Continental Shelf development and Brooks Range mining are other examples of those development potentials. Mining is the biggest potential economic development in the region and could induce secondary requirements of a deep-water port, a railroad or haul road, one or more new communities, and substantial labor force in-migration.

Many of the development issues are not part of the formal workplan for the Regional Strategy but have been suggested for inclusion by regional residents. The extent of consideration of these issues will depend upon the time available, budgetary and staff supplements, cooperation by participating agencies, and the preferences of the Steering Committee and community review board.

The issues list is being used as a starting point for agency discussion by the task forces. The issues list will be expanded and reorganized to identify cause-effect relationships and sort the issues into topic areas for better analysis and discussion.

One issue area deserves special attention because of its interrelationships with so many other facets of development. That issue is human resource development. Success of almost all other programs is dependent on solving problems of alcoholism and local management capability and to a certain extent, unemployment.

Those three (3) problems are barriers to development and self-determination, and hence, a threat to the effectiveness of public programs in development. Alcoholism limits the stability of the labor force through limited ability of individuals to get and hold jobs. Economic development programs promoting industrial development and natural resource extraction, like mining, are not going to help the majority of residents of the region

until local people can get training, and get and hold jobs created by development. Therefore, the success of economic development programs will be limited until alcoholism is solved.

Local management capability problems will likewise limit the ability of the region's residents to get meaningful jobs, effectively manage utilities, manage municipal affairs or develop basic local businesses to serve village residents' needs. Stability of local government staff could also be improved.

Local management capability has to be a high priority for programs in order to make the public expenditures of time and money in planning programs effective. That may imply a need for agencies to re-order their priorities and perhaps even to restructure their programs or institutional structures.

Land use planning and municipal management at the local level will be limited in effectiveness until these human resource problems are improved. Implementation effectiveness of the strategy itself will be limited unless greater awareness of decision processes and regulatory principles are taught. State agencies should recognize these problems as ceilings on the effectiveness of their programs statewide and work with social service agencies to solve the problems of alcoholism and education to work within their own agency to expand field outreach training programs and consider joint funding arrangements.

Social services can be improved by contracting to local groups for delivery but training projects must become a high priority in programs.

A broad range of options and resources should be examined, possibly through the Regional Strategy task force structure. Mobilizing a combination of agencies in an effort to target specific resources should be the

responsibility of the agencies involved. Examples of agencies already involved in the area are Community & Regional Affairs, Alaska Federation of Natives, regional non-profits, university extensions, and the Community Enterprise Development Corporation. These groups should review their involvement, consider expanding it, and work with local and regional groups such as the school district and university to establish training courses. The university is already considering a program in land management and one in business management, with workshops in communities. Similar programs need to be established in public administration, utility management, and other areas. These areas will be the subject of review and will be outlined in detail by the consortium on secondary and higher education. The Regional Strategy task force on health, education, and social services will be asked to identify the barriers, highlight the problems, and recommend detailed actions in the implementation agenda.

3. Data Base Identification and Updating

To identify the existing data and isolate some of the gaps, a comprehensive search of the literature on physical and environmental resources affecting development locations was conducted. This element was contracted to the Arctic Environmental Information and Data Center and a National Science Foundation resident. They produced the following:

1. Bibliography and Index of Information on the NANA Region
(243 Citations, 38 current research projects.)
2. Wall-sized Display Sheets of Available Maps and Studies
 - a. Documented Subsistence Use Areas and Village Land Selections.
 - b. Historical and Archaeological Sites.
 - c. Climate, Coastal Geology, Soils, and Vegetation Studies.
 - d. Fish & Marine Mammal Distribution.

e. Furbearer Distribution.

f. Seabird and Waterfowl Distribution.

These will be useful for coastal management as well as permit review by agencies.

3. Summary of New Information since the Regional Profiles on a village-by-village basis

4. Summary of Data Gaps (Information Needs on NANA Region Environment

Key literature sources are available at the Mauneluk Association in Kotzebue.

Two (2) additional bibliographies are being considered under separate contracts as a result of this project. One will be for educational literature on the region and one for health and social services studies in the region. The studies however, depend on funds coming available.

Eventually, all bibliographies will be put on computer storage at Mauneluk and will be extractable upon request by word processor.

Other important sources of information include the following:

1979 Village Sanitation Facilities Handbook.

1979 Public Facility Inventory by State Department of Transportation and Public Facilities.

1979 Integrated Service Plan for Northwest Arctic School District.

1979 Overall Economic Development Plan.

1979 Tribal Specific Health Plan.

1979 Community Survey by the Alaska Public Forum.

1976 Community Profiles by the Arctic Environmental Information and Data Center.

Data base updating included field-correcting the community profile maps prepared by AEIDC. The profile maps were corrected by local residents, often city council members or city administrators. Corrections included items like major re-routing of sewer lines, water lines, electrical lines,

new buildings, relocated buildings, major erosions, recent major land use changes, etc. This is an ongoing element of the project.

Profile corrections will be used when preparing maps of preferred development locations. The maps will be overlays for existing community profile maps held by agencies. Funds and staff were not made available for this project to re-issue corrected profiles. Overlay maps will be prepared on the basis of community meetings this coming winter. Because of new and updated information, agencies are encouraged to field-check their profiles whenever they anticipate a project for a NANA Region community.

4. Program Inventory

Mauneluk Association is conducting an inventory of planning, construction, and research projects going on in the region. The inventory is being developed in conjunction with a master schedule for capital facility programming. Together they form the basis for a regional management system which will be used for monitoring and coordinating activities. Local agencies and communities can expect to have increased local management capability when additional information is generated about anticipated programs and projects in the region. Copies of the inventory and master schedule will be available to interested and participating agencies.

Progress on the program inventory to date include the following:

- 1) Questionnaires distributed to agencies about projects in the region.
- 2) Presentations made by agencies on overall program purposes at orientation meeting for agency heads.
- 3) Written requests sent out for written products.
- 4) Written requests sent to Mauneluk staff members for goals and objectives, projects, and data needs.

5) Interviews of agency directors and administrators.

The only technique which provided significant information was the personal interview. Interviews consisted of a presentation of the topics listed in the original workplan under "Coordination and Capabilities of Key Actors." These included categories such as technical assistance, mission, lead times, project schedules, etc. Interviews were conducted with the following and will be compiled in the program inventory report:

Public Health Service

Chief, Sanitation Facilities

Chief, Environmental Services

Director, Kotzebue Service Unit

District Engineer, Sanitation Facility Construction

Department of Transportation & Public Facilities

Chief, Planning Section, Division of Facility Procurement

National Park Service

Deputy Director

Administrative Officer

Director of Administrative Services

U.S. Fish & Wildlife Service

Program Analyst, Administrative Services

Refuge Planner for Selawik Refuge

NANA Regional Corporation

President

Special Assistant to the President of the Development Section

Many more have been contacted and have attended meetings but lack of time has limited the number of formal interviews. Each interview took from forty-five (45) minutes to an hour and a half. To conduct interviews with all the participating agencies would be immensely time-consuming so a standardized form is being developed and sent to agencies. Obtaining written comments from agencies is usually difficult. Therefore, attempts to make our future requests clear and specific will be pursued.

For master scheduling, a uniform worksheet has been developed for distribution to participating agencies. The worksheet provides a common format in plotting project schedules. A composite of the schedules will be made to obtain an overview of scheduling patterns. Deadlines for projects will be shown in the final report but most agencies, even in interviews, were reluctant to get into a detailed listing of every project and its deadlines.

Some agencies seem reluctant to divulge the contents of their projects and schedules. They may have fears of becoming committed once a schedule is put on paper in public. Others have expressed problems with costs of projects going up after public announcements due to speculations on land around a site, or sudden increases in prices of materials, or reduced ability to negotiate low bid prices. Others do not seem to know what their own agency is doing. These comments have come from a wide variety of agencies, not necessarily any of the groups interviewed. Some agencies whose operations and planning are dependent on the outcome of D-2 legislation are not able to make any projections, plans, or commitments due to the uncertainty of programs, funding and land status.

Another widely used reason for agency reluctance is the federal budget process. Most referred to the federal budget process as their

primary planning deadline. Most technical and financial assistance requests need to be submitted by the deadline for the federal budget process.

This element of the work program is perhaps the most time consuming and the least productive so far. Another staff position should be funded for some of the more time-intensive work or a different method of interview used. An alternative would be expansion of agency cooperation in returning responses. Some of the more useful written responses are attached on the following pages. We hope that future responses will follow more closely the depth of detail displayed in these examples.

HUD PROJECTS - NANA REGION

Housing

Housing units reserved for the NANA Regional Housing Authority;

Noorvik - 10 units, Kiana - 15 units, Selawik - 18 units.

Community Development Block Grants

Current or proposed grants:

FY-77

1. Kiana - Rehabilitation of the community center.
\$23,000 - pending closure.
2. Kobuk - Housing winterization program
\$24,100
3. Selawik - Construction of firehouse/training center.
\$60,000

FY-78

1. Kivalina - Construction and equipping fire station.
\$52,000
2. Noatak - Construction and equipping fire station.
\$82,300

NATIONAL PARK SERVICE

Gates of the Arctic	Vegetation impact baseline investigations.	David J. Cooper, University of Colorado	Underway
Bering Land Bridge	Multidisciplinary survey of the Chukchi-Imuruk (Bering Land Bridge) area.	Dr. Herbert R. Melchior, Cooperative Park Studies Unit, University of Alaska plus eight (8) additional scientist.	Completed
Bering Land Bridge	Socio-Economic Study of Reindeer Herding.	Larry Naylor, et. al., University of Alaska Fairbanks	Completed
Bering Land Bridge	Archaeological survey.	W. Roger Powers, University of Alaska Fairbanks	Field work completed.
Bering Land Bridge	Historical overview.	Melody W. Grauman, NPS	Completed
Seward Peninsula	Tundra disturbance and recovery associated with drilling operations and AVT use in the Cape Espenberg area.	Dr. Charles H. Racine, The Center For Northern Studies.	Completed
Seward Peninsula	The origin and geologic setting of the Maars near Cape Espenberg.	Dr. Robert B. Forbes, Geophysical Institute, University of Alaska	Completed
Seward Peninsula	Archaeological Investigations for 14 (H) of ANSCA.	Kathryn Koutsky and Russell Sackett, University of Alaska, Fairbanks.	In progress.

Northwest Alaska	Home range use, social structure, and habitat selection of the Western Arctic caribou herd.	James L. Davis, and John W. Coady, Alaska Department of Fish & Game.	ADF & G Completed
Arctic Lowlands	Evaluation of ecological and geological sites for recognition as national natural landmarks.	Dr. David F. Murray, Institute of Arctic; Biology, University of Alaska.	Contract Underway. administration transferred to HCRS 5/78.
Interior and Western Alaska	Ecological and geological theme studies for national natural landmarks program.	Dr. Steven B. Young, The Center	Contract Underway. administration transferred to HCRS 5/78.

PRELIMINARY WORK PROGRAM
FOR
REGIONAL WATER PLANNING GUIDES

WATER SECTION, ALASKA DEPARTMENT OF NATURAL RESOURCES

I. PROJECT INITIATION

- A. Define Region.
- B. Contact all organizations active in region.

II. DESCRIPTION OF REGION

- A. Physiographic, Socio-economic and resource inventory.
- B. Water Resources.
 - 1. Climatological data.
 - 2. Hydrological data (surface & ground).
 - a. Inventory of existing information.
 - b. Field investigations.
 - c. Data development and analysis.
 - d. Assessment of data gaps.

