

land Use
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LAND USE AND OCCUPANCY BY THE INUIT OF NORTHERN QUÉBEC
FOR THE COASTAL AND INLAND AREAS OF LABRADOR

Submitted to
Office of Comprehensive Claims
Department of Indian Affairs and Northern Development

Submitted by
Makivik Corporation
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INTRODUCTION

On June 18, 1987, Makivik Corporation submitted to the Office of Comprehensive Claims of the Department of Indian Affairs and Northern Development (DIAND) a series of land use maps. The subject matter portrayed on these maps defines the historical and current patterns of land use by the Northern Québec Inuit for the coastal and inland territory that falls within the political boundaries of Labrador. These computer generated maps were prepared by the Makivik Research Department and were based on information derived from a long-term systematic field study that was designed to collect and analyse both land use and ecological knowledge data for the entire Inuit territory of Northern Québec. This systematic study provided the primary data base for the series of land use maps. The preparation of specific maps for land use in Labrador was made possible by a funding grant from DIAND. The funds from this grant were used to expand and review land use information through additional field work and to process and print this data through the use of computer graphics.

PROJECT OBJECTIVES AND APPROACH

On March 20, 1985, Makivik formally advised the Minister of DIAND that Northern Québec Inuit have aboriginal rights and interests in Labrador, which rights and interests are recognized and affirmed under section 35 of the Constitution Act, 1982. At that time, it was determined that Makivik Corporation which represents the Inuit beneficiaries of the James Bay and Northern Québec Agreement (JBNQA) would be responsible for preparing an initial statement of claim that would identify the historical and current use of the offshore and land areas of Labrador by Inuit now residing in Northern Québec.

The purpose of this report is to provide background information about the project's objectives and methods used to produce the series of land use maps that define the initial statement of claim. The report will explain the similarities between the Makivik Study and those carried out for Labrador in 1975, 1976; it will clarify the objectives and techniques that make the results of these two studies comparable; and it will present a detailed explanation of the methodology used for the Northern Québec study. The maps that accompany this report are intended to be self-explanatory in that they clearly define both the outer boundaries and specific areas of intensive use by species and season. Nevertheless, a brief overview of conclusions that can be drawn from these maps will be included in the final section of this report.

The approach that was taken in order to identify the initial statement of claim corresponds to the process that was carried out during 1973 and 1974 for the Northwest Territories (Freeman, M., 1976) and during 1975 and 1976 for Labrador (Labrador Inuit Association, 1977). Both of these studies were based on an intensive and comprehensive collection of land use and occupancy information through individual hunter interviews that were carried out by trained researchers in all Northwest Territories and Labrador communities.

In Northern Québec, the scheduling of events that led to the signing of the Agreement in November 1975 did not provide either funding or time to complete a similar land use and occupancy study for the Northern Québec territory. The importance of such a data base, however, was recognized by Makivik Corporation. Consequently the Corporation provided its own funding to design and undertake its own land use study. This study had many similarities to those of the Northwest Territories and Labrador, but it also attempted to meet objectives that were specific to the requirements of Northern Québec Inuit. In particular the Makivik study attempted to define in great detail the ecological knowledge base that underlies all land use patterns. For the purpose of a statement of claim in Labrador, however, the maps are based on three primary criteria :

- (1) The subdivision of land use into past and present utilization. This roughly translates into activities and occupation prior to and after, the early 1960's. This date need not be exact since it is meant to represent a time before and after the movement of Inuit into permanent settlement.
- (2) The presentation of land use information according to major species or species groups. The activities required to harvest each of these species is further subdivided into seasons.
- (3) The presentation of other land use information such as camp sites, travel routes and other places that were important for supporting the use and occupation of specific territory.

These three criteria are also fundamental to the Northwest Territories and Labrador studies and therefore they allow comparisons to be made between the Northern Québec statement of claim on the same basis as the Labrador Inuit statement of claim. It must be pointed out, however, that the funding made available to Makivik Corporation was not adequate to complete a formal presentation including supporting studies that characterized the published reports of either the Northwest Territories or Labrador. On the other hand, Northern Québec had the advantage of designing an independent study that was free from a single objective of land claim verification. This enabled the Inuit to identify their own priorities and to develop different methods for meeting these priorities.

The emphasis on ecological knowledge as a part of land use, along with an attempt to define land use according to more precise criteria than "outer boundaries" are two important differences. The use of the computer for analysing and producing land use and ecological maps for

Northern Québec reflects changes in technology that was not available for the earlier studies. Finally, it should be noted that the Northern Québec study was part of a larger development of a research capacity for Inuit themselves and thus it was carried out in relationship to the development of a much larger program that emphasized the transfer of expertise from the South to the North.

PROJECT METHODS AND TECHNIQUES

The general principles and specific methods that were used to collect the information presented on the "Northern Québec Inuit Land Use in Labrador Map Series" represents the most recent expression of a methodology that had its origin in 1973. In that year, a group of northern researchers joined forces with Inuit to first debate the usefulness of, and then designed the procedures for, a study that would portray the utilization and occupancy of Inuit lands within the Northwest Territories. The need for such a study was based on the impending need to settle land claims based on a process that would provide the Inuit themselves with an information base they could use for their negotiations. Overtime the relationship between land use and occupancy studies and land claims has been expanded to include other objectives. In particular the usefulness of such data for land use planning and resource management has been demonstrated throughout the Inuit territory.

In Northern Québec the study designed by the Makivik Research Department enabled both land claim and management or planning objectives to be met within the framework of a single body of data. Since 1973, many new techniques for the processing and presentation the data become available through the use of computer graphics. These technical innovations along with the rapid accumulation of experience by Inuit and researchers on how best to collect, analyze, interpret and present land use, and ecological knowledge information has enabled this data base to become accessible for resolving a broad range of problems.

The production of the Labrador map series reflect the application of five fundamental principles.

1. That if there is to be a just resolution of land claims there must be a data base created to illustrate an activity that is all but invisible to outside observers, since it has no visible markers or other references that can be obtained from sources other than the Inuit themselves. Thus, it must be accepted that the Inuit have the capacity to express their knowledge and their experience with land and resources in a systematic manner.
2. That the design of the study needed to obtain this systematic data base must conform to Inuit as well as to southern scientific standards of representation and reliability. Therefore, the data that is derived from an interview process is structured by a methodology that makes it understandable and accessible to Inuit as well as to other users.
3. That the interpretation and application of the findings from such an important, yet sensitive data base, must be controlled by the Inuit themselves according to principles that encourages them to use such data for policy formation and decision-making without limiting its availability to others.
4. That the collection of land use information cannot be separated, except for specific practical purposes, from its broader cultural and ecological context if it is to be effectively collected, properly understood and effectively used.
5. That such a major undertaking leading to the creation of a massive data base must anticipate that its use will not be limited to a narrow range of objectives since the information itself will hopefully encourage the identification of other problems and applications.

From these five principles, it is possible to design an appropriate methodology that can incorporate interview based data sources with computer based analytical techniques. These two components can then be integrated within a framework that allows for the flexibility that is needed to meet the conditions of specific problems. In order to accomplish this task, five additional points can be identified :

1. That the information required for land use and ecological knowledge studies is still available within the oral tradition of present-day Inuit.
2. That the information that comprises this oral tradition can be systematically converted to a visual and permanent format through interviews and other research technique based on communication between researchers and Inuit hunters.
3. That methodologies can be established to regulate and systematized this process and that one of the primary elements of this methodology is the use of maps as a means of recording information and communicating ideas and conclusions based on this information.
4. That to be effective and relevant land use information must be collected in close association with the ecological knowledge of Inuit about the living resources and natural environment in which they live.
5. That both land use and ecological knowledge information can be collected, analysed by computer and that the use of computers and computer graphics can enhance the importance of maps and other visual representation of data in a manner that will make the data base more accessible to Inuit and to their growing awareness of its potential applications.

The Northern Québec Study

The guiding principles and objectives stated above formed the basis for the design of the Northern Québec Land Use Study. This section will set out the general methodology that was used in order to produce the Labrador maps that are submitted with this report but the reliability and scope of this information is best understood in relationship to the detailed objectives and methods that are described in Appendix 2.

Most of the information used for the presentation of the Labrador maps were collected through land use and ecological interviews that were carried out in 1984 and 1985. The availability of this data reduced considerably the time and cost of additional field work. Further field work was necessary, however, because of the specific requirements needed to establish an initial statement of claim for the Labrador territory. Therefore, after funds were received for this purpose from DIAND, a short-term study was designed with the objective to review and, where needed, to revise available data and to assure that the data base was complete with respect to the specific objectives required for a statement of claim.

The Northern Québec Study had four primary objectives. These were:

1. To record on maps and in text all information on the historical and present-day land use of Northern Québec hunters. This will enable Inuit to make very detailed maps of their hunting territory. These maps will be made for each species that are hunted by Inuit and they will show the hunting pattern for each species in spring, summer, fall and winter.
2. To record on map and in text Inuit information about travel routes, camp sites, archaeological sites, and any other place that is special or important to Inuit for any reason.

3. To record on map and in text all of the traditional ecological knowledge of Inuit about the movement and behaviour of all of the animals, fish and birds used by Inuit. A separate map will be made for each species that will include everything the Inuit know and consider to be important about that species for each season.
4. To record on map and in text, all of the Inuit knowledge about the physical environment of Northern Québec. This will include information about the sea, sea-ice, fresh water, and land. It will show what happens to each of these environments in the spring, summer, fall, and winter. It will also locate and explain dangerous areas and any other information about the environment that the Inuit think is special or important for any reason.

The Interview Procedure

The interview is the primary source of information for all land use and occupancy studies. Details for the interview process and specific questions asked throughout Northern Québec are described in Appendix 2. The reader is referred to this Appendix since it illustrates the mass of details that must be accumulated in order to accurately portray land use patterns and ecological knowledge.

The Labrador land use maps were created from information collected during two primary interview sessions. The first was for a two-month period in 1985. This session provided all of the basic land use and ecological information that was required in order to complete the community of Kangiqsualujjuaq. The second interviewing session took place in February 1986. Its purpose was to review the 1985 information in relationship to questions of land use in Labrador.

An example for one particular hunter that is representative of both interview sessions is presented in Appendix 1. This written information accompanied detailed past and present land use maps that were recorded from the hunter representing his land use at a scale of 1:500,000.

