

**GREAT LAKES ENVIRONMENTAL
IMPACTS ON NATIVE HEALTH**

PHASE ONE

CENTRE FOR TREATY ADVOCACY

MARCH 28, 1991

ASSEMBLY OF FIRST NATIONS

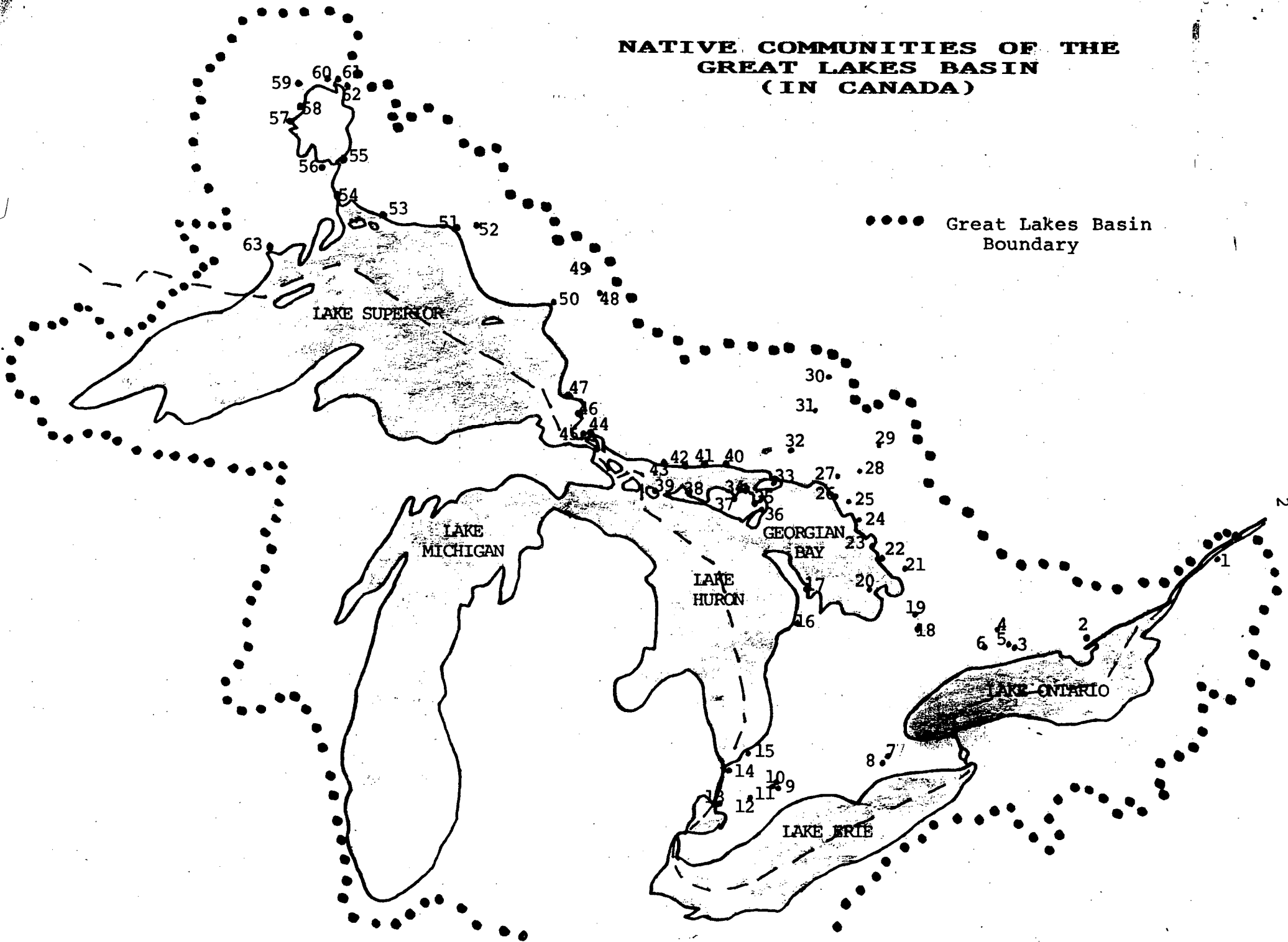
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**NATIVE COMMUNITIES OF THE
GREAT LAKES BASIN
(IN CANADA)**