III. WATER USES WITHIN REGION

- A. Water Rights.
- B. Community Systems.
- C. Mining and Industrial Uses.
- D. Instream Flows.
 - 1. Anadromous streams.
 - 2. Federal reservations.
 - 3. Native Claims
 - 4. Fish hatcheries.
 - 5. National Park Service Monument facilities.

IV. PROBLEMS AND ISSUES

- A. Statewide
- B. Regional
- C. Local

V. MANAGEMENT GUIDELINES

TRIBAL SPECIFIC HEALTH PLAN OUTLINE

PREAMBLE

- A. Treaties - Legislation.
- B. Culture, Language, Tradition.

I. SCOPE OF PLAN

- A. Purpose of plan.
- B. Timeframe of plan.
- C. People to be served.
- D. Service area covered.
- E. Political and physical map.

II. DESCRIPTIVE DATA ON THE SERVICE AREA

- A. Geography, topography, climate, and seasonal variations.
- B. Transportation.
 - 1. Private vehicles.
 - 2. Highways, secondary roads.
 - 3. Rail transportation.
 - 4. Bus service.
 - 5. Air.
- C. Communication.
 - 1. Telephone.
 - 2. Radio
 - 3. Other.
 - 4. CB radio.
- D. Housing Sanitation.
- E. Educational status of service population.
- F. Economic conditions:
 - 1. Family income levels.
 - 2. Sources of income.
 - 3. Per capita income levels.
 - 4. Unemployment rates.
 - 5. Types of employment.
- G. Political structure and relationship.

III. DEMOGRAPHIC AND HEALTH DATA

- A. Age and sex distribution of the population.
- B. Morbidity and mortality.
- C. Major health problems.
- D. Population distribution.
- E. Leading cause of death.
- F. Migration.

TRIBAL SPECIFIC HEALTH PLAN OUTLINE

III. DEMOGRAPHIC AND HEALTH DATA (Continued)

- H. Community relationship.
- I. Industrial or agriculture hazards.
- J. Traditional medicine.

IV. TOTAL HEALTH NEEDS "FOR YOUR TRIBE"

A. Patient Care.

- 1. Hospital care.
- 2. Contract care.
- 3. Emergency Medical Services.
- 4. Patient transportation.
- 5. Extended skill care.

B. Ambulatory Care.

C. Preventative Health and Field Medical Services.
(Community Medical Services)

- 1. Sanitation.
- 2. Dental.
- 3. Public Health Nursing (Community Health Nursing).
- 4. Health Education.
- 5. Mental Health.
- 6. Social Services.
- 7. Public Health Nutrition.
- 8. Optometry.
- 9. Audiology.
- 10. Alcoholism.
- 11. Home Health Care.

D. Tribal Health Programs.

- 1. Implementation of Public Law 93-638.
- 2. Community Health Representative/Community Health Aide.
- 3. Training of Traditional Indian Practitioner.

E. Program Management.

F. Facilities Construction.

V. HEALTH RESOURCES CURRENTLY PROVIDED

VI. UNMET NEEDS.

VII. APPROACH AND PLAN FOR OVERCOMING THE UNMET HEALTH NEEDS

BN/lrg

5. Organization Development

As part of the first year's efforts, an organization structure was developed. The organization chart is shown on the following page.

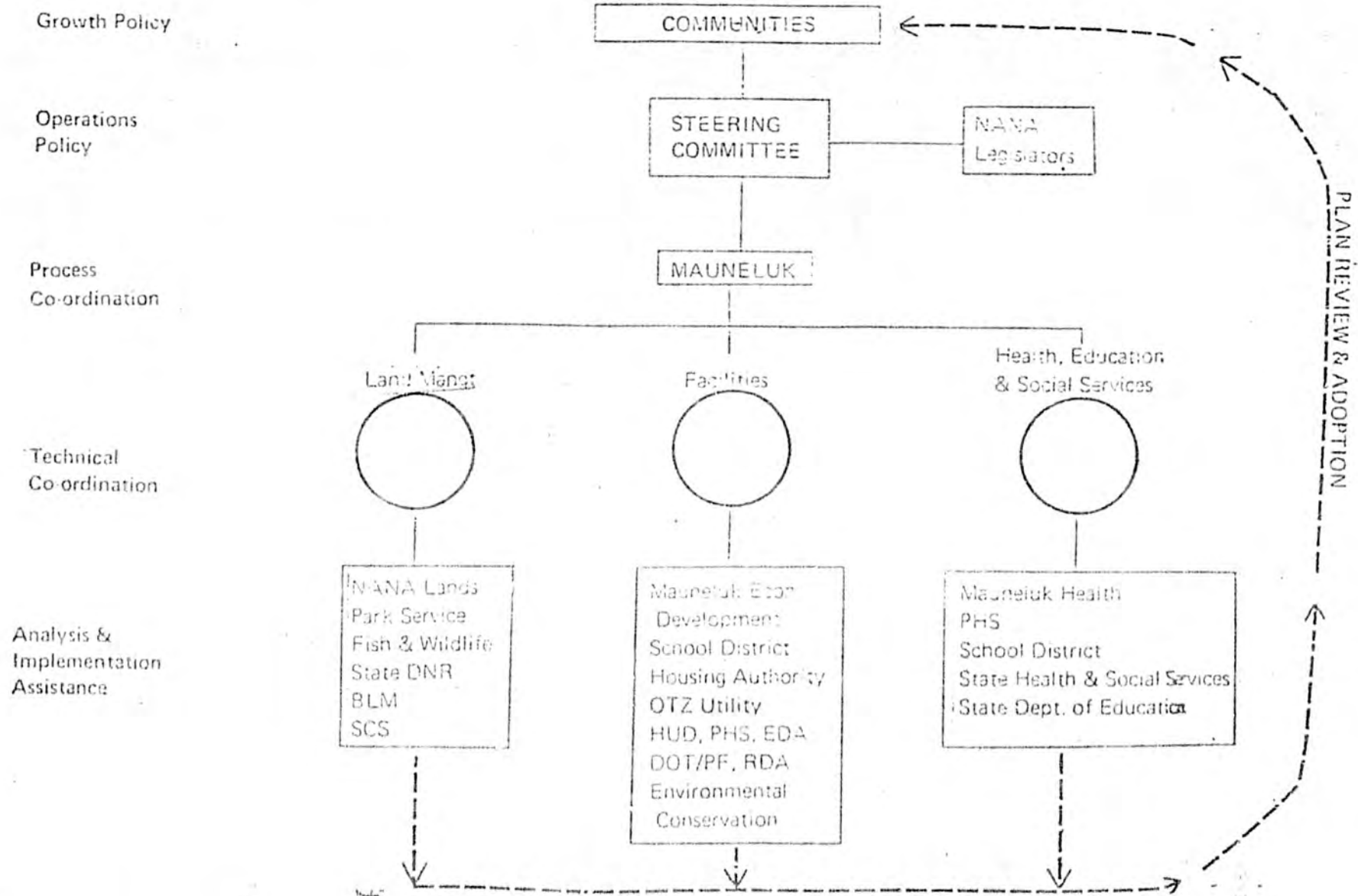
The organization chart was developed with assistance from residents of communities, regional leaders, and a management consultant. At this time, the chart has the tentative approval of the Steering Committee and has been presented to numerous local boards, all the city administrators, and staff of the three (3) regional entities.

The structure is based on initiation of information flows (problem statements, goals, priorities) from the communities, through the region, to the agencies. The return flow to the communities consists of recommendations and technical information provided by the agencies and the regional staff.

Since considerable time spent developing the organization structure, this progress report section provides a detailed description of progress. The communities will be represented by a community review board consisting of mayors from the municipalities. City Administrators will be asked to attend whenever possible to provide technical back-up information to the mayors. The municipalities are represented because they have the authority under Title 29 of the Alaska Statutes for local planning, planning, zoning, service delivery, facility construction and elements of local transportation -- all tools for implementation of the plans at the local level. IRA Councils must also be included in order to ensure coordinated siting and programming of their capital facilities. But because of the size of the board (eleven [11] members) and the powers held by the municipality, IRA Councils will be included during community plan preparation and in policy decisions on management of NANA lands. The main contact point of Mauneluk's

NANA DEVELOPMENT STRATEGY

ORGANIZATION FOR REGIONAL PLANNING



assistance in community plan preparation will formally be the municipality but the IRA Council and staff will be encouraged to attend and participate.

The Steering Committee is made up of the chief executive officers of the three (3) regional entities: NANA Regional Corporation, Mauneluk Association, and the Northwest Arctic School District. These are management professionals who are familiar with both the problems in the region and mechanisms for dealing with the problems through corporate and bureaucratic means. The Steering Committee members have a responsibility to ensure that their organization's staff, plans, and policies are consistent with the Regional Strategy to the greatest extent possible. They stand to be in a pivotal position and therefore have the ability to ensure that the strategy components are implementable by their agencies and that their staff and boards will be able to provide consistency with goals and policies.

The Steering Committee has several ex officio members to ensure coordination with the legislative and administrative decision processes at the State level. Ex officio members consist of the legislative delegation from the region, and State and Federal groups involved in design and funding of the strategy.

Legislators have the ability to introduce and support legislative changes recommended by communities and agencies in the implementation agenda. Legislators will also be able to influence the State budgetary allocations to follow Regional Strategy recommendations for capital facility and program priorities. As ex officio members they can also use the Regional Strategy as a reference while in Juneau, and coordinate legislative priorities with the Steering Committee. They can also help

the project assess feasibility of alternatives and obtain cooperation from state agencies.

Other ex officio members of the Steering Committee include the Governor's Office, the Department of Community & Regional Affairs, the U.S. Department of Housing and Urban Development, and an independent planning professional with the University of Alaska. These groups are on the Steering Committee because they helped design and fund the project, can provide advice on useful procedures, and are interested in following the evolution of the planning process developed. But as ex officio members they are non-voting members, and will not directly influence the decisions of the region. These groups represent another potential source of leverage for ensuring compliance with the strategy by State and Federal agencies. Their participation, allocations, and facility construction practices and technical assistance will be important examples for other groups.

Task forces were created to establish coalitions among agencies which have common interests and responsibilities. The initial "working group" had difficulties because of the heterogeneity of the participants and the lack of common interests, so the working group has been recombined into these task forces. It is assumed that State and Federal agencies are committed to providing services and technical assistance to the project for the purpose of strategy formulation.

It is our hope that agencies will take an active role on the task forces by providing professional expertise and judgement in analyzing issues, cause-effect relationships, barriers to goals achievement, and mechanisms for overcoming those barriers. Participation by agencies is expected to bring about greater understanding of the complexities of local and regional issues and alternatives for solving the problems.

The three (3) task forces will be asked to conduct the following activities:

1. Review local policies and goals.
2. Review local problem statements.
3. Review community plans.
4. Develop evaluation criteria for regional review of plans, and projects and programs.
5. Evaluate plans, projects, and programs proposed.
6. Analyze alternative means of overcoming barriers to achieving goals and specific projects.
7. Assist in "scoping" of potential impacts and long-term implications of project alternatives being considered.
8. Assist in preparation of background material which could be useful in a regional plan.
9. Jointly develop an implementation agenda.

The task forces thus provide a forum for structured discussion of issues, and a mechanism for solving the field problems and bureaucratic problems facing the region. If agencies do not choose to participate actively, regional staff will have to provide analysis and recommendations. Since only one (1) planner is funded for the project, that work would fall on that one person, and the product would be correspondingly limited by the lack of input from other agencies. Each task force will have a technical coordinator representing the region.