During these interviews in the community of Kangiqsualujjuaq a total of 81 potential hunters were identified. For the Labrador land claim maps, 33 of these hunters were selected for additional intensive interviews. The historical and current land use for all of these hunters was included on the series of maps submitted with this report. In addition, 14 hunters from the former community of Killiniq were also selected and their land use maps were included as a data source for the land claim study. Consequently, the maps represent 47 hunters which represents a significant percentage of the total Northern Québec hunters who have used and live in the Labrador territory on a regular basis.

Data Review and Claim Orientation

In order to finalize the Labrador claim maps a sample of 12 major hunters from the 47 noted above were selected for intensive interviews about land use in Labrador. These interviews used the original land use maps as a source of information and focused on particular questions about the relationship of Labrador land use to the Québec Inuit. These interviews enabled the general pattern of occupancy supported by land use to be described and the computerized map patterns to be verified. The maps that have been submitted to DIAND as an initial statement of claim represents the corrections and additions made by these 12 hunters for the original land use map series.

One of the primary techniques used to review hunter data was to use the composite computer maps as a means for animating group discussions about both the pattern and specifics of land use data. It has been found that the accumulation of individual land use to form a "composite" land use created patterns that hunters often wish to modify or revise.

In other words, the whole is not always the sum of the parts and it is therefore important for hunters to work as a group when reviewing the composite maps. It is this review process that encourages the most accurate portrayal and explanation of land use information. It is only at this stage that most hunters are prepared to accept the results of land use studies.

Data Processing

All of the information required for this project was processed by a computer hardware system and software package that was produced specifically for the land use and ecological study that had been carried out by the Research Department of Makivik Corporation. The hardware system consists of a Hewlett-Packard 9817 computer equipped with a 15 M.B. Winchester disk, a laser jet printer, Numonics 220 digitizer, Numonics digitizing pen, a H.P. 7580 B plotter and a H.P. monochrome monitor.

This system has enabled the point, line and area data collected on the original interview maps to be digitized at the same scale and stored in a format that recognizes the geographic coordinates that are required for reproducing this information through a computer driven plotter. All information was coded and labelled in a manner that allowed for editing, correcting or adding to the data file. In addition, the point, line and area data that was stored as geographic coordinates can be explained by the production of written text derived from the recorded interview and then reproduced for storage and reproduction in a computer. This text can be coordinated to and printed with the computer generated maps.

The program allows for the computer operator to select all or part of any geographical area needed for data presentation. Consequently, the computer was able to locate all of those maps that had been stored and which contained information that fell within the area designated for the computer as "Labrador". For this project it was assumed that

Labrador land use was a part of a much larger system that included the entire Québec/Labrador peninsula and all of the plotting was based on a request to illustrate a hunter's entire pattern of land use. Thus, it is possible for Labrador land use to be seen and understood as part of a much larger pattern of Québec/Labrador land use.

The details of the computer program that has been used to process all of the data collected in Northern Québec is briefly described in Appendix 3.

INTERPRETATION OF RESULTS

The information that is portrayed on the land use maps must be considered a valid indication of the extent and potential importance of Labrador to the Inuit of Northern Québec. There are many interpretations that can be made with respect to the meaning of these land use areas. At this time, however, it is felt that a detailed interpretation would be premature. As indicated earlier, these maps are part of an initial statement of claim and they certainly do not constitute a formal expression of all Inuit concerns that would be raised in detailed discussions of the Labrador claim. The following points, however, are worthy of notice :

- the land use within Labrador was part of a vast land use system that comprised the entire Québec/Labrador peninsula. This is particularly true for historical times.

- the land use in Labrador represented an occupation and not simply occasional use. It was tied to a series of permanent or seasonal camp sites, it was based on real knowledge of the region and its resources, it obviously illustrates that there was a social system of families and larger social groups that depended upon the exploitation of Labrador

resources, and it was able to function in a larger social setting that permitted the free exchange of people into this territory.

- The land use patterns are based on a full range of resources that are required for survival in the North. These resources were harvested according to well-defined seasonal activities and the location and pattern of this seasonal land use is clearly portrayed on the maps.

- The dependence on and utilization of Labrador territory by Northern Québec Inuit also included ecological and not only land use processes. In particular it is evident that many of the marine avian and land mammals moved between what is now defined as Québec and Labrador in order to adapt to the conditions of the region as a whole. As a consequence, there is the need to understand that a Northern Québec concern with the Labrador land claim involves considerations other than the validation of specific land use.

- The specific definition and larger meaning of concepts such as intensity or continuity of use cannot be easily determined to a single factor approach such as land use maps. The natural use of a large territory has been interrupted and disturbed by many factors; some political, some cultural or social and some economic. The importance of the number of hunters in relationship to the creation of a land use pattern and the continuity of the utilization and its gradual decline from historical to current times are not in themselves indicators that can be used to verify or dismiss arguments about the sharing of territory.

- The maps presented in this initial statement of claim are based on a valid and well-defined methodology. Many questions remained to be answered and it will eventually become necessary to formulate an equally precise methodology that can be used to help interpret the meaning of land use patterns in relationship to shared use and the resolution of potential conflicts.

APPENDIX 1

KANGIRSUALUJJUAO
LAND USE INTERVIEWS
MAY 1985

Interview : NOAH ANGNATUK
Topic : PAST LAND USE
Date : MAY 17, 1985
Interviewer : MURRAY RIDGEWAY
Interview No. _____

Map No. _____

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Pt. 1 Noah was born here in May 1910 (other records say 1912), the Northwest government told him he was born in 1910. He doesn't know how many years he was here, though Kangiqsualujjuaq and Kuujjuaq were visited in those days. Noah was using a boat with a sail in those days, there were no motors then. This was around the time of the M.B.C., when there was a company near George River.

Noah's father was attacked by wolves near the Tunilic River, and he was killed. Noah was still at his mother's back when it happened.

Noah knows more about Short Lake and Weymouth Inlet. This is where, and when, he started to know something. When Noah was a boy they moved to Killiniq, and he knows all of Labrador from Killiniq south along the coast. He has hunted all along the west and east coast of Labrador/Québec. He doesn't exactly know what age he was at Killiniq. There were Germans (Moravians) around there. People will be going back to Killiniq this summer. Noah is not sure whether he will go or not. Ottawa said they could move back "where they belonged".

During the fall, lots of seals were coming through McLenan and Gray Strait. There are also many types of fish near Killiniq. So many types of fish that the fish would hook themselves. Both jigging and nets were used to catch the fish, even flounders. The fish are so big they don't live in lakes, they

KANGIRSUALUJJUAQ
LAND USE INTERVIEWS
MAY 1985

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Interviewer : MURRAY RIDGEWAY
Interview No. _____

Map No. _____

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need very deep water.

POLAR BEAR He got Polar bear along the east coast, in the days when there were no hunting regulations, and they could get Polar Bear anytime they wanted. Noah is not sure whether there are any laws about Polar bears in P.Q.

BELUGA When Noah was a teenager he came across by dogteam, in springtime and he caught a beluga near Pt. 1. He was on his way to George River to do some shopping. Whales were around in July, coming up the coast through the strait south of the Killiniq Island. They used a net to catch whale. There were killer whales near Killiniq as well (ardluk?) that would eat beluga and seals. Killer whales were around Pangnirtung. Baffin Island as well. A few Narwhales were seen near Baffin Island.

Cod and char, when they were caught, were put in salt to preserve them. Cod could be done (preserved) right away. Char has to wait for salt to arrive by boat to be stored. Fish was sent to Germany, fish was also bought from the Moravian Company (seal fat -muskrat). This was around 1902 or so, before Noah got there. Both the HBC and the Moravians were buying whale skin and fat.

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WALRUS There used to be lots of walrus in November/December coming through the straits since 1928. A walrus killed an Inuk in a kayak a while back. The man was seal hunting at the time when the ice was breaking up. The walrus was coming towards him, it was a spirit animal that killed him. The RCMP men saw it happen and said it was only an accident.
In the winter, walrus are on the east coast, they are back in the spring.

Whales move out in the fall (November/December), back in the springtime (May/June/July).

Any type of animal was taken when he used his dogteam. In January, when there was ice, he would travel alone. It used to be alright to hunt any kind of animal. Now the Newfoundland Government won't let them hunt in this area.

CARIBOU A winter time dogteam route is marked down the coast.
Caribou used to be found on Killinik Island, since around the 1900's they started going away but now they are coming back.

SEAL As marked are found in the inlets, in winter to Ryan's Bay, in the summer to Kachvak Fiord.

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PTARMIGAN Are found in the area as marked - Willow and Rock Ptarmigan both need branches to survive. Lots of Ptarmigan fly south in the fall. Down the Labrador coast. Ptarmigan could easily drown migrating between Baffin Island and the main land. In springtime the birds go North.

WOLF In those days, fox fur could be sold but not wolf, there was no market for wolf pelts. If there are caribou, there are going to be wolf. In Killiniq, wolf killed a dog in Noah's village.

In Kamoktorvik Lake char and brook trout were to be found.
"This was the lake where there was the most fish in wintertimes".

FOX This was also the area they trapped fox, mostly in the valleys, not in the mountains.

In 1927, two gentleman in a plane flew over the Labrador coast. It was the first time the people (Inuit) saw a plane in this area. It crashed on the ice a long distance from land and it was hard to see. The people were still alive and tried to walk to land, which was difficult as the ice was still moving. They reached Nachvak and Komakturvik by walking. These planes used to deliver messages to ships about ice in the areas. Checking out the ice-conditions. The planes may have been from

KANGIRSUALUJJUAQ
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Lake Harbour, Northwest Territories (later on, Noah added the rest of the story). The people killed a walrus after the plane has gone down. The people ate it, except the captain who didn't like walrus, and he became very hungry! In Killiniq area, a "Canso" plane with a damaged wing was on the ice. The wind caused the ice to break up and the plane floated off! In fall of the same year, two men from C.W.S. looking for Polar bears landed on ice that had just frozen. The plane sank. CWS people have overdosed bears. Inuit who see these bears think that they are dead.

EIDER

Always moving along east coast, lots of Baffin Island, many more along east CST than in Killiniq, Islands full of eggs. Eider are found along the coast, eggs as well.

Noah heard that there was a german submarine in Saglarsuk Bay, which was where the Germans put their equipment. The sub was captained by a 23 years old. These Germans didn't bother the Inuit in the area - only the periscope was usually seen. The Germans were giving out pictures and books. The Inuit took or broke the equipment without knowing who it belonged to.

In the Nachvak Fiord there were lots of animals and fish. Noah used his boat to get them. In the fall (September/October) during the time of rough water, the people would be going home.

KANGIRSUALUJUAQ
LAND USE INTERVIEWS
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Topic : PAST LAND USE

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Interview No. _____

Map No. _____

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GEESE There were hardly any geese in Killiniq, no green grass to eat. There were just a few Canada, Snow and Brant Geese. There used to be geese along the west coast of the coast, once they were seen they were shot.

There were a few snowy owls.

They were found along the west coast anytime of the year.

Interview : NOAH ANGNATUK
Interpreter : T. S. ANNANACK
Date : FEBRUARY 1986
Interviewer : MARIE ROUÉ
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In wintertime when the days are long there was a wide group of people coming from somewhere around. Nachrak, starving. It was before his time, before there was qadlunat and the Bay. And there was an old woman with the people starving, who all died. But she survived. She came on this lake. She made a hole with her ullu, it was hard, she had to take off all this ice but the more she chopped the softer was the ice. And when she arrived near the water she took a rock, threw it and made a hole. That's the reason why they called this place Komartorvik which means to pick the lice from someone's hair and eat them. (Cf. Eskimos without Igloos, Nelson H.M. Graburn, 1969 : 74 "Another woman, the last to survive to her group, could not bring herself to eat her kinsmen but managed to survive by eating the lice on their bodies." After she had caught and eaten some fish she got her strength back. So she started walking towards Burwell where she knew there was people.

Labrador

There was many animals on the Labrador coast but they had no weapons and it was hard to kill them. People used to live there, but in Labrador they bought this land. Now people from Nain in Labrador can't even come there to hunt the animals that they like to shoot and to eat. There is a lot of fish in this area. All these rivers and lakes have fish. He does not know if there are fish around Makuvik Island because he has never been there.

In Burwell there is only small fish in the lake, "iqaluak". People like to eat them a lot. They stay there and can be fished all year round. He only knows from Killiniq to Hebron. The south is only for Labrador people. They try to own this place even if they don't know how to control it.

Interview : NOAH ANGNATUK

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People from Labrador come here and they are welcome. I don't know what is in their mind.

Noah's father and Mark Annanack's (the mayor) grandfather used to hunt together and to travel together, mainly in Labrador. They would never split.

Umiaks. They sailed in umiaks made of sealskin (udujuk). To make an umiak they would use only sealskin ropes. There is one person in Wakeham Bay who still knows how to make these boats, it's Mark Annaqatak, "the bald one". They used to carry a lot of load, dogs, hunting material and tents. The umiak was designed with a square front and a pointed back and with the wind the front used to make a big splash.

Government Research and Management; Polar Bears and Killer Whales. From the past until nowadays, the life is changing. Before, when they were hunting they were allowed to kill anything that they could see. And now the management is kept by the government.

There was more animals before the governments was there and began to make research.

Now Noah has been at a meeting in Kuujjuaq. There is hardly any whales. There is more killer whales in the area of Burwell and Labrador. When the summer comes, the killer whales start coming and they start feeding on whales. That's why there is hardly any whale in Ungava. The killer whales, even if there is a bigger whale, they can bite it. Even if there is about 10 to 50 whales in one group, even if there is only 2 killer whales, they would go one side of the beluga whales and start eating them. He has seen that. When he was hunting he has seen a killer whale trying to attack him, coming after him. He had an outboard and he has been able to get his way from the killer whale.

Interview : NOAH ANGNATUK

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The killer whales are so big that they can take any amount of animals, seals, cods, etc.

It's the only animal who eats a lot of sea mammals. When he was young people had seen dead whales on the land. He has even heard that people had seen dead killer whales on the land on the shore. There is something which bothers him. When there was research about polar bear they were put to sleep with a needle. He knows about 2 polar bears that were put to sleep and after they were blind, not able to see. They were only shitting, and they died. He has seen some other polar bear that had been given the sleeping needle. He has seen dead polar bears floating in the sea in the area around Killiniq. The first that he was speaking about, they were on the main land, in (4). You could throw a rock to this polar bear. He would open his eyes without being able to see. It's a long time ago now. In the past time they used to see dead polar bears in the water with no wound.

Observations about ptarmigans He knows about other kind of species like ptarmigan dying when crossing over the ocean due to bad conditions of weather in October. It happens even since. The ptarmigans used to pass through Killiniq in the month of October and he has heard about dead ptarmigans dying over the ocean because of storm weather - probably tired. At the month of May-April he knows that the ptarmigans fly out from the land to the ocean. In September, October the ptarmigan start coming back in the same direction. Maybe they go and make eggs in Greenland. In May they come from all Ungava through Killiniq and Button Island right to Resolution Island and they go further. And they come back through the same way. When a ptarmigan is tired of flying and lands on the ground, a person can easily grab it. He knows that some ptarmigans even used to land on the ships, when they get tired after flying on a long distance. (I asked if a tired ptarmigan is good to eat. The answer: Yes, the meat is good and more soft).

Interview : NOAH ANGNATUK

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Colonisation - Changes in Tastes. Noah likes to eat the qadlunat species: turkey, pork. When he was a boy, when the white people came, it was the first time they knew about sugar. When the Hudson Bay came, they would give them food to know how they reacted, then they would sell it on exchange for kamiks, tents, foxes...

Caribou Hunt. They would let their umiaks on the land at Rivière Beaufremont before to begin to walk inland, anywhere they could see caribou. They would not count the days as long as they could see caribou. And when they came back, the women will tell that they had seen caribou passing at Killiniq.

Qaniyatalik. (5) There was caribou, fish, ptarmigan. They used to go 10 to 15 miles inland. They used to walk until Fort Lake. They would go anywhere they thought they would see a caribou.

Anecdots. When he was young he used to guide tourists to Helen Falls. The Cree in Great Whale want to buy any kind of kamiks or mits or anything Inuit. They want it even if it is used...

When Noah was old enough to be able to hear stories, people used to say that they were caribou, even if there was nothing to see when he was a boy. He used to like to be outside, to be up in the morning to hear the whiskey jack "öppanoarjuak".

Noah was born near Alluviaq. He remembers when he was small and the caribou used to make calfs on the mainland. When he was able to work they moved to Killiniq, and he started to work for the Hudson Bay.

Interview : NOAH ANGNATUK

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His father would go in the mainland in September to kill caribou for qulitaks (clothing) or for a mattress. Sometimes the caribou would cross the river Alluviaq in July.

In point (1) they used to be a family all the year round. The grand children are now in Labrador. They used to go to Burwell by dogteam and by boat. In pt. (2) they were setting up traps sometimes for arctic fox, some on the islands, some on the land. In that case they would sleep on the Aulatsivik Island. Komaktorvik : The ice was not too thick there. The white man from Killiniq would hear so often about how good was this place for fishing that they would want to go there at pt. (1) to fish. But the mechanic on the boat could not get any fish. So they had to give him a fish and to make up a story about it so that the captain of the boat would not be angry against him.

Caribou - Summer. In summertime they used to stay around in his father's home in Tasiujaq. Only for the summer for hunting caribou - for anurak (near Tunnulik river).

Long time ago there were caribou only inland. That was the only time when they were able to get some caribou, and buy some meat that they would take back in winter. Before this time there used to be caribou, but when they moved to Killiniq the caribou were gone. And now the caribou have come back to Killiniq. That happened after Noah was in George River. Before he was born he knows that they were caribou.

Interview : NOAH ANGNATUK

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Once they were walking for caribou hunt in summertime, he was himself in his mother's amauti. And his father was killed by a spirit. He was victimized by a wolf. Noah's grandfather, "the Annanack" helped his mother and himself to survive. At this time there was hardly any food. And he would not have survived if he had not been fed by the "Annanack" (important: he says that twice at different moment). He only remembers his stepfather Lucassie Annaqatak. In this time they had only mussel loaders and they would take back the bullets inside the caribou once killed to use them again.

In summer time they would take a boat from Killiniq as soon as the ice breaks up and then they would go hunting any kind of species they would find, caribou for instance (cf. lines from Killiniq through Rivière Beaufremont). They would walk all over. When he was a boy they still used to go hunting for clothes, seals in the beginning of spring for underwear, kamiks and dogfood; and caribou in August/September. The Mountain Police would help them to buy clothes also if they had no money. They would provide food and clothes for the widows and old people.

Caribou - Wintertime. They would go hunting to 'Simialuk' which means (?) a land beside lake because there were caribous there. They had two roads to go, either direct by land, either by the Labrador coast but not on the fjord as it is dangerous to go there : there is a crack with snow pack over. Before to arrive in Alluviaq they would reach Simialuk. They used to go caribou hunting when the days are longer (in February - my comment). They would stay a few days in Simialuk, and they used to bring some caribou back. When they had 19-20 they would bring some back and they would leave some meat and come back maybe a few days later to bring the meat back.

Interview : NOAH ANGNATUK

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Rough Ice - Nanuklurk. When the day are long, about this month, when the bay is frozen on the Labrador coast the ice begins to make waves and breaks up even when there is no wind. He believes that there is some kind of creature in the ocean in the outside Labrador coast who causes the ice to break up, a huge polar bear called Nanuklurk. (On question : somebody saw it before he was born when people used to travel here and there.) Even if it is in the middle of the winter, when the ocean is rough it is like if it was spring. It was smooth, and when the weather is rough you can see it doing ripes. When this nanuklurk moves his huge body around, there are huge waves even if the day is nice.

APPENDIX 2

APPENDIX 2

METHODS AND TECHNIQUES FOR INUIT ECOLOGICAL AND LAND USE MAPPING PROJECT

A. General Information

The role of traditional knowledge in present day society is becoming increasingly important for the understanding and preservation of native cultures. Traditional knowledge plays a critical role in the every day lives of our people while at the same time this knowledge must be translated into new forms. New forms are created in order to deal with the rapid rate of change characteristic of today. In order for us to identify our present day needs and goals and control the direction that new forms take for dealing with changes, we must identify the roots from which our world view is based. Knowing these roots and effectively understanding them will in turn enable us to better predict and decide about the future.

This field guide is a first attempt to describe a step by step process and general framework in which the Inuit of Northern Québec are presently recording their knowledge about the ecology, environment and their land use activities for both past and present. These records in the form of maps and written text are in turn supported by explanations, perceptions and ideas that hunters maintain are the basis of our knowledge.