The Lands Task Force was formed to embark on cooperative land management. This is a follow-through on earlier intentions of the land management agencies to conduct management planning for large ecosystem scale rather than individual monuments or selection areas. The Land Task Force will be asked to follow the same general planning steps as

the other task forces but may continue on to develop a detailed regional land use plan. For purposes of the Regional Strategy, the task force should establish as much as possible the intended uses of large areas of land so that these plans can be passed on to other task forces for transportation and economic development planning. Detailed land use plans can be prepared at a later date. The technical coordinator for the Lands Task Force will be the Director of the NANA Lands Department.

The Facilities Task Force will be asked to follow the same basic planning steps but will focus on issues such as the following:

1. Facility costs.
2. Flexibility of design criteria.
3. Limitations on local ability to pay for facilities.
4. Priorities.
5. Technology suitable to bush communities.
6. Streamlining of permit requirements.
7. Specific opportunities for coordinating facility programming.
8. Arctic construction techniques found useful in the past.

These topics may stray from the focus on strategic planning per se but they relate to the regional development policies on facility construction and will be important topics for demonstrating that flexible approaches to design and construction in this region can be effective. Products will be a set of recommendations on construction programming coordination procedures, a suggested construction schedule, and other items mentioned for all the task forces. The technical coordinator for the Facilities Task Force will be the Economic Development Planner from Mauneluk Association.

The Health/Education/Social Services Task Force will be coordinated by the Director of Programs for the Northwest Arctic School District. That task force will have as starting information, the School District's Integrated Service Plan, the Tribal Specific Health Plan, and the Six (6) Year Capital Facilities Plan for the School District. Joint review of existing problems and solutions will follow the same process as used by other task forces.

The technical coordinators and the Regional Strategy planner will ensure that the task force efforts are coordinated so that important products of each task force reach the other task forces. An example would be the transfer of land management recommendations from the Lands Task Force to the Facilities Task Force for use in transportation planning. Another example would be the transfer of clinic and school construction priorities from the Health/Education/Social Services Task Force to the Lands Task Force; and targeting to communities in which the clinics and schools will be built so that they can reserve sites and easements in the communities. Likewise, the Facilities Task Force would need to receive notice of the proposed construction so that sewer hook-ups, electrical generating capacity and service lines can be planned early and extended to the site.

Mauneluk is developing step-wise procedural guidelines for task force participants and communities on A-95 reviews; will provide some technical assistance to communities; and, will target immediate products to groups needing to receive them. Mauneluk has recently established a Village Assistance Team in the Planning Department consisting of technical assistants with management experience and local government

leadership roles to run the housing planning and management assistance programs.

The structure developed during the first year provides a mechanism for strategy formulation that ensures community participation, professional analysis assistance, and feedback to communities for review. After the Regional Strategy is formulated, the Community Review Board will be able to monitor and evaluate the extent of compliance with the strategy recommendations.

An annual meeting will be held by Mauneluk to keep agencies up to date with progress and problems of the strategy. The structure will provide a long-term forum for on-going analysis and accountability.

6. Process Formulation

Time has been spent with staff and agencies trying to design a process which minimizes the amount of new meetings required and taking advantage of existing structures and programs to the greatest extent possible.

The overall framework for the process is the standard model of the planning process used in most planning literature.

This process will be used to guide the development of community plans, and as a reference for the task forces.

The process has the following major stages:

1. Problem definition.
2. Goals identification.
3. Data collection.
4. Analysis.
5. Identification of Alternatives.
7. Selection of a Plan.
8. Implementation.

This is an idealized process, so most of the steps are not discrete and sequential. Some of the steps are undertaken concurrently.

There is feedback between stages and the process can be repeated and updated. This progress report shows that the strategy project has already moved through parts of the first four (4) stages. We have defined problems, identified goals, begun the data collection on literature (in bibliographies), begun to identify existing programs and projects, and identified several data sources.

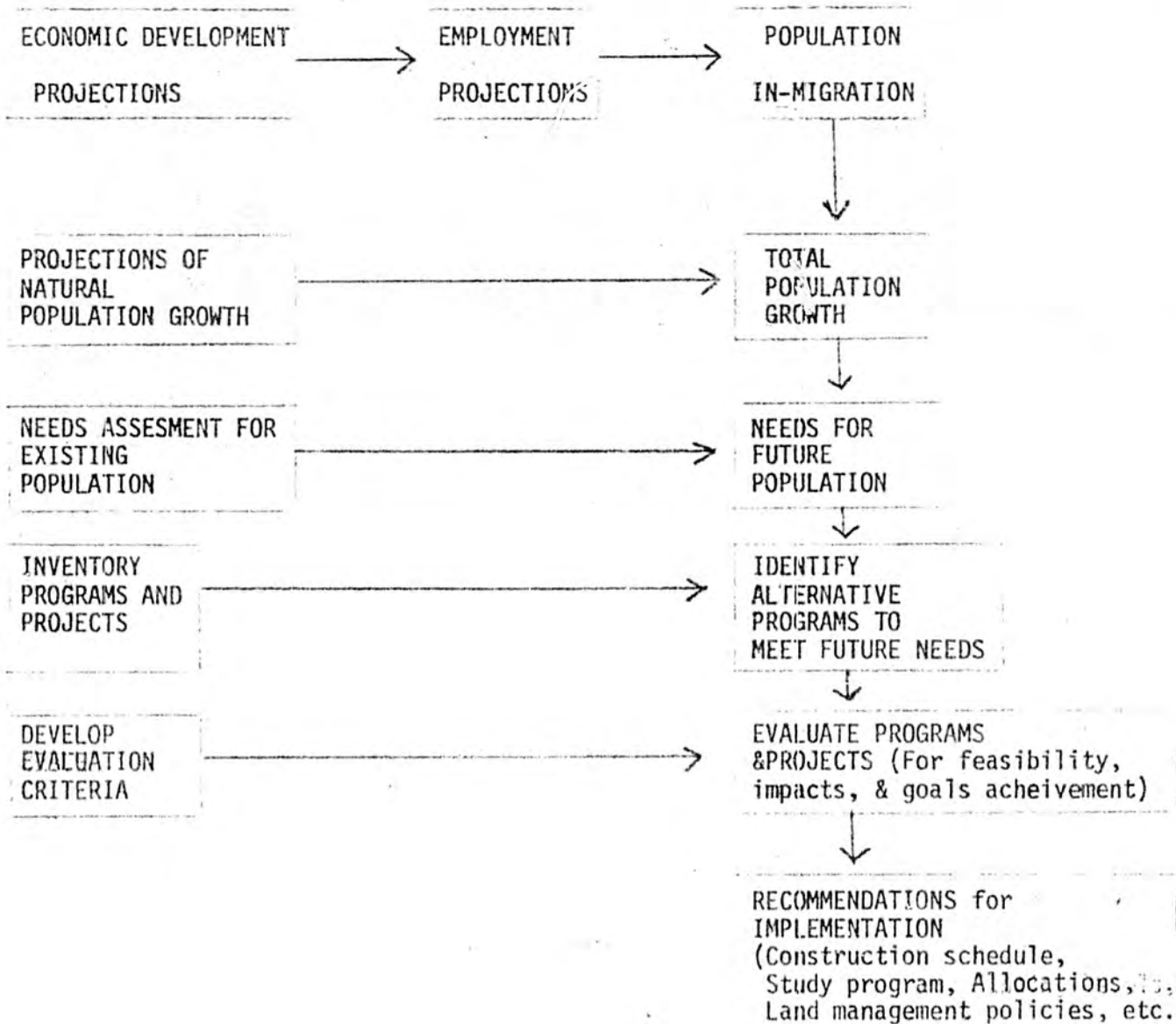
The next stage will be analysis of existing information by staff and task forces.

Existing data will be analyzed by staff and consultants to provide a basis for further development planning. An example is the use of the Overall Economic Development Plan which has already had substantial public input and analysis as the starting point for further analysis of economic development policies and projections. Staff research on alternative future economic development scenarios will be added to the OEDP research to form the foundation for projections of new employment, proportion of labor in migration and population increase due to outside forces.

At the same time, data is being analyzed for projections of natural demographic growth of the existing population. Natural population growth will provide an indication of baseline population levels for which facilities and services will be planned. Further detailed planning for additional growth can be delayed until the probabilities of other economic developments become more clear. The chart on the following pages shows the sequence of information analysis.

One of the advantages to taking a strategic planning approach is that detailed development planning can be forestalled until later, when more

SEQUENCE OF ANALYSIS
FOR REGIONAL STRATEGY PROJECT



accurate assumptions can be developed, based on evolving market conditions, regulatory policies, and land status changes. In the NANA Region for example, land status depends on D-2 which should be resolved next year. The Alaska Native Land Claims Settlement Act (ANSCA) land reconveyances and mineral exploration studies will be completed in the next few years. Right now, the world price of copper is holding down the feasibility of mineral extraction operations. The Western Arctic Transportation study findings and rapidly emerging energy policies will affect the feasibility of coal, oil, gas, and construction projects. As these changes occur, the effects on population growth and facility demands can be studied in greater detail in later studies.

The analysis phase includes both data analysis by regional staff and conceptual issues analysis by the task forces. The task forces will be asked to conduct an organized investigation of barriers to development, types, location, and timing of development projects, and economic, physical, and administrative constraints.

The joint review approach will also be used in the following stages: "Identification of Alternatives" and "Evaluation of Alternatives." After alternatives are identified by each task force, they will be evaluated according to criteria developed earlier. Evaluation criteria for policies, programs, and projects will include financial, administrative, and political feasibility. The legality, infrastructure availability, environmental impacts, social impacts, goals achievement, and long-term implications will also be examined.

If the joint review approach does not meet cooperation by the agencies

or communication difficulties are overwhelming, regional staff may have to conduct the work. However, the purpose of putting all this effort into the process is to provide public legitimacy to the findings of the task forces, to maximize the rationality and breadth of alternatives considered and to include agencies in the project.

Impact analysis for each project will be similar to the "scoping" of survey issues approach used by the Bureau of Land Management (BLM) Outer Continental Shelf (OCS) office.

Evaluation of projects is partially based on the extent to which individual projects contribute to the accomplishment of multiple goals. Each project will be evaluated for goals achievement and other factors before it is selected for inclusion in the strategy. By assessing the degree to which a project achieves the regional goals and the number of multiple goals achieved, all the projects are tied back to this first year's work. The projects proposed in the final package should therefore constitute a group which is well-screened, will have minimum impacts and will have maximum benefits in achieving the various goals. It should be an integrated hierarchy of goals, objectives, policies, programs, and projects.



The package should therefore be internally consistent (without major incompatibilities between projects and goals).

The rationality and understanding achieved by extensive participation by agencies should provide greater support by those agencies at later dates, as each of the previously studied projects is submitted for funding and permitting. Poorly conceived or muddled projects, especially those which are consistent with regional goals, agency regulations, and acceptable impact levels should be screened out early.

This should help to eliminate incompatible projects before they get so far underway that they are carried forward under their own momentum rather than rationality and public value.

Once criteria are set to guide the agency reviews, joint meetings may not be needed very often. The A-95 Clearinghouse will provide distribution of proposals to agencies and communities so that the only times meetings would be required is in the cases of controversial proposals.

The State Clearinghouse Coordinator has agreed to provide distribution of proposals to all agencies, State and Federal, who are participating on the NANA Regional Strategy. This should provide some incentive for Federal agencies, many of whom do not presently receive notice of proposals. Mauneluk will provide a list of agencies participating actively so that they can receive those benefits. Central offices of each agency will be asked to send proposals to their representative participating in the Regional Strategy affecting the NANA Region.

Mauneluk will also assist communities to prepare comments on significant proposals affecting the communities. This should improve

local management capability by developing awareness and skills for formal communications with the Clearinghouse. Eventually, an element of the process will be a regional clearinghouse. In support of this approach, Mauneluk is providing the above-mentioned service to communities, and providing reference and data services to agencies.