At this time it is critical for all Native people to begin the process of a continual development of an information base. Once we have information "packages" we have the tools which enable us to make decisions which are based on our Native world view and not those imposed on us by others. Native people's traditional knowledge and occupancy of the land is based on two principles :

1. That there is an evolving pattern of land use both past and present. Land use means where and how people go in order to harvest. This pattern can be described with the use of maps in terms of its geographical limits, intensity of use and shifts either seasonally or over longer periods of time.
2. Coupled with this there is a social system and information base that functions within that territory in order to use the resources created from the land. This relationship between man and resources is dynamic and is based on four factors :
 - a) ecology of the resource base;
 - b) knowledge and information base of the people;
 - c) their skills and technology and;
 - d) the population as a whole.

1. Explaining the Project

The final success of the Ecological Knowledge and Land Use Mapping Project will be based on the degree of cooperation and enthusiasm for each hunter and for the community as a whole. Cooperation and enthusiasm will in turn, be directly linked to the level of understanding about the project. Understanding, of course, is directly linked to the information and explanation Inuit are able to provide along with what they have heard about the Project and its importance from other Inuit. Consequently, explaining the Project to Inuit and the community is the essential first step of success.

2. Project Objectives

The primary objectives for the Ecological Knowledge and Land Use Mapping Project have been described in the Newsletter that is distributed to all hunters prior to their participation. Briefly, however, the following points can be emphasized.

This project is essential for :

1. Culture - it will preserve knowledge and the patterns of land use for future generations and play a futur role in understanding the past.
2. Management - it will provide very valuable information and ideas about the animals and the environment of each community for use in Inuit based decisions about management.
3. Economy - it will help determine how Inuit should decide between subsistence and commercial use of resources or territory.
4. Political - it will demonstrate very clearly the real pattern of land use and rights to territory that can be used in offshore claims, protection against development or for establishing boundaries of Inuit control. It will also provide every individual and family with a record of their land and use that would serve as a clear statement of their history and ownership of territory.
5. Planning - it will provide the essential information that will enable Inuit communities or regions to create detailed plans for the controlled protection and development of their territory and its resources.
6. Education - it will provide through Inuit knowledge and understanding about their territory information that will be absolutely essential for the development of a curriculum based on Inuit information and explanations.

3. Basic Principles

There are several principles upon which this project is based, that should be understood by the hunters, communities and researchers.

1. This information is controlled by Inuit for their use according to their priorities and questions they want to answer.
2. The information can be shared with others, but only when the Inuit agree to sharing and only after they establish the rules for its use.
3. In order to assure Inuit control over the information and its use the entire project is being funded by Inuit funds or from foundations that contribute directly to projects but do not require any of the information for their own use.
4. All of the information will be returned to the community for their use.
5. Each hunter will receive a copy of his own map with all of the land use information that he contributed to.

4. Organizing the Community

There are many different ways to communicate information within a community and every community will have one particular way that "works best". It could happen that there will be a misunderstanding or misinterpretation. Regardless of how we organize the distribution of information and the explanation of the project, nothing will take the place of time and patience. From this base however, certain approaches may be more appropriate :

1. Council Office : meet with Mayor and council representatives. The first meeting is to present yourself and the project. Ask when would be the best time to have a meeting with the community. Perhaps they have one already scheduled in which you could make a presentation of the project.

2. Working Research Partner and Space : Council will help provide space. The school might have space. Ask around for the best person to work with. It is good to keep several options open (by having more than one helper) for times (day, nights) that one researcher will not be available.

3. Anguvigaq Representatives : contact by visiting at home. Find out when they are having a meeting in which you could spend 15 minutes at the beginning going over the project and the names of the people who should participate and help develop the information base. Get times with them for making their maps.

4. Radio Announcement : you could ask some hunter/Anguvigaq representative who would work with you to give a talk about the project and work plan on the radio. Announce how long you will be working in the community, how many people are working and who they are - announce their names. Also who's maps must be completed. Announce times, and where you are set up to do the work. Invite whole community to come visit the office.

5. Individual Hunter Contact : visit hunters at their homes; a much more general understanding is accomplished in their home atmosphere. Sometimes the hunter will prefer making his map at home. Better if he makes his historical map in the office because it's the first map and is recorded while the current day map is less complicated to make.

6. Community Meeting : project presentation; names of people who should make their maps; working schedule; place. You should keep in touch regularly with an Anguvigaq representative and Council members. Don't be shy to appoint a person who can be your "elder" for times when you need consultation.

B. The Interview

The interview must encourage the hunter to present his own facts, observations, explanations and ideas about the ecology and behavior of each particular species and his historical and current day patterns of land use. In order to do this two points are essential :

1. The hunter(s) must clearly understand **why** these interviews are being carried out. This involves a careful explanation of the project and the use of the information that is being collected.
2. The hunter(s) must understand that they are really not there to answer questions, but rather to provide **expert** information. Questions should not result in short "yes or no" type answers as apposed to descriptions and explanations. The hunter's own words and perceptions are the most important to record in order to achieve the best understanding of his explanations.

The researcher must be familiar with the project in relationship to Inuit way of life in order to encourage personal initiatives during the interview. The ideal situation is when the researcher can describe to the hunter in his own words the project and be able to formulate specific questions and those of his own which he can ask the hunter. The basis of an individual's initiative is discussion and explanations between researchers, other Inuit and the Elders.

1. Material Required for Interviews

- 1) Example of Land Use map
- 2) Registered acetate identified with label
- 3) Three (3) different size base maps :
 - 1:500,000
 - 1:250,000
 - 1:50,000
- 4) Legends in Inuktitut and English
- 5) Three (3) sets of pens, erasers (for hunters, researchers)
- 6) Field guides (marine mammal; land mammal; fish; birds)
- 7) Notebook
- 8) Tape recorder - microphone preferably hanging from ceiling.

2. Land Use Interview

This interview develops historical and current day patterns of land use for individual hunters. This interview also enables hunters to record their own life histories which will directly support their land use maps.

Depending on a hunter's age he will have two maps. The historical interview takes close to four hours since time is spent at the beginning with an introduction. Also life histories are recorded. The current day map focuses on land use patterns and nowadays camping sites and is usually a couple of hours.

Make sure you distinguish between past and present hunting - a hunter could be confused and tell of his nowadays use when doing an historical map. It's a good idea to tell him : "This map is only for your hunting long ago, we will make a separate map for your hunting nowadays."

There is an overlap in time when people were still using dogteams and when they started using the first canoes.

It is also important to let the hunter draw his own lines. If he feels shy you can explain that it is too difficult for the researcher to try and mark his lines precisely.

Patterns and community history will be well developed after mapping the key hunters. Similarly, some questions included on the land use interview when answered by eldest hunters will not have to be asked again. After this, the process of individual land use interviews becomes more heavily based on **individual histories** and **intensity** of land use.

Sometimes a hunter will have problems finding his route on the map. In this case find out who he was travelling with or who knows this particular route at which time researchers can copy route off his partner's map.

Since it is impossible to pay all the hunters for the time it take to develop such a land use information base only the eldest hunters in a community are paid for their time spent on land use mapping. Elders are paid \$50. for completing each map. The time the other hunters spend on their maps can be seen as their **contribution** to the community and school atlas.

3. Ecological Interview

This interview enables Inuit to develop an ecological information base entirely from the **expertise** of active and respected hunters. The hunter's knowledge reflect a powerful relationship between the land and animals. The idea is for the hunters to identify and develop their own "pieces" of information, ideas and needs versus interviews structured to answer questions developed in and around southern information and criteria.

Native perceptions and understandings are not necessarily evident, straight forward or similar to a biologists. This is knowledge that is entirely theirs and which the interviewer must encourage and note even though it may not be what he thinks or has been taught.

Because it is not always possible during an interview situation to completely understand the depths of what is being said (language, speed of interview, etc.), the researcher should ask his co-worker after the interview. He or she can be a great help to clarifying understanding information and patterns.

Record all ecological interviews using the pause button when necessary. Hunters are hired at \$25/hour as experts for ecological mapping.

C. Notes Accompanying Maps

The notes should be written to represent in the case of a land use map, a hunter's life history and seasonal patterns of land use by species. It helps to write a hunter's notes in the first person making it more personal and easier to directly accompany his map. Eventually all hunters who will participate will get a copy of their personal notes and land use maps.

In the notes it is more important to include information that is not "mappable" while noting the key areas of use and importance. Key areas can be those where a lot of activity occurs or a specific purpose area. Other information that cannot be mapped includes psychological explanations and perceptions especially typical of ecological information.

Set up your land use notebook (book 1) with a header which includes :

Hunter No.	Hunter Name	Historical	Current	Page #
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You should have a separate notebook for Ecological Interviews starting with book 1.

Set up each individual hunter interview notes or group of hunters with their name(s), number(s), name of co-worker, other people present, time and date of interview. Note at the end of interview number of tapes included for that interview.

In your notes (especially Ecological) be careful when writing by distinguishing (make a note to yourself or put parenthesis), what and how information is being told to you and how you understand it. Instead of restructuring sentences which take time and can be misinterpreted it is better if you write down the exact words that are being told to you. If you wish, after the interview, you can write your own words in a separate section.

D. Land Use Interviews

1. Hunter Introduction - General

All individual hunters in Northern Québec are making land use maps showing their hunting areas for each species for every season of the year. This Mapping Project belongs to the hunters of Northern Québec. Inuit are making **their own** maps and developing **their own** information base. We are here to assist you to develop this information which will be made into community and school Atlas. Every community will have their own series of maps and booklets in Inuktitut.

The mapping computer located at Makivik's Cartographic Centre in Kangiqsujuaq will be able to generate maps quickly and in Inuktitut (show computer maps).

Each hunter has two land use maps, one historical and one current.

1) The **historical** map is the time before people were living in settlements; hunting and travelling using dogteams, umiaqs (big canoe), kayaks and only a few bullets.

2) The **current** day map is since people have been living in the community, in houses, and up to today while hunting by canoe and skidoo.

First, in order to establish a sense of time when did you have your first dogteam?

When did you no longer have them? When did you get your first skidoo?

When did you start travelling by canoe?

2. Hunter Introduction - Historical Map

There are two parts to the historical map :

- 1) The first is to tell about your life history such as where you were born (pt.1) and where you lived during the different seasons before moving to the settlement. Also who you travelled with and who were your neighbours. Other hunters have also described why and where they moved across the land during the different seasons in a year. The individual seasons for all your living sites will be coded on the maps and in the notes.
- 2) The second part of the historical map involves marking your seasonal hunting, fishing and trapping areas for each individual species. Here is a list of species which we will use with the species' individual colour. After you have drawn an area (the translator's name) will code it.

It is also interesting to note how you hunted or fished a long time ago and with what (e.g. spear, snares).

The individual seasons for all your hunting lines will be coded by (researcher's name).

You should also identify your dogteam, umiaq, kayak, Peterhead and walking routes.

During the mapping you can include anything that you feel is important to have on your map.

3. Seasons - Months

This is the list of seasons and months which the Mapping Project uses. Take a look at the months which belong to each season.

During the interview it is best to describe your hunting patterns for each species by individual season; this way we will do it systematically and not miss any information. It is up to you what season you want to start with.

Show an example of a hunter's historical map.

Do you have any questions?

Ready to start?

Do you mind starting with Marine Mammals?

E. A Hunter's Sense of Time

My parents' time

When I was born

When I was a small boy - growing up
- learning to hunt

When I was a young man - still single
- hunting on my own

When I met my wife - my own family

When I moved to the settlement

F. Historical Hunter Interview

1. Life history

You can begin by telling about your life history.

LIFE HISTORY and LIVING SITES such as where you were born (pt.1).

Which seasons did your family live at this camp? Why?

(Pt.2) - From there where did they move?

What seasons did you live there?

Which were the camps that you and your family used to use?

During which seasons?

Are there any other places?

What did you do there?

What were people hunting there? What for? (e.g. seal skins, dog food...)

Where and what months did people dry fish and meat?

Family

What were your parent's names?

Where were they from? From which region/community?

Who did your father travel with?

Can you remember which were the camps your father used before?

How did people from different camps communicate with each other? How did people send messages?

Living sites

Could you explain where, why and how you and your family moved to during the different seasons of the year?

From which points did you move back and forth?

Camp type

Did you also build kayaks? Where were people building kayaks?

Do you remember hearing about grass tents? (moss and willow called allugalik)

Were there any places where people were living in grass tents?

Can you remember people living in skin tents? Where?

Neighbours and other people

Who were the people you met from other settlements?

Which places were there a lot of people living?

The people who lived there, did they have a certain name? What did they called themselves?

Which were the families that lived together?

Who were some of your neighbours?

Where did people build huge igloos to gather and enjoy games? What seasons? months?

Keep note how hunters have reacted to a particular idea, questions, maps, etc.

Note anything interesting hunter is doing in the process of mapping - e.g. saying how much he loves an area, how sure he is of the lines he is marking, etc.

These questions are only guidelines and topics of interest. Treat them as well as possible but follow the conversation as it leads and mark down any additional questions you may find relevant.

G. Current Land Use Map

This map is similar to the historical map except there is no life history section of the interview. Also, a lot of the historical type question are irrelevant here.

It is important to determine with the hunter from when and where in time his present map begins. If the hunter is no longer hunting on a regular basis you should note since when.

You will notice some species were less hunted historically and more intensively nowadays, or vice versa; eg. caribou : long ago was hard to find, nowadays caribou are closer to the community. Geese : long ago not important because of availability of bullets, small food resource, etc. Camp site information you can pick up during the interview or at the end.

If there are routes used today which are the same as long ago you could ask hunter if he would accept that you copy the route off his historical map instead of waisting time doing it over during the interview.

Similarly if there is a route which he travels with some other person who's routes has yet been mapped you could ask if it would be possible to copy the route off his partner's hunting map.

1. Hunting Patterns Current

Seasonal hunting patterns for individual species - proceed as second half of historical interview.

2. Living Sites

Which camps do you use nowadays?

Are the camps used today are the same as long ago?

Since you have been in the settlement can you describe your seasonal movement across the land?

3. General

What is the most important feeling you have about the transition from the past hunting way of life to the present way of life?

What do you think Inuit must do in order to make this transition happen under your control and in the way you want?

How many whales does a community (nowadays) need for food supply in the spring? Summer? Fall?

H. ROUTES

1. General

When : Early spring route
Late spring route
Spring route : What months is it no longer safe to travel on the ice?
Fall route : What months can people usually start travelling on the ice?
Winter route
Which routes can you only travel by dogs and not by skidoo?
Night time route

Where : Sea ice route : how do you tell which direction you are travelling?
Inland routes : how do you tell which direction you are travelling?
What land marks do you use to tell direction?

Most known routes

- Which routes are the most known?
- Why is it best known and/or most used?
- Which routes are more recent?

Along the way

- Is there something different/important to know or watch along this route?
- Do you come across anything special along the way?
- Where are your overnight spots?
- Identify any dangerous areas.

Time

- How long was the trip?
- Who had the last dogteam? What year?

2. Kayaks

- Where :
- Which areas did people hunt with kayaks?
 - Which routes did people used to travel by kayak?
 - Were there any places where people's belongings were transported by kayak while the owners walked?
 - Which months are the best for kayaking?

Dangerous areas

Identify any dangerous areas?

- Time
- What year (how old were you) when the skin kayaks disappeared?
 - Last person who had one?
 - Who still knows how to make one?
 - How did you repair kayaks? skins? fish?
 - Patching with large fish - what kind?

3. Umiags

- Can you remember?
- Who owned them?
- Seal skin steered only with big paddles

4. Peterhead

- What regular trips did people go on? (purpose?)
- What special trips did people go on (place, purpose?)
- Which people/families went on these trips?
- Who were the men who owned Peterheads?
 - with sails?
 - with motors?
- From whom did the hunters get a Peterhead?
- How were they bought?
- Who travelled with who?

Along the way

- Is there something different/important to know or watch for along this route?
- Do you come across anything special along the way?
- Identify all the dangerous areas.

Time

How long was the trip?

What year (how)?

What kind of weather is warning of rough seas that won't be safe to travel?

How did people navigate? What land marks did people use?

How did they use the sun, the stars and the moon?

5. Harbours

Where?

Are there shallow water areas when travelling you must be careful? Where?

6. Canoe

Where : - Spring time route
- Night time route

When : - What year were the first motor? canoes?

Shallow water areas where motor touches ground.

Time/distance/cost

- How many gallons?
- How much dollars for one gallon? (with what motor size?)
- Full/empty

7. Dogteam/Skidoo

Where : - Early spring route
- Late spring route
- Winter route
- Which routes can you only travel by skidoo and not by dogteam?

When : - In the spring what months is it no longer safe to travel on the ice?
- What months is it no longer possible to travel by land?
- In the fall what months can people usually start travelling on the sea ice?

Most known route

- Which are the most known?
- Which are the most recently discovered route?

Overnight spots - Where?

I. Land Use Archeology / Special Area Interview

Archeological Sites

Identify where?
What does it look like?

Kayak Stand - Where?

Cache

Where?
What was cached there?

Grave

Where?
Who?
How many?

Inuksuk

Where? (several / single)
Purpose - caribou hunting/heading
- land mark
- marker for ships (built by whites)

Driftwood Sites

Where were people living who used this area?
Regular source or dependent on wind?

Drinking Water Site

Where were people living who used this area?

Place where the water is especially good - why?

Cabins

Who's cabin?

Any cabins that used to be there that are no longer there.

Meeting Site

Where?

Who used to meet there?

- local people?

- people from different settlements?

During which season?

For how long would people stay there?

What did people do there?

Do you remember a story about that place?

Drum Site

Where?

Are they many?

Are they full or empty?

Do you know who they belong to?

Are there a danger to the nearby lakes, rivers or wildlife?

Ship Wreck

Where?

Who's boat?

How long been wrecked? Since when?

Do you know what was it's cargo?

Trading Post

Where?

Name?

What year was it established?

People from which settlements used to go there?

When did it close down, if it is closed?

Land Mark

Do you know of a special feature on the land that is important to mark on the map?

i.e. Where the ground is sunken by dogs travelling such a long time over same area.

Special rocks, cliffs with a special shape.

Special Area

- Special area for the people and/or resources

e.g. : . historical site

. Old Fort Chimo - old canal built of trees for herding caribou

. Wildlife area

. Special Resource area

e.g. : . Crater lake

. "Story" area

Drinking Water Site

Where were people living who used this area?
Place where the water is especially good - why?

Cabins

Who's cabin?
Any cabins that used to be there that are no longer there.

Meeting Site

Where?
Who used to meet there?
- local people?
- people from different settlements?
During which season?
For how long would people stay there?
What did people do there?
Do you remember a story about that place?

Drum Site

Where?
Are they many?
Are they full or empty?
Do you know who they belong to?
Are there a danger to the nearby lakes, rivers or wildlife?

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. Special Resource area

e.g. : . Crater lake

. "Story" area

J. Ecological Interviews

Map Scales : 1,500,000, 1:250,000 and 1:50,000

1. Introduction

Make sure the hunters have the factual information :

- e.g. Where do they feed? on what?
- What overland/sea/coastal route do species take while migrating?
- When (months) - early, middle, late
- What other species is the animal related to in the wild?
- What are some of the physical changes for a species throughout certain time in the year?

Expand on the physical and psychological explanations :

- e.g. Describe species lifecycle.
- Why are they feeding where they are?
- Feeding varies seasonally and regionally
- What happens which can help you predict a species location, a species behaviour?

Sensitivity of species - physical capabilities :

- e.g. How long can they stay under water without coming up to breath?
- Sensitivity of hearing (i.e. whales, Harp seals)

A general statement about what you want to say about the species:

- e.g. If some Inuit kids wanted to know about the whales what would you tell them?

2. Critical Areas

Delineate / classify these areas.

Definition of critical :

- 1) Critical to the survival of a species : concentration areas -
Why and **how** do the animals use these areas?
- 2) Culturally critical - related to a hunter's mental map.
- 3) Critical in the defence of your territory.

Sensitive areas are sometimes more defined in some areas than others thus it is important to describe.

3. Shift/Changes in patterns of behaviour/habitat.

- Year to year variability
- Habitat dependencies
- Changes in habitat use
- In the past were there other habitat sites important to a species which is longer seen there now? If so, do you know why they moved or changed location?
- Are there new places the species is using nowadays? where?
- Are they still using their old place?
- Changes in group size?
- Composition of groups?
- Changes in behaviour?