After the strategy is completed the Clearinghouse Coordinator should be able to compare a given proposal with the goals, policies, and projects in the final document. Further comments may be warranted but most questions on local preferences should be available.

7. Community Information & Education

Announcement of the Regional Strategy project was made during community meetings conducted by the Alaska Public Forum in each of the eleven (11) villages. However, in Kotzebue, while trying to obtain local match, it was discovered that understanding of the project was severely limited. Subsequently, presentations were made to all the regional boards, commissions, and staff. A total of eighteen (18) presentations were made in the villages and Kotzebue. One presentation was to the assembled city administrators and IRA administrators from every village.

The City of Kotzebue decided after two (2) presentations to contribute to the local match. The City negotiated in return a fixed amount of time to be provided by the Regional Strategy planner to the Planning Commission of the City of Kotzebue. The role of the Regional Strategy planner in these meetings is not to be staff to the City but to be available for advice on workplan development, factors to consider, and resources which can be sought for technical and financial assistance from the State

and Federal governments. The time spent working with the Planning Commission can be justified in that approximately half of the region's residents live in Kotzebue.

Much more time was spent in public education and information than was anticipated at the detriment of the schedule for other activities. However, the time spent is considered by Mauneluk to be important to the public acceptance and cooperation on the project and will have its payoff in long-term implementation.

Some time was also spent on considering the usefulness and feasibility of media coverage by radio, video, and local television interviews with regional leaders. Initial investigations have been made on the possibility of a slide-show or film on the region, its problems, and the alternatives available. The film or slide-show would provide a useful public participation and information tool, as well as a product which could be used outside the region and state for public information on the strategy and the region.

8. Data Collection Agreements

Efforts to commit agencies to participation include the formalization of agreements for data collection and programs. The examples mentioned in the first section on progress results are representative of the results. Soil surveys, forest assessments, gravel resource maps, land ownership maps, and other products useful for implementation will be outputs of the first years efforts. Other projects committed this year include a preliminary census to be conducted by the school district this fall to update population figures and a consultant contract to calculate population projections under various economic development scenarios.

Interagency cooperation has been exemplified by efforts by the State Department of Natural Resources Water Management Section in Anchorage which is formulating water planning guides for the region. Field reconnaissance water sampling was conducted on the Kobuk River and tributaries by an interagency team. During the study design phase of the project, coordination was kept up with the strategy project through offers by the Department of Natural Resources to collect data for other agencies projects. An outline of the water planning project was distributed at a working group meeting and several extensive phone conversations were held with various participants to coordinate efforts. Logistics were coordinated with Mauneluk and a detailed study design was submitted just prior to the field work. The Department of Natural Resources Water Section will base water demand projections on population and economic development projections to be made by the Regional Strategy staff and consultants next winter. Results will be passed out to all strategy participants for whom water planning guides will be helpful.

9. Carrying Capacity as a Regional Management Concept

An additional element of the strategy requiring time during the first year was research on the application of carrying capacity concepts to regional planning. Working with the National Science Foundation resident, a preliminary background paper was written reviewing the literature on carrying capacity, and the application to community situations. A copy of the paper is being rewritten now for distribution to the Steering Committee.

Potential exists for using the concept to determine temporary

limits on the growth rates and magnitudes of communities before substantial public investment is needed to relieve the strain on community resources. The approach may be applied in communities in which limiting factors such as gravel shortages, water shortages, financing ceilings, and lack of public investments are limiting further growth.

The carrying capacity approach may be useful in designing data collection programs. If the program is designed early enough with the appropriate measures, indicators can be collected from the beginning of the project for each village. The amount of surplus housing, unused sewer hookups, excess electrical generating capacity, and buildable land space available, are examples of such measures.

The effort is focused at a comparison of resource supply and demand to provide an early warning system for potential shortfalls. This approach will be of benefit in highlighting the need for early management attention to engineering, administrative, land use, and relocation alternatives.

Regional accounts for each village were started, which summarizes available data for each of the categories, so that managers and agencies will have a display of critical problems and impending shortfalls due to population growth.

STATE PROJECTS PROGRAMMED THROUGH
THE DIVISION OF FACILITY PROCUREMENT & POLICY
DEPARTMENT OF TRANSPORTATION

(Anticipated for construction in the next several years.)

Ambler Elementary School Remodel	\$ 890,000
Kotzebue Voc. Ed. & Gym Facility	4,500,000
Noatak High School	2,410,000
Noorvik Elementary School Remodel	1,135,000
Noorvik High School	945,000
Selawik Elementary School Remodel	875,000
Selawik High School	590,000
Kotzebue A.A.F.A.	2,337,000
Kotzebue Court Addition	298,000

Ambler High School Phase II (85% Complete)	456,125
Kotzebue Hatchery	5,000,000

Health Facilities at:

Shungnak	100,000
Kivalina	100,000
Kobuk	100,000
Buckland	100,000
Ambler	100,000

School Facilities and equipment at Kiana	200,000
--	---------

Maintenance Storage Buildings at:

Noorvik	100,000
Kiana	100,000
Shungnak	100,000

COMMUNITY PROJECTS MATRIX - PLEASE PRINT IN BLACK INK OR USE TYPEWRITER

FORM FOR PROJECTS LISTED IN
CURRENT YEAR: 1978

FORM 2

Mauneluk Association/Nana Region
Name of Community

(A) PRIOR- ITY	(B) PROJECT DESCRIPTION AND PURPOSE	(C) TYPE OF PROJECT	(D) FUNDING SOURCES	(E) AMOUNT FROM EACH SOURCE	(F) DATE OF COM- PLETION	(G) WHEN WILL YOU APPLY FOR THESE FUNDS? WHAT PROBLEMS, IF ANY, ARE YOU HAVING WITH FUNDING?
1.	Gravel source - Kotzebue, Noorvik	Planning	BIA	\$ 10,000		
2.	Sno-go repair shop - Deering	Const.	EDA	\$ 66,000		February 1979
3.	Boat building/storage facility - Kotzebue	Const.	EDA	\$300,000		February 1979
4.	Heavy equipment - Buckland, Noorvik, Kiana	Const.	?			Contract available to utilize equip- ment for local project. Private financing to be pursued.
5.	Solid waste disposal - Selawik, Kiana, Kivalina, Shungnak, Noorvik, Buckland OTZ	Const./ Imp.	HUD, CBDG or USDA			April 1979
6.	Airport improvement - Buckland, Shungnak, Kivalina, Deering, Noatak, Noorvik	Const.	Fed. AA			Mid-1979
7.	Warm-up shelters airport - Kiana, Kivalina, Selawik, Ambler, Shungnak, Noatak	Const.	State DOT Private	\$ 10,000 10,000	May '79	
8.	Erosion Control - Noatak	Planning	?			Identification of funding agency.
9.	Firehouse - Noatak, Kivalina	Const.	HUD	\$130,000	Summer 1979	
10.	Bridge - Selawik	Const.	State DOT	\$2.5 Mil.	?	Bonding approved in State general election. Design to commence.

ADDITIONAL INFORMATION - (any CURRENT problems encountered by your community in obtaining funding):

EXPLANATION OF CODES

- (A) PRIORITY: Number 1 is your first priority project for this year, number 2 is second priority, etc.
 (B) PROJECT DESCRIPTION AND PURPOSE: Please name and describe the project and tell briefly how the community will make use of it.
 (C) TYPE OF PROJECT: Service, construction, improvement, personnel, planning. Select one of these which best identifies the project.
 (D) FUNDING SOURCES: What agency(s) or program(s)?
 (E) AMOUNT FROM EACH SOURCE: Please specify.
 (F) DATE OF COMPLETION: Please estimate.
 (G) WHEN WILL YOU APPLY? PROBLEMS?

Bob Knoll

SIGNATURE

EDA Planner

TITLE

Mauneluk Association

ORGANIZATION

January 22, 1979

DATE

**FORM FOR PROJECTS LISTED IN
CURRENT YEAR: 1978**

FORM 2

Mauneluk Association/Nana Region
Name of Community

(A) PRIOR- ITY	(B) PROJECT DESCRIPTION AND PURPOSE	(C) TYPE OF PROJECT	(D) FUNDING SOURCES	(E) AMOUNT FROM EACH SOURCE	(F) DATE OF COM- PLETION	(G) WHEN WILL YOU APPLY FOR THESE FUNDS? WHAT PROBLEMS, IF ANY, ARE YOU HAVING WITH FUNDING?
11.	Regional forestry industry for local consumption.	Planning				When research finished.
12.	Water & sewer - Selawik	Planning Stage				
13.	New housing - Selawik, Noorvik, Kotzebue	Const.	HUD Nana Reg. Hst. Authority.	\$2.5 Mil.	?	Bids were too high - project being re-evaluated.

ADDITIONAL INFORMATION -- (any CURRENT problems encountered by your community in obtaining funding):

The priority rating is extremely difficult to assign due to the autonomy of each village; so I grouped them by project category. In-
dividual priorities may be extracted from OEDP.

EXPLANATION OF CODES

- (A) PRIORITY: Number 1 is your first priority project for this year, number 2 is second priority, etc.
 (B) PROJECT DESCRIPTION AND PURPOSE: Please name and describe the project and tell briefly how the community will make use of it.
 (C) TYPE OF PROJECT: Service, construction, improvement, personnel, planning. Select one of these which best identifies the project.
 (D) FUNDING SOURCES: What agency(s) or program(s)?
 (E) AMOUNT FROM EACH SOURCE: Please specify.
 (F) DATE OF COMPLETION: Please estimate.
 (G) WHEN WILL YOU APPLY? PROBLEMS?

Bob Knoll
SIGNATURE

EDA Planner

TITLE

Mauneluk Association

ORGANIZATION

January 22, 1979.

DATE

PLEASE NOTE: THE PRECEDING PAGES WERE TREATED
AS A UNIT IN THE ORIGINAL DOCUMENT.

PLEASE NOTE: THE FOLLOWING PAGES WERE TREATED
AS A UNIT IN THE ORIGINAL DOCUMENT.

**BIBLIOGRAPHY AND INDEX OF INFORMATION
ON THE NANA REGION**

by

**Lynne Zeitlin Hale
Public Service Science Resident**

and

**Information Services
Arctic Environmental Information and Data Center**

Prepared for Mauneluk Association

Kotzebue, Alaska

April 1979

**Arctic Environmental Information and Data Center
University of Alaska
707 A Street
Anchorage, Ak. 99501**

**This publication was supported by Mauneluk Association
and National Science Foundation Grant OSS 78-2092**

BIBLIOGRAPHY AND INDEX OF INFORMATION
ON THE NANA REGION

The preparation of this document was financed in part through a comprehensive planning grant from the Department of Housing and Urban Development, under the provisions of Section 701 of the Housing Act of 1954, as amended, and the Division of Community Planning, Department of Community and Regional Affairs of the State of Alaska, the NANA Corporation, and the Mauneluk Association July 1979.

BIBLIOGRAPHY AND INDEX OF INFORMATION
ON THE NANA REGION

by

Lynne Zeitlin Hale
Public Service Science Resident

and

Information Services
Arctic Environmental Information and Data Center

Prepared for Mauneluk Association
Kotzebue, Alaska

April 1979

Arctic Environmental Information and Data Center
University of Alaska
707 A Street
Anchorage, AK 99501

This publication was supported by Mauneluk Association
and National Science Foundation Grant OSS 78-2092

ACKNOWLEDGEMENTS

This bibliography was compiled with the help of numerous people.

Bert Greist and Walter Sampson of the NANA Regional Corporation Land Department indexed their collection of maps and documents; Jeff Smith and Bob Knoll of Mauneluk Association provided access to their collections; and numerous state and federal agencies provided citations and documents on the NANA region.