4. Interrelationship Between Species

Different species are seen close to one another or together in the same region :

e.g. whales or seals will be feeding when Arctic terns are seen flying overhead.

One species behaviour forewarns another species presence or behaviour :

e.g. when the geese arrive the fish are out of the sea and in the rivers.

Species doing the same thing at the same time :

e.g. young are born and with their mothers at the same time as other species.

K. Ways of Animals

General topics dealt within ecological interviews :

Migration : Early arrivals (months)
Later arrivals (months)
Old/young — male/female
Some
Most

Movement : Months
Patterns of movement
Movement up river - how far?
Movement into bays
Movement from - coast to inland
- offshore to coast

Grouping : Months
Males/females/young
High/low tide
How long in the area?
Local movement in area?
How large/small groups?
Changes in group composition between seasons?

Basking : Months
Land
Ice - what kind of ice : ice floating off edge, new ice,
thick ice?

Moulting : Months
Male
Female
Physical change - colour change
Age dependent

Feeding : Months
On what?
Schedule - day/night
Seasonal variability

Denning : Seasonal occupation
areas : Different kinds : Fox - holes sandy areas
Polar bear - cliffs, snow drift

APPENDIX 3

HP 9817 Menu Driven Software Package:

The overall system will consist of a branching format of menus, each branch giving you more specific functions to perform. The system as it is outlined on the flow charts consists of four main parts:

- 1) Start Up routine,
- 2) Utility Tasks,
- 3) Lists/Symbols Manager,
- 4) and Map File Manager.

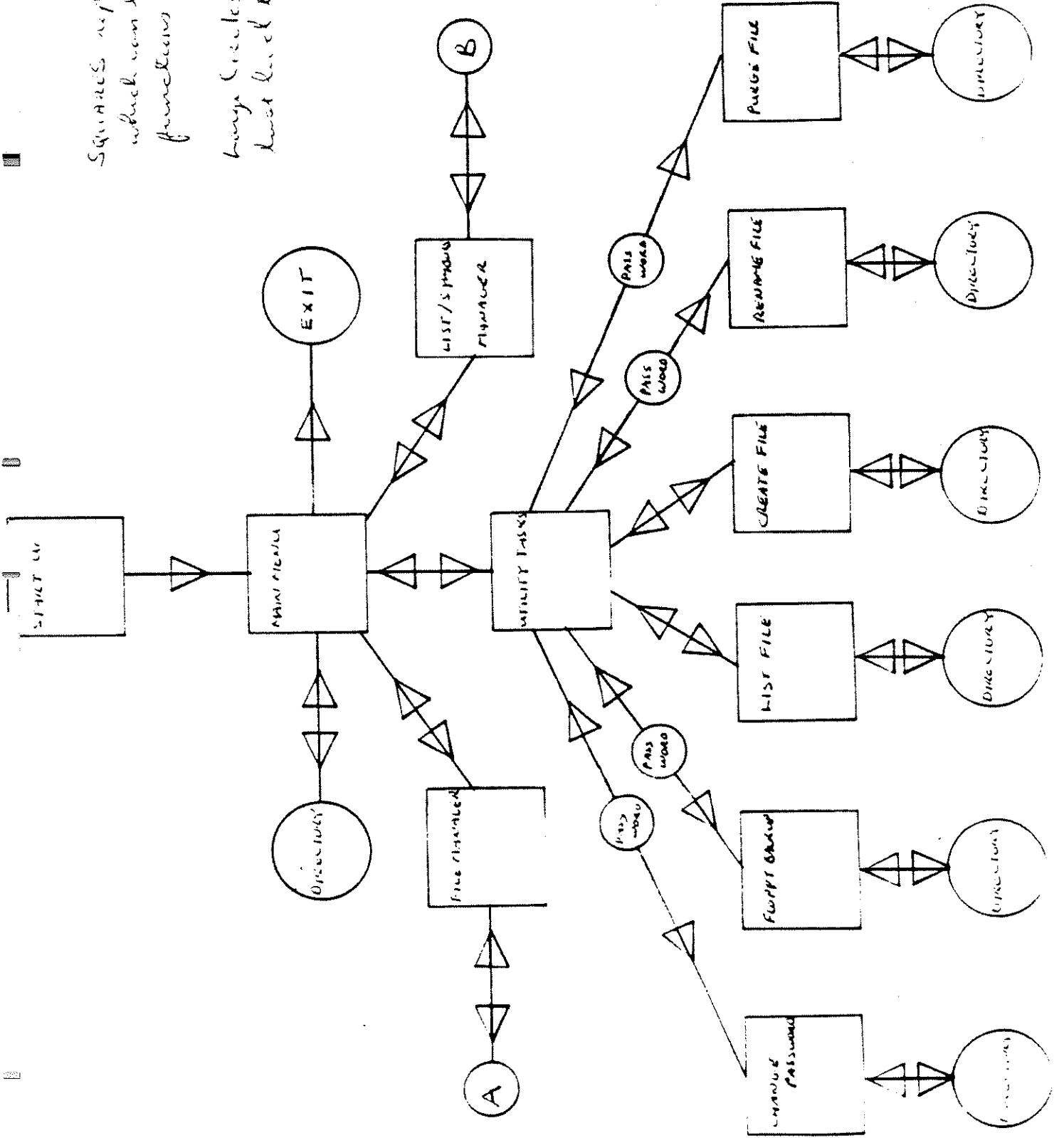
Each of these parts consist of a number of subfunctions which will be described on the following pages. Keep in mind that not all of the subfunctions have to be implemented at the same time. They are included to give an overall picture of the final system. In the following paragraphs I will state which subfunctions are essential for the initial system and which ones can be added later.

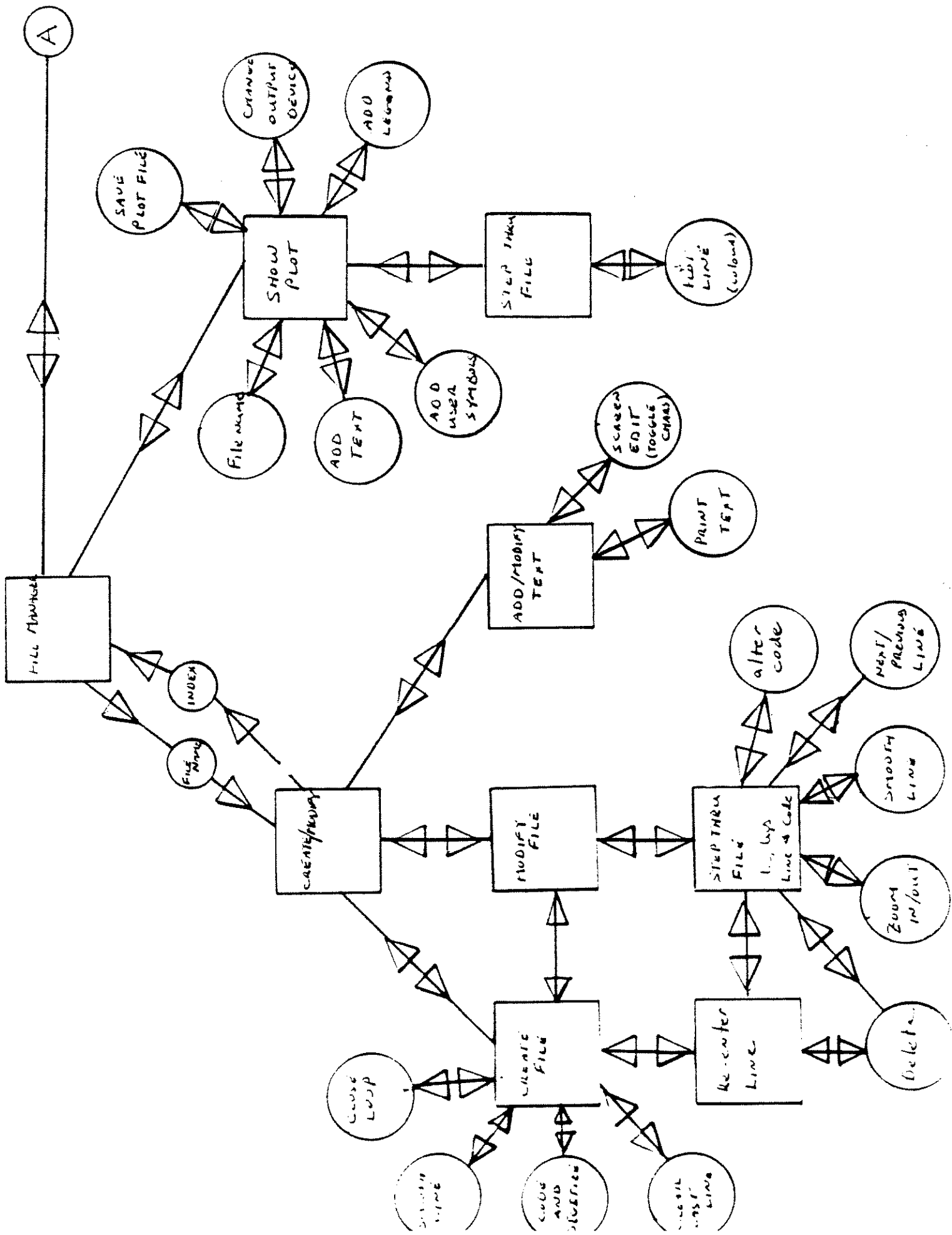
Before going into the overall system the method of how files, screens and validating of data will be described.