TABLE OF CONTENTS

INTRODUCTION	1
SECTION 1: MASTER BIBLIOGRAPHY.	3
1.0 General References.	4
<u>The Physical Environment</u>	
2.0 Climate	6
3.0 Geology	8
3.1 Soils.	14
3.2 Permafrost	--
3.3 Geologic Hazards	16
3.4 Minerals and Fossil Fuel	18
4.0 Freshwater Resources.	20
5.0 Marine Resources.	24
5.1 Marine Geology	25
5.2 Physical Oceanography.	28
5.3 Chemical Oceanography.	30
<u>The Biotic Environment</u>	
6.0 Biotic Communities.	31
6.1 Terrestrial Vegetation	33
6.2 Aquatic Vegetation	36
6.3 Terrestrial Animals.	37
6.3.1 Caribou	42
6.3.2 Reindeer.	46
6.4 Aquatic Animals.	50
6.4.1 Freshwater and Anadromous Fish.	53
6.4.2 Marine Fish	56
6.4.3 Marine Mammals.	59
6.5 Birds.	63
<u>The Human Environment</u>	
7.0 Socio-Cultural Resources.	68
8.0 Planning Studies.	74
9.0 Health Studies.	78
10.0 Maps.	79

SECTION II: AUTHOR INDEX.	84
SECTION III: GEOGRAPHIC INDEX	102
U.S.G.S. Quadrangles.	103
Villages.	110
Other Locations	113
SECTION IV: KEYWORD INDEX	117
SECTION V: SOURCE LOCATION.	133

INTRODUCTION

This bibliography and index was compiled to provide increased access to information on the environment and resources of the NANA region. It is organized to facilitate the use of existing knowledge in the development of new plans and programs for the region. The bibliography includes references to published documents, mapped information, and current research.

Section I is the master bibliography, which is divided into ten chapters by broad subject area. Each entry has a unique accession number which identifies it in all indexes. Accession numbers for current research have a "9" preceding the document number; e.g. 6.40901. All entries in Section I include a complete bibliographic citation.

Section II is an alphabetical author index. For each citation the primary author plus additional co-authors, truncated title (current research titles are printed in capital letters) and accession number are listed. Personal authors are listed alphabetically by their last name; corporate authors (such as a society, institution, government department, etc.) are interfiled alphabetically with the personal authors. Each accession number listed for an author refers back to a citation in the master bibliography (Section I).

Section III is a geographic index. Bibliographic entries that contain information on USGS Quadrangles (1:250,000), villages, and other key locations are listed by accession number. Each accession number listed for a geographic location refers back to a citation in the master bibliography (Section I).

Section IV is a keyword index. Keywords were assigned using a list developed by AEIDC, Mauneluk, and NANA staff. All keywords are listed alphabetically with the accession numbers of citations containing relevant information. Again, each accession number refers back to a citation in the master bibliography (Section I).

Section V is a source location index. This index shows where the citations included in the bibliography can be found. If a document is available within the NANA Region (either at the NANA Regional Corporation or Mauneluk Association offices) no other source is listed. AEIDC and the Alaska Resources Library are the source locations for the majority of documents not available within the region.

This bibliography, while comprehensive, is not complete. New information is continually being published about the NANA region, and researchers, whose interests are focused, will undoubtedly find additional pertinent references. Our search for information focused on the NANA region's natural resources. Information sources on such topics as human health, the region's early history, and archaeology were not extensively researched.

The Bibliography and index of information on the NANA Region was organized to allow easy updating. New documents can be added by assigning them accession numbers in the appropriate chapter. Any additional references that are found by users of this document should be sent to Mauneluk Association Planning Department, P. O. Box 256, Kotzebue, Alaska 99752.

SECTION I
MASTER BIBLIOGRAPHY

CHAPTER 1.0
GENERAL REFERENCES

- 1.00001 Tuten, Merry A., and John M. Eckhardt. 1977. A bibliography on Alaskan subsistence. Joint Federal-State Land Use Planning Commission for Alaska. Study 28. 63 pp.
- 1.00002 Alaska, University, Arctic Environmental Info. and Data Ctr. 1976. Alaska Regional Profiles: Northwest Region. Report for the Alaska Office of the Governor, Juneau, AK. 265 pp.
- 1.00003 Federal Field Committee for Development Planning in Alaska. 1968. Alaska natives and the land. Anchorage, AK. 565 pp.
- 1.00004 Joint Federal-State Land Use Planning Commission for Alaska. 1975. Resources of Alaska, a regional summary. Resource Planning Team, Anchorage, AK. 619 pp.
- 1.00005 Gordon, Richard J., and Benjamin A. Shaine. 1978. Alaska natural landscapes. Joint Federal-State Land Use Planning Commission for Alaska. Study 33. 75 pp.
- 1.00006 Joint Federal-State Land Use Planning Commission for Alaska. 1973. Noatak-Kobuk: A description. Anchorage, AK. 6 pp.

- 1.00007 Goldberg, Burton. 1975. Selected bibliography and annotations: Land regulation, land management, land transfer. Joint Federal-State Land Use Planning Commission for Alaska, Anchorage, AK.
- 1.00008 U.S. Bureau of Land Management. 1978. BLM photography coverage in Alaska. Alaska State Office, Anchorage, AK.
- 1.00009 Alaska Public Forum. 1979. NANA Survey. Anchorage, AK. 23 pp.
- 1.00010 Abrahamson, John D. 1968. Westward Alaska: The native economy and its resource base. Federal Field Committee for Development Planning in Alaska.
- 1.00011 Wilimovsky, Norman J. 1966. Environment of the Cape Thompson region, Alaska. Div. of Federal Information, U.S. Atomic Energy Commission. 1250 pp.
- 1.00012 Allen, Anda , and Barbara J. Sokolov. 1977. Survey of Alaska information systems. Arctic Environmental Information and Data Center, University of Alaska, Anchorage. Report for U.S. Fish and Wildlife Service.
- 1.00013 Keating, Peter. 1978. Alaska data inventory catalogue; a guide to unpublished data collected by Alaska state agencies. Alaska Div. of Policy Development and Planning, Office of the Governor, Juneau. 137 pp.

CHAPTER 2.0

CLIMATE

- 2.00001 U.S. National Climatic Center. 1966-present. Local climatological data; monthly summary. Asheville, NC. Monthly reports for various individual weather stations throughout the U.S.
- 2.00002 U.S. National Climatic Center. 1949-present. Local climatological data; annual summary with comparative data. Asheville, NC. Annual reports for various individual weather stations throughout the U.S.
- 2.00003 U.S. National Climatic Center. Mid 1800's-present. Surface weather observations. Unpublished. Asheville, NC. Hourly observations from Alaskan weather stations.
- 2.00004 U.S. National Climatic Center. 1915-present. Climatological data, Alaska; annual summary. Asheville, NC. Annual summaries of Alaskan weather station data.
- 2.00005 U.S. National Climatic Center. 1948-present. Climatological data, Alaska; monthly summary. Asheville, NC. Monthly summaries of Alaskan weather station data.
- 2.00006 Bedurtha, Frank T. 1952. An investigation of anticyclogenesis in Alaska. Journal of Meteorology. 9:119-125.

- 2.00007 Barry, R. G. 1977. Study of climatic effects on fast ice extent and its seasonal decay along the Beaufort-Chukchi coasts. Pages 574-743 in Environmental Assessment of the Alaskan Continental Shelf. Principal Investigators' Annual Reports, March 1977. Vol. 14. NOAA OCSEAP Research unit 244.
- 2.00008 Brower, William A., Harold W. Searby, and James L. Wise. 1977. Climatic atlas of the outer continental shelf waters and coastal regions of Alaska. Volume III: Chukchi-Beaufort Sea. Arctic Environmental Information and Data Center, University of Alaska, Anchorage, and National Climatic Center, Environmental Data Service, Asheville, NC. 439 pp.

CHAPTER 3.0
GENERAL GEOLOGY

- 3.00001 Moore, George W. 1960. Recent eustatic sea-level fluctuations recorded by arctic beach ridges. Pages B335-B337 in V.E. McKelvey, ed. U.S. Geological Survey. Professional Paper 400-B.
- 3.00002 Dall, William H. 1881. Notes on Alaska and the vicinity of Bering Strait. American Journal of Science. 21:104-111.
- 3.00003 Hopkins, David M. 1959. History of Imuruk Lake, Seward Peninsula, Alaska. Bulletin of the Geological Society of America. 70:1033-1046.
- 3.00004 Herreid, Gordon. 1966. The geology and geochemistry of the Innachuk River map area, Seward Peninsula, Alaska. Alaska Div. of Mines and Minerals. Geologic Report 23. 25 pp.
- 3.00005 Patton, William W. 1973. Reconnaissance geology of the northern Yukon-Koyukuk province, Alaska. U.S. Geological Survey. Professional Paper 774-A. Shorter contributions to general geology. 17 pp.
- 3.00006 Sainsbury, C. L. 1967. Upper Pleistocene features in the Bering Strait area. Pages D203-D213 in Geological Survey research, 1967. U.S. Geological Survey. Professional Paper 575-D.

- 3.00007 Hopkins, David M., F. S. MacNeil, R. L. Merklin, and O. M. Petrov. 1965. Quaternary correlations across Bering Strait. *Science*. 147(3662):1107-1114.
- 3.00008 Miller, Thomas P., William W. Patton, and Marvin A. Lamphere. 1966. Preliminary report on a plutonic belt in west-central Alaska. Pages D158-D162 in Geological Survey research, 1966. U.S. Geological Survey. Professional Paper 550-D.
- 3.00009 Miller, Thomas P. 1972. Potassium-rich alkaline intrusive rocks of western Alaska. *Bulletin of the Geological Society of America*. 83:2111-2128.
- 3.00010 McCulloch, David S., and David M. Hopkins. 1966. Evidence for an early recent warm interval in northwestern Alaska. *Bulletin of the Geological Society of America*. 77:1089-1108.
- 3.00011 Hopkins, David M., and F. S. MacNeil. 1960. A marine fauna probably of late Pliocene age near Kivalina, Alaska. Pages B339-B342 in V.E. McKelvey, ed. U.S. Geological Survey. Professional Paper 400-B.
- 3.00012 Gates, George O., and George Gryc. 1963. Structure and tectonic history of Alaska. Pages 264-277 in O.E. Childs and B.W. Beebe, eds. *Backbone of the Americas--tectonic history from pole to pole*. Proceedings of the 46th Annual Meeting of the American Association of Petroleum Geologists, Denver, CO. 1961. A.A.P.G. Memoir 2.
- 3.00013 Ugolini, F. C. 1975. Ice-rafted sediments as a cause of some thermokarst lakes in the Noatak River delta, Alaska. *Science*. 188(4183):51-53.

- 3.00014 Quackenbush, L. S. 1943. Notes on Alaskan mammoth expeditions of 1907 and 1908. Bulletin of the American Museum of Natural History. 54:87-130.
- 3.00015 Miller, Thomas P., Ivan Barnes, and William W. Patton. 1975. Geologic setting and chemical characteristics of hot springs in west-central Alaska. U.S. Geological Survey. Journal of Research. 3(2):149-162.
- 3.00016 Hershey, Oscar H. 1909. The ancient Kobuk Glacier of Alaska. Journal of Geology. 17:83-91.
- 3.00017 Hopkins, David M. 1972. The paleogeography and climatic history of Beringia during late Cenozoic time. Inter-Nord. 12:121-145.
- 3.00018 Smith, Philip S. 1912. Glaciation in northwestern Alaska. Bulletin of the Geological Society of America. 23:563-520.
- 3.00019 Hopkins, David M. 1959. Cenozoic history of the Bering land bridge. Science. 129(3362):1519-1528.
- 3.00020 Porsild, A. E. 1938. Earth mounds in unglaciated arctic northwestern Alaska. Geographical Review. 28:46-58.
- 3.00021 Fernald, Arthur T. 1953. Active sand dunes in the Kobuk River valley, northwestern Alaska. Bulletin of the Geological Society of America. 64(12/2):1421-1422.

- 3.00022 McCulloch, David S., Dwight W. Taylor, and Meyer Rubin. 1965. Stratigraphy, non-marine mollusks, and radiometric dates from Quaternary deposits in the Kotzebue Sound area, western Alaska. *Journal of Geology*. 73(3):442-452.
- 3.00023 Dutro, J. Thomas 1953. Stratigraphy and paleontology of the Noatak and associated formations, Brooks Range, Alaska. *Bulletin of the Geological Society of America*. 64(12/2): 1415.
- 3.00024 Fritts, Crawford E. 1970. Geology and geochemistry of the Cosmos Hills, Ambler River, and Shungnak quadrangles, Alaska. Div. of Mines and Geology, Alaska Dept. of Natural Resources. *Geologic Report 39*. 69 pp.
- 3.00025 Mendenhall, Walter C. 1902. Reconnaissance from Fort Hamlin to Kotzebue Sound, Alaska, by way of Dall, Kanuti, Allen, and Kowak Rivers. U.S. Geological Survey. *Professional Paper 10*. 68 pp.
- 3.00026 Smith, Philip S. 1911. The Alatna-Noatak Region. Pages 315-338 in A. H. Brooks, et al. *Mineral resources of Alaska, report on progress of investigations in 1911*. U.S. Geological Survey. *Bulletin 520*.
- 3.00027 Smith, Philip S. 1913. The Noatak-Kobuk Region, Alaska. U.S. Geological Survey. *Bulletin 536*. 16 pp.
- 3.00028 Hopkins, David M. 1967. The Bering land bridge. Stanford University Press, Stanford, CA. 495 pp.
- 3.00029 Miller, Thomas P. 1970. Petrology of the plutonic rocks of west-central Alaska. U.S. Geological Survey. *Open-File Report 71-210*. 132 pp.

- 3.00030 Barnes, David F., and Irvin L. Tailleux. 1970. Preliminary interpretation of geophysical data from the lower Noatak River basin, Alaska. U.S. Geological Survey. Open-File Report 70-18. 15 pp.
- 3.00031 Nava, Joseph A., and Peter R. Morrison. 1974. A note on hot springs in the interior of Alaska. *Arctic*. 27(3):241-243.
- 3.00032 Colinvault, Paul A. 1964. The environment of the Bering land bridge. *Ecological Monographs*. 34(3):297-329.
- 3.00033 Forbes, R. B. 1978. The origin and geologic setting of the moors near Cape Espenberg, Alaska. Geophysical Institute, University of Alaska, Fairbanks. 34 pp.
- 3.00034 Smith, Philip S., and J. B. Mertie. 1930. Geology and mineral resources of northwestern Alaska. U.S. Geological Survey. Bulletin 815. 351 pp.

CURRENT RESEARCH

3.00901 PALEOMAGNETISM OF LAST 150,000 YR IN ALASKA

Colinvaux, Paul A.
Inst. Polar Studies, Ohio State University
125 South Oval Mall, Columbus, OH 43210

(614)422-6531

1977-1980

Noltimier, Hallan C., Ohio State Univ., Inst. of Polar Studies

National Science Foundation

ARCTIC and NORTHWEST: Imuruk Lake, Whitefish Lake, Akaliiovak Lake, and Toolik Lake. To investigate the history of remnant magnetism preserved in the sediments of arctic Alaskan lakes. The study takes advantage of the fact that at high latitudes the history of changes in inclination can be traced in sediment cores which are not oriented in the horizontal plane. The ancient sediments at Imuruk Lake have yielded perhaps the best evidence in sediments for the Blake Event 110,000 BP.

3.00902 ALASKA MINERAL RESOURCES

Mitchell, Jr., Michael
Univ. of Alaska, AEIDC
707 A Street, Anchorage, AK 99501

(907) 279-4523

3/79 to 7/79

Hawley, Chuck C., CCH & Associates

U.S. Bureau of Mines

\$55,000

STATEWIDE: To define, and map at 1:1,000,000 scale, metallic mineral deposit host rock units for Alaska. To perform cost-benefit analyses of development of selected mineral deposits.

CHAPTER 3.1

SOILS

- 3.10001 MacNamara, Edlen E. 1965. Soils of the Howard Pass area, northern Alaska. Ph.D. Thesis. Rutgers State University, New Brunswick, NJ. 31 pp.
- 3.10002 Aitken, George W. 1965. Ground temperature observations, Kotzebue, Alaska. Cold Regions Research and Engineering Laboratory, U.S. Army, Hanover, NH. Technical Report 108. 14 pp.
- 3.10003 Schoephorster, Dale B., and Charles D. Bowen. 1965. Soils of the Kobuk area, Alaska. U.S. Soil Conservation Service. 33 pp.
- 3.10004 Preston, James E., William R. Fibich, Thomas H. George, and Peter C. Scorupl. 1977. Range sites and soils of the Kotzebue Sound area. U.S. Soil Conservation Service. Includes section on snow cover on winter range, by George P. Clagett. 64 pp.
- 3.10005 Furbush, Clarence E. 1971. Soils of the City of Kotzebue. U.S. Soil Conservation Service, Palmer, Ak. 20 pp.
- 3.10006 Hinton, Robert B., and Marvin L. Dixon. 1967. Soils of the Deering area, Alaska. U.S. Soil Conservation Service. 26 pp.

3.10007 Sigafos, Robert S., and David M. Hopkins. 1952. Soil in stability on slopes in regions of perenially frozen ground. Pages 176-192 in Frost Action in Soils: A Symposium. Highway Research Board. Special Report No. 2 (National Research Council Publication 213).

3.10008 Sigafos, Robert S. 1951. Soil instability in tundra vegetation. Ohio Journal of Science. 51(6):281-298.

CHAPTER 3.3
GEOLOGIC HAZARDS

- 3.30001 U.S. Army Corps of Engineers. 1977. Alaskan communities: Flood hazard and pertinent data. Flood Plain Management Services. 186 pp.
- 3.30002 Alaska Dept. of Environmental Conservation. 1976. Coastal processes, terrain, and hazards. Report for Alaska Coastal Management Program. 1 vol.
- 3.30003 Fathauer, Theodore F. 1978. A forecast procedure for coastal floods in Alaska. U.S. National Weather Service, Anchorage, AK. Technical Memorandum NWS AR-23. 27 pp.
- 3.30004 Hopkins, David M. 1977. Coastal processes and coastal erosional hazards to the Cape Krusenstern archaeological site. U.S. Geological Survey. Open-File Report 77-32. 16 pp.
- 3.30005 Finley, S. , J. Riehle, and K. Emmel. 1977. Areas of particular concerns for geologic reasons in the Alaska coastal zone. Div. of Geological and Geophysical Surveys, Alaska Dept. of Natural Resources, Anchorage. Preliminary report. 57 pp. 3 maps.

CURRENT RESEARCH

3.30901 RECONNAISSANCE ENGINEERING GEOLOGY OF CERTAIN COASTAL COMMUNITIES, ALASKA

Yehle, Lynn A.

(303)234-3721

U.S. Geological Survey

Mail Stop 903, Box 25046, Denver, CO 80225

Oct 77-Sep 78

Lemke, Richard W., U.S. Geological Survey

U.S. Geological Survey

SOUTHEAST, SOUTHWEST, and NORTHWEST: To evaluate by reconnaissance field methods, the general geology and the general engineering geology of certain coastal communities for geologic hazards including earthquakes. Field work completed for Haines, Hoonah, Ketchikan, Metlakatla, Petersburg, Sitka, Skagway, Wrangell, and Yakutat; also Barrow, Bethel, Dillingham, Kotzebue, Naknek-King Salmon, Nome, and Unalakleet. U.S. Geological Survey Open-File Reports are available for most of the southeastern Alaska communities.

CHAPTER 3.4

MINERALS AND FOSSIL FUELS

- 3.40001 U.S. Bureau of Mines, Alaska Field Operations Center. 1978. Mineral appraisal of the proposed Kobuk Valley National Park, Alaska: A preliminary comment. Open-File Report 110-78. 31 pp.
- 3.40002 U.S. Bureau of Mines, Alaska Field Operations Center. 1978. Mineral appraisal of the proposed Gates of the Arctic Wilderness National Park, Alaska: A preliminary comment. Open-File Report 109-78. 29 pp.
- 3.40003 Miller, Thomas P. 1976. Hardrock uranium potential in Alaska. U.S. Geological Survey. Open-File Report 76-246. 7 pp.
- 3.40004 Sainsbury, C. L., Travis Hudson, Reuben Kachadoorian, and Thomas Richards. 1970. Geology, mineral deposits, and geochemical and radiometric anomalies, Serpentine Hot Springs area, Seward Peninsula, Alaska. Pages H1-H19 in Contributions to economic geology, 1969. U.S. Geological Survey. Bulletin 1312.
- 3.40005 Dake, H. C. 1945. Alaska jade deposits. Mineralogist. 13:328-329.
- 3.40006 Halpern, Joel M. 1953. Arctic jade. Rocks and Minerals. 28(5-6):237-242.

- 3.40007 Mulligan, John J. 1957. Examination of Hannum lead prospect, Fairhaven district, Seward Peninsula, Alaska. U.S. Bureau of Mines. Open-File Report 6-65. 12 pp.
- 3.40008 Cathcart, S. H. 1920. Mining in northwestern Alaska. Pages 195-197 in G.C. Martin, ed. Mineral resources of Alaska; report on progress of investigations in 1918. U.S. Geological Survey. Bulletin 712.
- 3.40009 Sainsbury, C. L. 1975. Geology, ore deposits, and mineral potential of the Seward Peninsula, Alaska. U.S. Bureau of Mines. Open-File Report.
- 3.40010 Plahuta, Joseph T. 1978. Geologic map and cross sections of the Red Dog prospect, DeLong Mountains, northwestern Alaska. U.S. Bureau of Mines. Open-File Report No. 65-78. 11 pp.
- 3.40011 U.S. Bureau of Land Management. 1978. Environmental analysis record for WGM/COMINCO mineral exploration program, Red Dog area. Fairbanks District Office. 22 pp.
- 3.40012 Jansons, Uldis , and Robert G. Bottge. 1977. Economic mining feasibility studies of selected mineral deposit types in the western Brooks Range, Alaska. U.S. Bureau of Mines. Open-File Report 128-77.

CHAPTER 4.0

FRESHWATER RESOURCES

- 4.00001 Dingman, S. Lawrence 1973. The water balance in arctic and subarctic regions; annotated bibliography and preliminary assessment. Cold Regions Research and Engineering Laboratory, U.S. Army, Hanover, NH. Special Report 187. 131 pp.
- 4.00002 Cederstrom, D. J. 1961. Origin of a salt-water lens in permafrost at Kotzebue, Alaska. Bulletin of the Geological Society of America. 72:1427-1432.
- 4.00003 Norwood, Gus. 1968. Alaska water resources, a strategic national asset. Paper for presentation at Seminar on the Continental Use of Arctic Flowing Rivers, Pullman, WA. 29 pp.
- 4.00004 Carlson, Robert F., Richard Seifert, and Douglas Kane. 1977. Effects of seasonability and variability of streamflow on nearshore coastal areas. Pages 96-250 in Environmental Assessment of the Alaskan Continental Shelf. Principal Investigators' Annual Reports, March 1977. Vol. 14. NOAA. OCSEAP Research unit 111.
- 4.00005 Carlson, Robert F. 1976. Effects of seasonability and variability of streamflow on nearshore coastal areas. Pages 23-74 in Environmental Assessment of the Alaskan Continental Shelf. Principal Investigators' Annual Reports, April 1976. Vol. 11. NOAA OCSEAP Research unit 111.