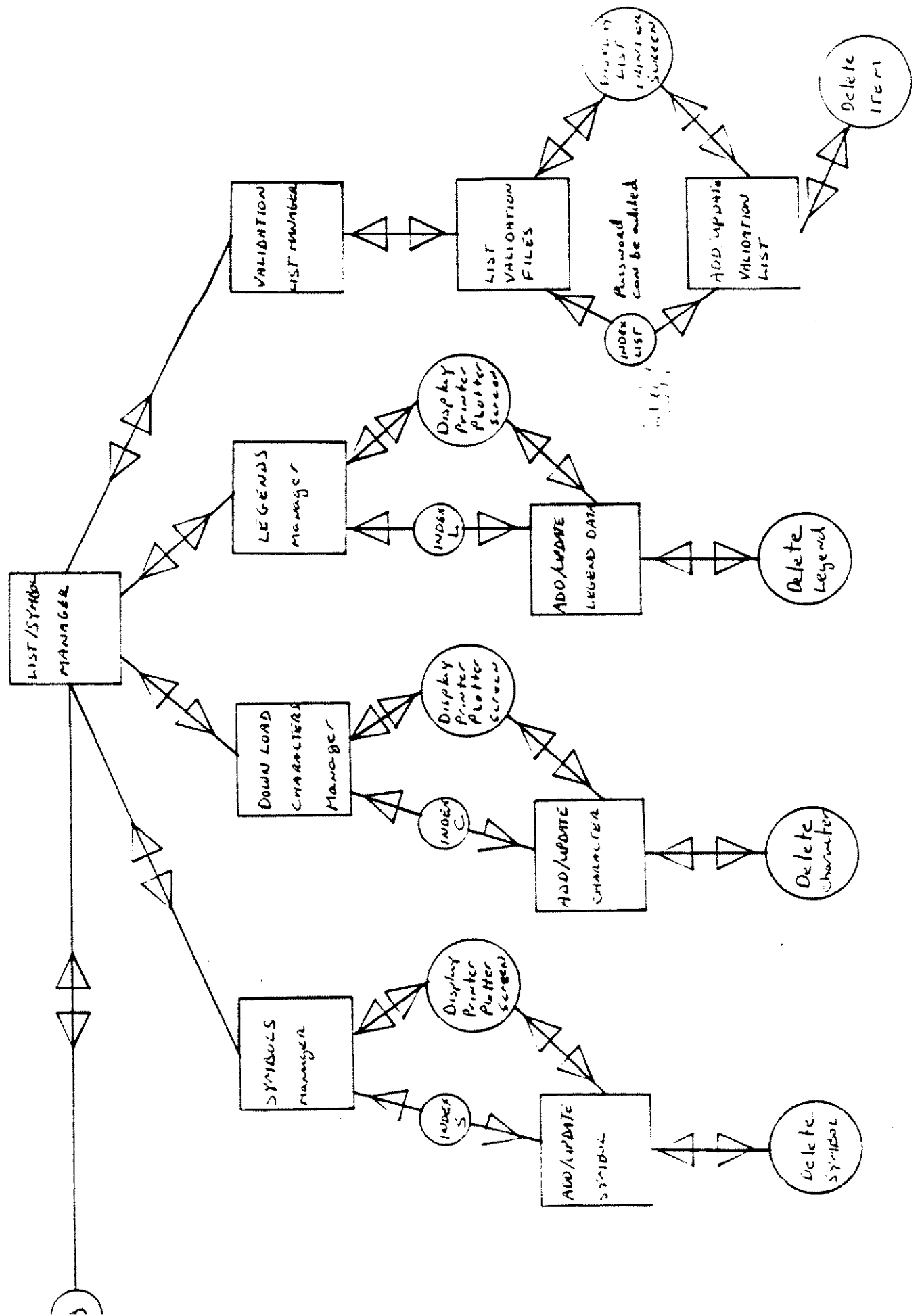
Please note: that if menus are required in French (or other language) they can be added at a later time although it should be defined as a requirement now.

SQUARES represent functions which can be used with other functions

circles represent the level that the user will be in







File Names:

The file names will be entered using the same subroutine from any point in the system. This will allow validation of codes and consistent file naming conventions. The subroutine will have access to the directory and allow direct file name input from the list.

The new file name format will be as follows:

first 2 characters	- Community code
next character	- Map sector code
next 3 characters	- Hunter code
next character	- Interview code (A,B,C,etc)
next 2 characters	- Map type code
next character	- File type Identifier

This will use the full ten character available for file names and allow easy file mask searches. The Community code, Map sector code, Hunter code, and Map type code will all be stored in validation lists to ensure only valid combinations are entered. The File type Identifier will be system supplied in the following format; D - data (digitized) file, T - text file, and I - index file (others can be added).

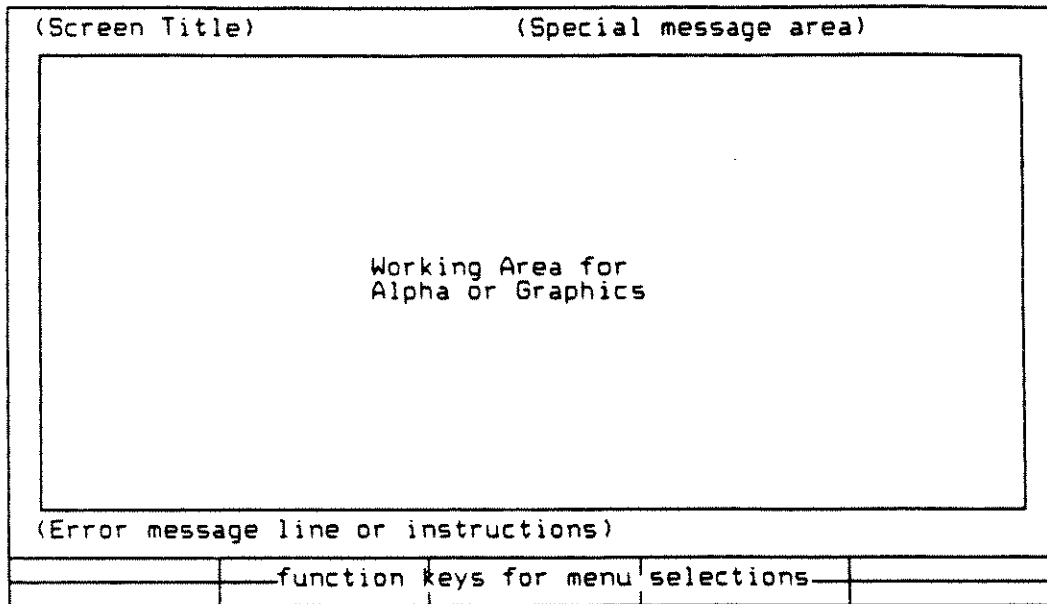
To aid the operator in entering the file name it can be broken into five steps (one step for each of the first five codes in the file name). When a code is to be entered all possible values will be displayed in English text on the screen and a menu type selection can be done.

File protection code can be added to the files if required, this will be included as an option to the operator.

The data files are random access and can be different length records depending on the Map Type format. So large amounts of space are not wasted, the length of the files will be truncated after each creation or update.

Screens:

All screens will follow the same format as shown below;



Screen Title - this area will display the function level you are now in (i.e. the menu name or specific function name).

Special Message Area - this area will display any special messages to the operator which will assist in performing the required function. Will also display messages the system puts out to let the operator know when time delays are due to some internal function being performed.

Error Message Line - this area will display any error message to the operator and a possible correcting action. If fatal errors occur this area will contain the error code which should be written down and passed on to be corrected. This area can also be used as an instruction line to assist the operator in performing the required task.

Function Keys - the labels on the functions key will change from menu to menu reflecting the appropriate functions available. Three function keys will remain standard throughout the whole system and always found at the same location where applicable: 1) Directory key, 2) Abort key, and 3) Return to previous menu key.

Working Area - the working area will automatically switch between alpha and graphics modes depending on the function being performed. If in alpha mode validation lists or text will appear here. When in screen editing mode this will be the working area. In graphics mode the area will display the plot or special symbols.

Validation Lists:

The validation lists will become a very important part of the system when completed. The lists will allow any entry person to enter valid codes without having to know which code represents which element. When a code is to be entered a menu with English representations of the codes will appear on the screen, the operator will then choose a selection from the menu and the proper code will be entered by the system.

A provision can be provided to allow direct code entry if request, although it will still use the validation list to verify a valid code has been entered.

A third method of code input is through a predefined graphics tablet and light pen. This function would still be tied into the validation list and possibly display the English representation of the code entered on the screen (in the special message area).

Below is a list of codes which would require validation list:

1)	Community	XX	
2)	Hunter	XXX	
3)	Map Type	XX	
4)	Species Group	X	\
5)	Species	XXX	\ would be tied together
6)	Activity Group	X	\
7)	Activity	X	\ would be tied together
8)	Relative importance	X	
9)	Age	X	
10)	Sex	X	
11)	Months Label	XX	
12)	Seasons	XX	\
13)	Range of Season	XX	\ might be combined ?
14)	Map Sectors	XX	leads into base map on screen.
15)	Pen colours	X	for default outputs.
16)	Line styles	X	for default outputs.

(Please note the 'X' can represent digit or alpha).

The validation list would be an ascii sequential file with random length records in the following format:

item	(1-3 characters)
description	(15-20 characters)
details	(free text to make maximum record length 80 characters)

A separate file will hold the list of validation files and their format to allow easy updating of these lists. This file will be created at program generation time to ensure all validation file have been accounted for. Additions of more validation files would mean programming for those file and manually adding their existence to the list of validation files.

Start Up Routine:

The Start Up routine is an essential part of the system, it will define most of the default parameters of the system so the Mapping routines can be set up for individual tastes. The following list will identify some of the things this routine will do:

- a) Auto boot - when system is powered on the mapping program will automatically start up with option to leave and return to the operating system.
- b) Install Date and Time - Will ask operator to enter correct date and time for time stamping on files (alternate method is if the system has a clock and calendar on a battery backup).
- c) Defines common and variables used.
- d) Sets up error logging routine.
- e) Sets up keyboard interrupts.
- f) Defines Input/Output devices.
- g) Allow user to individually tailor the system and store it in a personal file. This will allow individuals to have the system defined the way they want or they can use the defaults initially set up in the system. (This is an option to be considered for phase III).

This routine then loads the Main Menu which contains the other three main sections of this system.

Main Menu:

The Main Menu will be the entry point into all of the subfunctions of the mapping system. The menu will consist of five choices:

- 1) Exit from System - Allows you to return to the Operating system.
- 2) Directory - Lists the files which are stored on the specified storage device (Hard disc will be default unless changed in Start Up routine). When displaying directory a file can be selected and kept as the default file name in the system (note the last file entered will always be kept as the default file name). The directory function will be available in all subfunction on the same function key. File mask can be used to find a group of files.
- 3) Utility Tasks - This will bring you into the next level of menus containing special utilities made available to the operator. Some of the functions will be password protected to prevent unauthorized use.
The functions available will be:
 - a) Purge File.
 - b) Rename File.
 - c) Create File (???)
 - d) List File.
 - e) Floppy Backup.
 - f) Change Password.

These are discussed in more detail in a following section.