- 4.00006 Williams, John R., and Donald A. Morris. 1974. Water resources of the Kotzebue area, Northwestern Alaska. U.S. Geological Survey and the Alaska Dept. of Natural Resources, Anchorage. Administrative Report. 26 pp.
- 4.00007 CH2M Hill Engineering of Alaska, Inc. 1979. An evaluation of the water and wastewater systems for the city of Kotzebue, Alaska. Unpublished. Draft Report.
- 4.00008 U.S. Geological Survey. 1977. Water resources data for Alaska, water year 1977. Water Data Report AK-77-1.
- 4.00009 Arnow, G. M., and G. L. Hubbs. 1962. Characteristics of surface and ground waters in selected villages of Alaska. Pt. 1. Unpublished. Arctic Health Research Center, Alaska Dept. of Health, Education, and Welfare, Anchorage. 32 pp.
- 4.00010 Alaska Water Study Committee. 1976. Alaska water assessment; state-regional future water and related land problems. (Juneau, AK). 401 pp.
- 4.00011 Still, P. J. 1976. Index of surface water quality records to September 30, 1973, northwest Alaska and Arctic Slope, Alaska. U.S. Geological Survey. Open-File Report. 9 pp. (1 map).
- 4.00012 Feulner, Alvin J., and Robert G. Schupp. 1963. Seasonal changes in the chemical quality of shallow ground water in northwestern Alaska. Pages B189-191 in Short Papers in Geology and Hydrology. U.S. Geological Survey. Professional Paper 475-B.

4.00013 Cederstrom, D. J. 1954. A test well at Kotzebue, Alaska.
U.S. Geological Survey. Open-file Report 215. 15 pp.

CURRENT RESEARCH

4.00901 KOTZEBUE SOUND REGIONAL WATER PLANNING GUIDE

Mack, Steve
Alaska Dept. of Nat. Res., Div. of FL & WM
323 E. 4th Avenue, Anchorage, AK 99501

(907)279-5577

1/79-8/80

Alaska Dept. of Natural Resources

NORTHWEST: Kotzebue Sound. To inventory water resources and water use in the area; to identify issues and conflicts concerning water resources; and to develop water management recommendations for the Kotzebue Sound region.

CHAPTER 5.0
MARINE RESOURCES

- 5.00001 U.S. National Oceanic and Atmospheric Administration. 1978. NODC catalog of OCSEAP data. Part 2; Inventory of digital data by lease area for the Alaska Outer Continental Shelf Environmental Assessment Program. Environmental Data Service, Washington, DC. 72 pp. Compiled by NODC, Data Index Branch.
- 5.00002 Shapiro, Lewis H., and John J. Burns. 1975. Major late winter features of ice in northern Bering and Chukchi Seas as determined from satellite imagery. Geophysical Institute. University of Alaska, Fairbanks. Report No. UAGR-236. Sea Grant Report No. 75-8.
- 5.00003 U.S. National Oceanic and Atmospheric Administration. 1978. NODC catalog of OCSEAP data. Part 1; Distribution of digital data received for the Alaska Outer Continental Shelf Environmental Assessment Program. Environmental Data Service, Washington, DC. 84 pp. Compiled by NODC, Data Index Branch.
- 5.00004 Outer Continental Shelf Environmental Assessment Program. 1978. Environmental assessment of the Alaskan continental shelf. Interim synthesis: Beaufort/Chukchi. Arctic Project Office, NOAA OCSEAP. 362 pp.

CHAPTER 5.1
MARINE GEOLOGY

- 5.10001 Biswas, Niren N., Larry D. Gedney, and P. Huang. 1977. Seismicity studies: (A) Northeast Alaska and (B) Norton and Kotzebue Sounds. Pages 269-315 in Environmental Assessment of the Alaskan Continental Shelf. Principal Investigators' Annual Reports, March 1977. Vol. 18. NOAA OCSEAP Research unit 483.
- 5.10002 Barnes, Peter , Erk Reimnitz, and David Drake. 1976. Marine environmental problems in the ice-covered Beaufort Sea shelf and coastal regions. Pages 512-676 in Environmental Assessment of the Alaskan Continental Shelf. Principal Investigators' Annual Reports, April 1976. Vol. 12. NOAA OCSEAP Research unit 205.
- 5.10003 Eittreim, Stephen , and Arthur Grantz. 1977. Seismic and tectonic hazards in the Hope Basin and Beaufort Shelf. Pages 226-268 in Environmental Assessment of the Alaskan Continental Shelf. Principal Investigators' Annual Reports, March 1977. Vol. 18. NOAA OCSEAP Research unit 432.
- 5.10004 Harrison, W. D., and T. E. Osterkamp. 1977. Subsea permafrost: probing, thermal regime and data analysis. Pages 424-466 in Environmental Assessment of the Alaskan Continental Shelf. Principal Investigators' Annual Reports, March 1977. Vol. 17. NOAA OCSEAP Research unit 253.
- 5.10005 Cannon, P. Jan 1977. The environmental geology and geomorphology of the Gulf of Alaska coastal plain and the coastal zone of Kotzebue Sound. Pages 333-345 in Environmental Assessment of the Alaskan Continental Shelf. Principal Investigators' Annual Reports, March 1977. Vol. 16. NOAA OCSEAP Research unit 99.

5.10006 McManus, Dean A., and Joe S. Creager. 1965. Bottom sediment data from the continental shelf of the Chukchi and Bering Seas. Dept. of Oceanography, University of Washington, Seattle. Technical Report No. 135. 2 vols.

CURRENT RESEARCH

5.10901 OIL SPILL VULNERABILITY, COASTAL MORPHOLOGY, SEDIMENTATION KOTZEBUE SOUND - CHUKCHI SEA

Hayes, Miles O.
Univ. of South Carolina, Dept. of Geology
Columbia, SC 29208

(803)777-6759

8/77 to 8/78

U.S. NOAA/BLM OCSEAP

\$30,000

MARINE: Kotzebue Sound and Chukchi Sea. To determine the vulnerability of coastal environments with regard to potential oil spills; to delineate coastal morphology and erosion-deposition trends; to analyze sediment characteristics and transport dynamics; to determine the interaction of oil spills and coastal ice.

5.10902 EVALUATION OF EARTHQUAKE ACTIVITY AROUND NORTON AND KOTZEBUE SOUNDS

Biswas, Niren N.
Univ. of Alaska, Geophysical Institute
Fairbanks, AK 99701

(907)479-7010

10/76 to 9/79

U.S. NOAA/BLM OCSEAP

\$144,300

NORTHWEST: Norton Sound and Kotzebue Sound. To install a temporary seismic network in western Alaska to help determine environmental hazards affecting offshore petroleum development.

CHAPTER 5.2

PHYSICAL OCEANOGRAPHY

- 5.20001 Coachman, Lawrence K., Robert L. Charnell, James D. Schumacher, and Knut Aagaard. 1977. Norton Sound/Chukchi Sea oceanographic processes (N-COP). Pages 579-673 in Environmental Assessment of the Alaskan Continental Shelf. Principal Investigators' Annual Reports, March 1977. Vol. 15. NOAA OCSEAP Research unit 541.
- 5.20002 Hunt, William R., and Claus-M Naske. 1977. Beaufort Sea, Chukchi Sea and Bering Strait baseline ice study. Pages 180-191 in Environmental Assessment of the Alaskan Continental Shelf. Principal Investigators' Annual Reports, March 1977. Vol. 15. NOAA OCSEAP Research unit 261.
- 5.20003 Stringer, William J., Stephen A. Barrett, and Linda Schreurs. 1978. Morphology of Beaufort, Chukchi and Bering Seas near shore ice conditions by means of satellite and aerial remote sensing. Pages 1-220 in Environmental Assessment of the Alaskan Continental Shelf. Principal Investigators' Annual Reports, March 1978. Vol. 10. NOAA OCSEAP Research unit 257.
- 5.20004 Goodman, Joe R., John H. Lincoln, Thomas G. Thompson, and Frederick A. Zeusler. 1942. Physical and chemical investigations: Bering Sea, Bering Strait, Chukchi Sea during the summers of 1937 and 1938. University of Washington Publications in Oceanography. 3(4):105-169.

CURRENT RESEARCH

5.20901 NORTON SOUND OCEANOGRAPHIC PROCESSES

Muench, Robin D.
U.S. Pacific Marine Environmental Lab
3711 15th Avenue NE, Seattle, WA 98105

(206) 442-1960

10/78 to 9/79

Charnell, Robert L., U.S. Pacific Marine Environmental Lab
Schumacher, James D., U.S. Pacific Marine Environmental Lab
Coachman, Lawrence K., Univ. of Washington
Aagaard, Knut, Univ. of Washington

U.S. NOAA/BLM OCSEAP

NORTHWEST: Norton Sound. To study fluctuations of the prevailing currents in Norton and Kotzebue Sounds.

5.20902 PREFERRED CRYSTAL ORIENTATIONS IN THE FAST ICE ALONG THE COAST OF THE BEAUFORT AND CHUKCHI SEAS

Weeks, Wilford F.
U.S. Army CRREL
P.O. Box 282, Hanover, NH 03755

(603) 643-3200

10/78 to 9/79

Gow, A., U.S. Army CRREL

U.S. Army CRREL

\$55,600

MARINE: Chukchi Sea. To describe and explain the strong preferred horizontal c-axis orientations that occur in the fast ice. Sampling has now been completed between Kivalina and Camden Bay.

CHAPTER 5.3
CHEMICAL OCEANOGRAPHY

- 5.30001 Shaw, D. G. 1977. Hydrocarbons: natural distribution and dynamics on the Alaskan outer continental shelf. Pages 507-727 in Environmental Assessment of the Alaskan Outer Continental Shelf. Principal Investigators' Reports, March, 1977. Vol. 13. NOAA OCSEAP Research unit 275.
- 5.30002 Cline, Joel D. 1977. Distribution of light hydrocarbons, C1-C4 in the northeast Gulf of Alaska, lower Cook Inlet, southeastern Bering Shelf, Norton Sound and southeastern Chukchi Sea. Pages 180-268 in Environmental Assessment of the Alaskan Continental Shelf. Principal Investigators' Annual Reports, March 1977. Vol. 13. NOAA OCSEAP Research unit 153.
- 5.30003 Burrell, David C., T. Gosink, A. S. Naidu, and D. Robertson. 1977. Natural distribution of trace heavy metals and environmental background in Alaskan shelf and estuarine areas. Pages 290-506 in Environmental Assessment of the Alaskan Continental Shelf. Principal Investigators' Annual Reports, March 1977. Vol. 13. NOAA OCSEAP Research unit 162.