- 4) Lists/Symbols Manager - This will bring you into the next level of menus containing functions to add lists and symbols to storage files for later use. Some of the functions will be password protected to prevent unauthorized use.
The functions available will be:
 - a) Validation List Manager.
 - b) Legends Manager.
 - c) Down Loadable Character Manager.
 - d) Symbols Manager.

More can be added if required. These functions are discussed in more detail in a following section.

5) Map File Manager - This will bring you into the next level of menus containing functions to add or modify digitized maps and to display these map on the required output device.

The functions available will be:

- a) Create/Modify digitized map.
- b) Show Map on output device.

More can be added if required. These functions are discussed in more detail in a following section.

Utility Tasks:

The utility task menu will give the operator access to a number of standard functions required in the day to day maintenance of the overall system. Most of these functions will be an extension of the equivalent operating system functions. The purging and renaming of files must be done by the program so the indexes can be properly updated to reflect the changes. If done outside of the program (i.e. the operating system) then index pointer will not properly reflect the changes in the files.

Password access will be required on some functions to prevent unauthorized changes. The password will be encrypted and stored within the program unit itself. When entering the password local echo will be turn off so it will not be displayed on the screen.

This menu will have six subfunctions as follows:

- 1) Purge File(s) - this function will request a password to be enter before access is allowed. A file name will then be requested (possibly a file name mask could be added to allow multiple file removal with one command) and the system will ask if OK to purge file (yes/no answer is required - no is the default). When complete all references to index files are removed automatically before returning to the Utilities menu. This subfunction will have access to the directory.
- 2) List File(s) - A file name will be requested (possibly a file name mask could be added to allow multiple listings with one command) and the system will list them as their internal format to the default listing device. Expanded listing formats could be added if required at a later date. This subfunction will have access to the directory.
- 3) Create File - A file name will be requested and the system will create a file with the appropriate format. It is questionable whether this function is required or allow file creation to be done in the areas where the file is first needed. This subfunction will have access to the directory.
- 4) Rename File - this function will request a password to be enter before access is allowed. A 'FROM' file name and 'TO' file name will then be requested and the system will ask if OK to rename file (yes/no answer is required - no is the default). When complete all references to index files are updated automatically before returning to the Utilities menu. This subfunction will have access to the directory.

5) Floppy Backup - A file name will be requested (possibly a file name mask could be added to allow multiple backups with one command) and the system will back them up in the same format they are stored on the hard disc. Index information will also be automatically backed up so the floppy disc can later be used as a file input device without having to re-index the file. This subfunction will have access to the directory.

6) Change Password - this function will request a password to be enter before access is allowed. A new password will be asked for, it will be asked for a second time to verify that the operator knows the new password he has entered. When entered the second time the file is updated and the new password comes into effect. Your must keep track of your password since there will be no direct way of retrieving it.

When any of the above function are complete they will return to the Utilities Task menu. When the 'previous menu' function key is entered the system will return to the Main Menu.

Lists/Symbols Manager:

This menu allows the operator to add or alter lists and symbols which have been stored on files for later use. The only function which would be considered essential initially is the Validation List Manager, the rest are features which can be added in phase III.

- 1) Validation List Manager - this function will manage all of the validation lists which are used in the system. A menu style screen will appear displaying all of the validation files in the system, a print key will allow you to make a hard copy. Choosing one of the items will bring you to a second screen displaying all of the items in the validation file (page up/down will be available if the whole list can not fit on the screen). The screen will allow you to add/update/delete (which requires password access) or make a hard copy of the list. In update or delete mode the item will be chosen from the screen in a menu style format. If 'add' is selected a prompt line will appear requesting the required data (the format of these files was described in a previous section). When leaving one of the modifying functions the file is updated (sorted if necessary) and then the screen is refreshed.

- 2) Symbols Manager - this function will allow the user to define or update user definable symbols. The symbols can be any graphic shapes with defined fills. A list with the symbol descriptions will appear on the screen (page up/down will be available if the whole list can not fit on the screen). The screen will allow you to add/update/delete or make a hard copy of the symbol. In update or delete mode the item will be chosen from the screen in a menu style format. If 'add' is selected a prompt line will appear requesting the required data (i.e a title for the symbol). The symbols can be added or altered graphically on the screen. When leaving one of the modifying functions the file is updated (sorted if necessary) and then the screen is refreshed.

- 3) Down Loadable Characters Manager - this function will allow the user to define or update user definable characters. The characters can be any graphic shapes. A list with the keyboard assignment will appear on the screen (page up/down will be available if the whole list can not fit on the screen). The screen will allow you to add/update/delete or make a hard copy of the characters. In update or delete mode the item will be chosen from the screen in a menu style format. If 'add' is selected a prompt line will appear requesting the required data (i.e keyboard assignment for the character). The characters can be added or altered graphically on the screen. When leaving one of the modifying functions the file is updated (sorted if necessary) and then the screen is refreshed.

- 4) Legend Manager - this function will allow the user to define or update user definable legends. The legends can be any graphic shapes with text. A list with the legend descriptions will appear on the screen (page up/down will be available if the whole list can not fit on the screen). The screen will allow you to add/update/delete or make a hard copy of the legend. In update or delete mode the item will be chosen from the screen in a menu style format. If 'add' is selected a prompt line will appear requesting the required data (i.e a title for the legend). The legends can be added or altered graphically on the screen. When leaving one of the modifying functions the file is updated (sorted if necessary) and then the screen is refreshed.

When leaving the Lists/Symbols Manager you return to the Main Menu screen. As mentioned earlier only the first item is essential to be done in phase II.

Map File Manager:

This menu controls the input of new files, editing and displaying of existing files. These functions can be divided into two main groups:

- a) Creating and Modifying map files, and
- b) Displaying map file to an output device.

The creating and modifying of map files have similar tasks so they have been grouped together. When choosing this function the file name is requested to determine if it exists. If the file exists then the 'modify' function is evoked, if the file does not exist then it will be created according to the previously defined format and the 'enter data' function is evoked.

Creating/Modifying Maps:

When entering this section points from the digitizing bed will be requested to calibrate incoming data to a predefined base map.

- 1) Create File - this section allows the operator to enter the required line codes as defined by the map type and then enter the digitized data from the digitizing bed (codes will be displayed while map is being digitized). When the line is being digitized it appears on the graphics display for the operator to view. The operator can then accept the line, clear the line, smooth the line or close the loop. In accepting the line it is stored onto the file. Clearing removes the digitized line from memory (removing line code is optional) and then the line can be re-digitized. Smoothing the line uses a smoothing algorithm on the last digitized line and re-displays it on the screen (the line has to be accepted to be stored on file). Closing the loop will copy the first point on the file to be the last point so the beginning point is the same as the ending point. All functions will be done from function keys allowing the operator to use combinations of them. When leaving the create mode the file will automatically be indexed (if the abort key is entered the file will be erased).

- 2) **Modify File** - this section allows the operator to modify the specified file on coded line by coded line bases. In Update mode the system will enter a create type mode to allow new lines to be entered. Edit mode the system will display the first code and line in the file and allow the operator to alter code, clearing line, smooth the line, closing loop, delete code/line, shift points on line, and zoom in/out. Altering the code allows the operator to enter a new code to be assigned to the line. Clearing removes the digitized line from memory (removing line code is optional) and then the line can be re-digitized. Smoothing the line uses a smoothing algorithm on the last digitized line and re-displays it on the screen. Closing the loop will copy the first point on the file to be the last point so the beginning point is the same as the ending point. Deleting code/line will remove the line from memory and move onto the next code/line. Shift points on the line allow the operator to choose a point and move it in a xy direction. When the point is accepted the screen will be updated. Zoom in/out allows the operator to zoom on a particular point. The zooming factor will be adjustable at startup time. When all changes are made to a code/line it has to be accepted before moving on to the next code/line. All functions will be done from function keys allowing the operator to use combinations of them. All changes will be made in memory and only when leaving the modify mode the file will automatically be updated and indexed (if the abort key is entered the file will not be altered).
- 3) **Add/Modify Text** - this will allow the operator to use a screen edit mode to modify one page of text which can be added to a graphics output. The text will be stored in the same file name as the data file but with a 'T' instead of a 'D' ending the name. The editing area will be 16 lines by 80 characters and can be accessed by using the arrow keys. A toggle will provide access to an alternate character set created by the user defined characters function. A mode will be available to print text to the output device for viewing. All changes will be made in memory and only when leaving the modify mode the file will automatically be updated and indexed (if the abort key is entered the file will not be altered).

All data files will be indexed when leaving the requested function and returning to the Map File Manager menu.

Displaying Maps:

This section will display the requested map to the screen, or plotter (the printer can be added at a later date). The system will work on a file edit mode which means all entered requests will be stored in memory with option to store to disc for later use. This has the advantage that all initial plot design can be done on the screen and then dumped to the plotter (or printer). Also generic plotting routines can be designed and used with different data files. The system will have a list of default colours, line styles and fills to allow for quick views before any massaging is done. The follow is a list of functions available and any combination of them can be used.

- 1) File name - this function is used to enter the name of a data file to be used for plotting.
- 2) Add Text - this function allows the operator to place the requested text at a specific location on the output map.
- 3) Add User Symbols - this function allow the operator to place the requested user symbols at a specific location on the output map.
- 4) Add Legend - this function allows the operator to place the requested legend at a specific location on the output map.
- 5) Change Output Device - this function allows the operator to change the output device from screen to plotter and back (or printer).
- 6) Save Plot - this function allows the operator to save the command just developed for the plot in a file to be retrieved at a later date.
- 7) Step through file - this function allows the operator to step through a data file code/line by code/line to select which line are to be plotted.

This section is dependent on how the remainder of the system is setup in determining which function are to be added in phase II or phase III.

Time Requirements:

The preceding pages outlines how the overall package should look when completed after phase III. Most of the requirements that have been requested have been included ~~and~~ ^{with} the addition of some others. The time requirements will depend on how many of the features are to implemented at the various stages. The proposal outlines which features can be left to phase III and under this outline the requirements are as follows.

Program and start up phase II - approx. 140 -160 hrs.

Program and add phase III - additional 40 hrs.

Please note if the addition of other language screens are required it should be stated now so the system can be written accordingly. Since the system will be a little more involved, programming this will take a little longer (approx. additional 30 hrs).

Hopefully the above estimates will give you a time frame for implementing this project. As mentioned to you I would like to get phase II done with-in the first month and give the equipment back to you. I would then continue with phase III on a section by section basis. Please note if you would like this proposal done as one phase, that can also be arranged.