CHAPTER 6.0
BIOTIC COMMUNITIES

- 6.00001 Melchior, Herbert R., Kenneth R. Whitten, Richard T. Schideler, and Charles H. Racine. 1976. Biological survey of the proposed Kobuk Valley National Monument. Cooperative Park Studies Unit, University of Alaska, Fairbanks. 215 pp.
- 6.00002 Broad, A. C., Helmut Koch, and G. M. Petrie. 1977. Reconnaissance characterization of littoral biota, Beaufort and Chukchi Seas. Pages 109-274 in Environmental Assessment of the Alaskan Continental Shelf. Principal Investigators' Annual Reports, March 1977. Vol. 9. NOAA OCSEAP Research unit 359.
- 6.00003 Watson, D. G., and W. H. Rickard. 1962. Gamma-emitting radio-nuclides in Alaskan fish and plants. Pages 244-257 in Hanford biology-1962 progress report. U.S. Atomic Energy Commission. Report HW-76000.
- 6.00004 Bergstrand, Jay. 1978. Fish and wildlife use and management in Alaska. Joint Federal-State Land Use Planning Commission for Alaska. Study 31. 50 pp.
- 6.00005 Young, Steven B. 1974. The environment of the Noatak River Basin, Alaska. Center for Northern Studies, Wolcott, VT. Contribution no. 1. 584 pp.
- 6.00006 Alaska Dept. of Environmental Conservation. 1976. Coastal ecosystems of Alaska: A preliminary review of the distribution and abundance of primary producers and consumers in the marine environment. Report for Alaska Coastal Management Program. 189 pp.

- 6.00007 Melchior, Herbert R. 1974. Final report. Chukchi-Imuruk biological survey. Cooperative Park Studies Unit, University of Alaska, Fairbanks. 517 pp.
- 6.00008 Dean, Frederick C., and David L. Chesmore. 1974. Studies of birds and mammals in the Baird and Schvatka Mountains, Alaska. Biological Papers of the University of Alaska. No. 15.
- 6.00009 Evans, Charles D., and Sal V. Cuccarese. 1977. Evaluation of wildlife habitats in Alaska--alternatives for replacement of national wildlife refuge lands. Arctic Environmental Information and Data Center, University of Alaska, Anchorage. Report for U.S. Fish and Wildlife Service. 155 pp. and maps. (scale, 1:1,000,000).

CHAPTER 6.1

TERRESTRIAL VEGETATION

- 6.10001 Sigafos, Robert S. 1958. Vegetation of northwestern North America, as an aid in interpretation of geologic data. U.S. Geological Survey. Bulletin 1061-E. 21 pp. Also pages 165-185 in Contributions to General Geology, 1956.
- 6.10002 Holmen, Kjeld. 1962. Chromosome studies in some arctic Alaskan Leguminosae. Botaniska Notiser. 115(1):87-92.
- 6.10003 Steere, William C. 1958. Mnium andrewsianum, a new sub-arctic and arctic moss. Bryologist. 61(3):173-182.
- 6.10004 Matthews, John V. 1974. Quaternary environments at Cape Deceit, (Seward Peninsula, Alaska): Evolution of a tundra ecosystem. Bulletin of the Geological Society of America. 85(9):1353-1384.
- 6.10005 Persson, Herman. 1947. Further notes on Alaskan-Yukon bryophytes. Bryologist. 50:179-310.
- 6.10006 Porsild, A. E. 1939. Contributions to the flora of Alaska. Rhodora. 41(485):141-301.
- 6.10007 Lutz, Harold J. 1963. Early forest conditions in the Alaska interior: An historical account with original sources. U.S. Forest Service. Juneau. 74 pp.

- 6.10008 Hanson, Herbert C. 1953. Vegetation types in northwestern Alaska and comparisons with communities in other arctic regions. *Ecology*. 34(1):111-140.
- 6.10009 Drury, Horace F., and Stanley G. Smith. 1957. Emergency food value of Alaska wild plants. Arctic Aeromedical Laboratory, Ladd Air Force Base, Fairbanks, AK. Technical Note AAL-IN-57-16.
- 6.10010 Nodler, Frances A., Arthur J. LaPerriere, and David R. Klein. 1978. Vegetation type mapping in northwestern Alaska in relation to caribou and reindeer range potentials. Cooperative Wildlife Research Unit, University of Alaska, Fairbanks. Special Report No. 2. 33 pp.
- 6.10011 Racine, Charles H. 1977. Tundra disturbance resulting from a 1974 drilling operation in the Cape Espenberg area, Seward Peninsula, Alaska. Report for the U.S. National Park Service. 47 pp.
- 6.10012 Murray, David F. 1974. Notes on the botany at selected localities in the Alatna and Killik River Valleys, central Brooks Range, Alaska. Final Report. Biology and Resource Management Project. Cooperative Park Studies Unit, University of Alaska, Fairbanks. 218 pp. and appendix 96 pp.
- 6.10013 Racine, Charles H. 1979. Tundra disturbance and recovery resulting from off-road vehicle use for summer reindeer herding and a 1974-75 winter drilling operation in the northern Seward Peninsula, Alaska. The Center for Northern Studies, Wolcott, VT. 69 pp.

CURRENT RESEARCH

6.10901 HISTORY OF ARCTIC ALASKAN AND BERINGIAN PLANT COMMUNITIES

Colinvaux, Paul A. (614) 422-6531
Ohio State Univ., Dept. of Zoology & Inst. Polar Studies
125 South Oval Mall, Columbus, Ohio 43210 1/77 to 1/79

National Science Foundation \$48,000

ARCTIC and NORTHWEST: Imuruk Lake, Whitefish Lake, Pribilofs, and Seward Peninsula. To refine the history of climate and environment of the Bering Land Bridge over the histories published between 1963 and 1967. Dating of the ancient history at Imuruk Lake is by remnant magnetism and radiocarbon. A refined, close-interval pollen analysis is being used to describe the history of the vegetation at these and other arctic Alaskan sites over more than 100,000 yr. In association with other work on surface samples, we shall use multivariate analyses to interpret the vegetation history as a climatic history of arctic Alaska.

6.30901 INVENTORY AND ANALYSIS OF THE FOREST RESOURCES OF THE NANA REGION

Hays, Hank (907) 276-0939
U.S. Forest Service, State and Private Forestry
2221 E. Northern Lights Blvd., Anchorage, AK 99502 3/79 to 1/80

Venard, Jim, U.S. Forest Service, State and Private Forestry

NORTHWEST: NANA Region. To inventory, map (1:63,360 scale) and assess the forest resources on native-selected lands in the NANA region.

CHAPTER 6.2
AQUATIC VEGETATION

- 6.20001 Alaska Dept. of Environmental Conservation. 1976. A preliminary inventory of tidally-influenced wetlands of coastal Alaska. Report for Alaska Coastal Management Program. 44 pp.

CHAPTER 6.3
TERRESTRIAL ANIMALS

- 6.30001 Pruitt, William O. 1968. Synchronous biomass fluctuations of some northern mammals. *Mammalia*. 32(2):172-191.
- 6.30002 Quay, W. B. 1951. Observations on mammals of the Seward Peninsula, Alaska. *Journal of Mammology*. 32(1):88-99.
- 6.30003 Neiland, Kenneth A. 1975. Further observations on rangiferine brucellosis in Alaskan carnivores. *Journal of Wildlife Diseases*. 11:45-53.
- 6.30004 Neiland, Kenneth A. 1970. Rangiferine brucellosis in Alaskan canids. *Journal of Wildlife Diseases*. 6:136-139.
- 6.30005 Ehrlich, Paul R. 1958. Lepidoptera collected in the tundra-taiga ecotone at Kotzebue, Alaska. *Entomological News*. 69(1):17-18.
- 6.30006 Bailey, Alfred M., and Russel W. Hendee. 1926. Notes on the mammals of northwestern Alaska. *Journal of Mammalogy*. 7(1):9-28.
- 6.30007 Alaska Dept. of Fish and Game. 1977. A fish and wildlife resource inventory of western and arctic Alaska, Vol. 1--Wildlife. Unpublished. Report for the Alaska Coastal Management Program. 360 pp.

- 6.30008 Alaska Dept. of Fish and Game. 1978. Alaska's wildlife and habitat. Vol. 2. Anchorage.
- 6.30009 McKnight, Donald E. 1975. Annual report of survey-inventory activities. Parts 1-4. Div. of Game, Alaska Dept. of Fish and Game. Federal Aid in Wildlife Restoration. Project W-17-6. Vol. 5. (4 parts)
- 6.30010 McKnight, Donald E. 1976. Annual report of survey-inventory activities. Parts 1-4. Div. of Game, Alaska Dept. of Fish and Game. Federal Aid in Wildlife Restoration. Project W-17-7. Vol. 6. (4 parts)
- 6.30011 Hinman, Robert A. 1977. Annual report of survey-inventory activities. Parts 1-4. Div. of Game, Alaska Dept. of Fish and Game. Federal Aid in Wildlife Restoration. Project W-17-8. Vol. 7. (4 parts)
- 6.30012 Hinman, Robert A. 1978. Annual report of survey-inventory activities. Parts 1-4. Div. of Game, Alaska Dept. of Fish and Game. Federal Aid in Wildlife Restoration. Project W-17-9. Vol. 8. (4 parts)
- 6.30013 Franzmann, Albert W., and Theodore N. Bailey. 1977. Moose research center report. Div. of Game, Alaska Dept. of Fish and Game. Federal Aid in Wildlife Restoration. Project W-17-9. Vol. 18. 76 pp.
- 6.30014 Franzmann, Albert W., and Charles C. Schwarts. 1978. Moose research center report. Div. of Game, Alaska Dept. of Fish and Game. Federal Aid in Wildlife Restoration. Project W-17-10. Vol. 9. 11 pp.

- 6.30015 Coady, John W. 1976. Interior moose and moose disease studies. Div. of Game, Alaska Dept. of Fish and Game. Federal Aid in Wildlife Restoration. Projects W-17-7, W-17-8, W-17-6 (second half). Vol. 3. 28 pp.
- 6.30016 Sigman, Marilyn J., and Albert W. Franzmann. 1977. Moose behavior studies. Div. of Game, Alaska Dept. of Fish and Game. Federal Aid in Wildlife Restoration. Projects W-17-7, W-17-8, W-17-9. Final Report. 16 pp.
- 6.30017 Franzmann, Albert W., Robert E. LeResche, Paul D. Arneson, and James L. Davis. 1976. Moose productivity and physiology. Div. of Game, Alaska Dept. of Fish and Game. Federal Aid in Wildlife Restoration. Projects W-17-2, W-17-3, W-17-4, W-17-5, W-17-6, W-17-7. Final Report. 87 pp.
- 6.30018 Gasaway, William C. 1977. Moose survey procedures development. Div. of Game, Alaska Dept. of Fish and Game. Federal Aid in Wildlife Restoration. Project W-17-9. Vol. 1. 69 pp.
- 6.30019 Gasaway, William C. 1978. Moose survey procedures development. Div. of Game, Alaska Dept. of Fish and Game. Federal Aid in Wildlife Restoration. Project W-17-10. Vol. 2. 47 pp.
- 6.30020 Nielsen, Carol A. 1977. Wolf necropsy report: Preliminary pathological observations. Div. of Game, Alaska Dept. of Fish and Game. Federal Aid in Wildlife Restoration. Projects W-17-8 and W-17-9. Special Report. 129 pp.
- 6.30021 Stephenson, Robert O. 1978. Characteristics of exploited wolf populations. Div. of Game, Alaska Dept. of Fish and Game. Federal Aid in Wildlife Restoration. Projects W-17-3 through W-17-8. Final Report. 21 pp.

6.30022 Alaska Dept. of Fish and Game. 1976. Alaska wildlife management plans, Northwestern Alaska. Draft proposal. Div. of Game. 146 pp.

6.30023 Harbo, Samuel J. 1959. Wildlife reconnaissance, northwest coastal Alaska. Pages 490-504 in Alaska Dept. of Fish and Game. Federal Aid in Wildlife Restoration. Project W-6-R-1. Annual Progress Report. 1959-1960. Vol. 1.

6.30024 Alaska Dept. of Fish and Game. 1973. Alaska's wildlife and habitat. Vol. 1. Anchorage.