GREAT LAKES BASIN NATIVE COMMUNITIES

Highlight indicates communities visited/interviewed

LAKE ONTARIO/ST.LAWRENCE

1. Akwesasne
2. Tyendinaga
3. Alderville
4. Curve Lake
5. Hiawatha
6. Scugog

LAKE ERIE

7. Six Nations
8. New Credit
9. Oneida
10. Muncey
11. Caradoc
12. Moraviantown

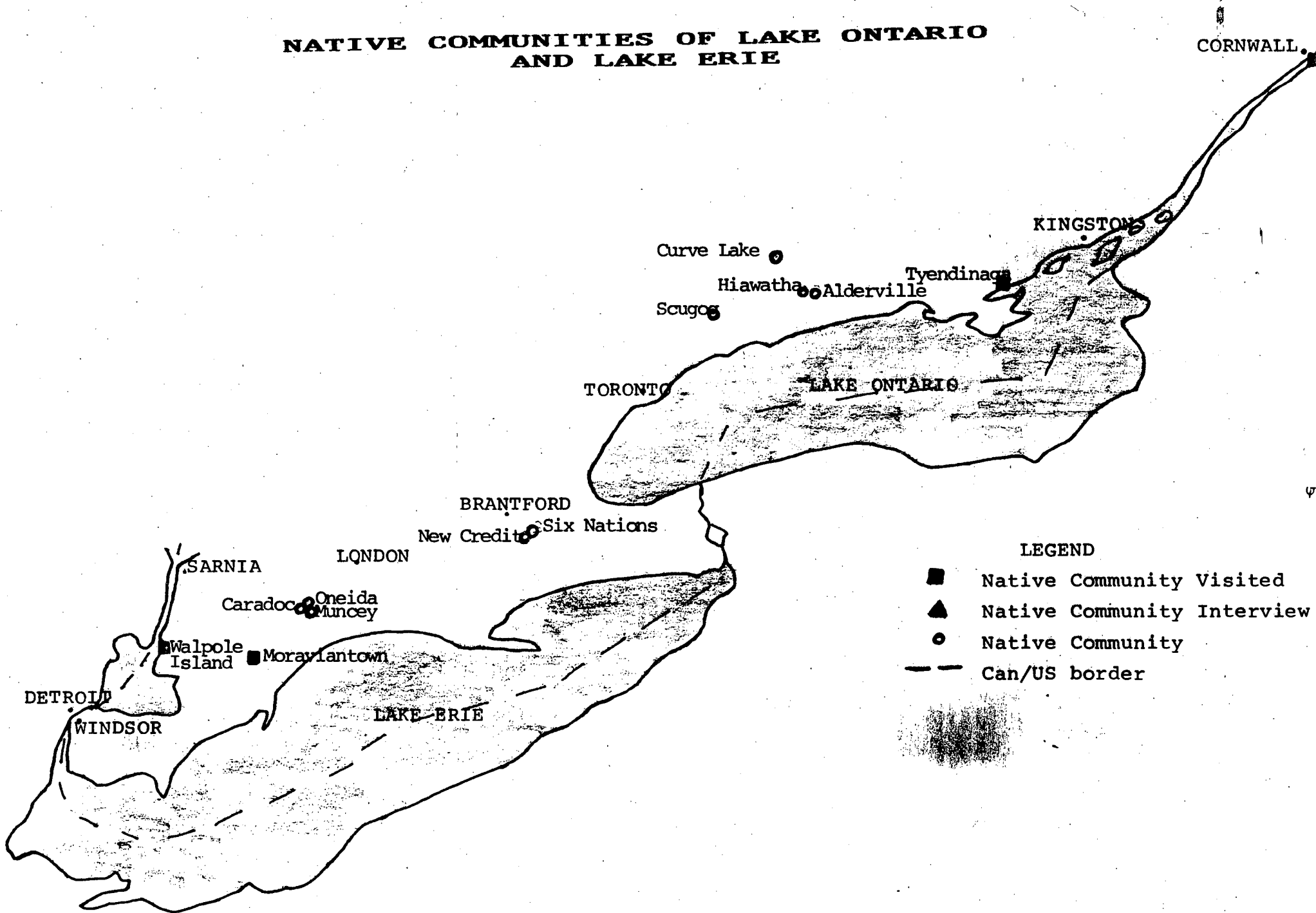
LAKE HURON

13. Walpole Island
14. Sarnia
15. Kettle Point
16. Saugeen
17. Georgina Island
18. Rama
19. Cape Croker (Georgian Bay)
20. Beausoleil (Christian Island) "
21. Gibson "
22. Moose Deer Point "
23. Parry Island "
24. Shawanaga/Naiscoutaing "
25. Magnetawan "
26. Henvey Inlet "
27. French River
28. Dokis
29. Nipissing
30. Temagami
31. Wahnapiatae
32. Whitefish Lake
33. Whitefish River/Birch Island (Manitoulin Isl)
34. Sucker Creek "
35. Sheguiandah "
36. Wikwemikong "
37. West Bay "
38. Sheshegwaning "
39. Cockburn Island "
40. Sagamok (Spanish River) (North Shore)
41. Serpent River "
42. Mississaugi "
43. Thessalon "
44. Garden River "
45. Batchewana "

LAKE SUPERIOR

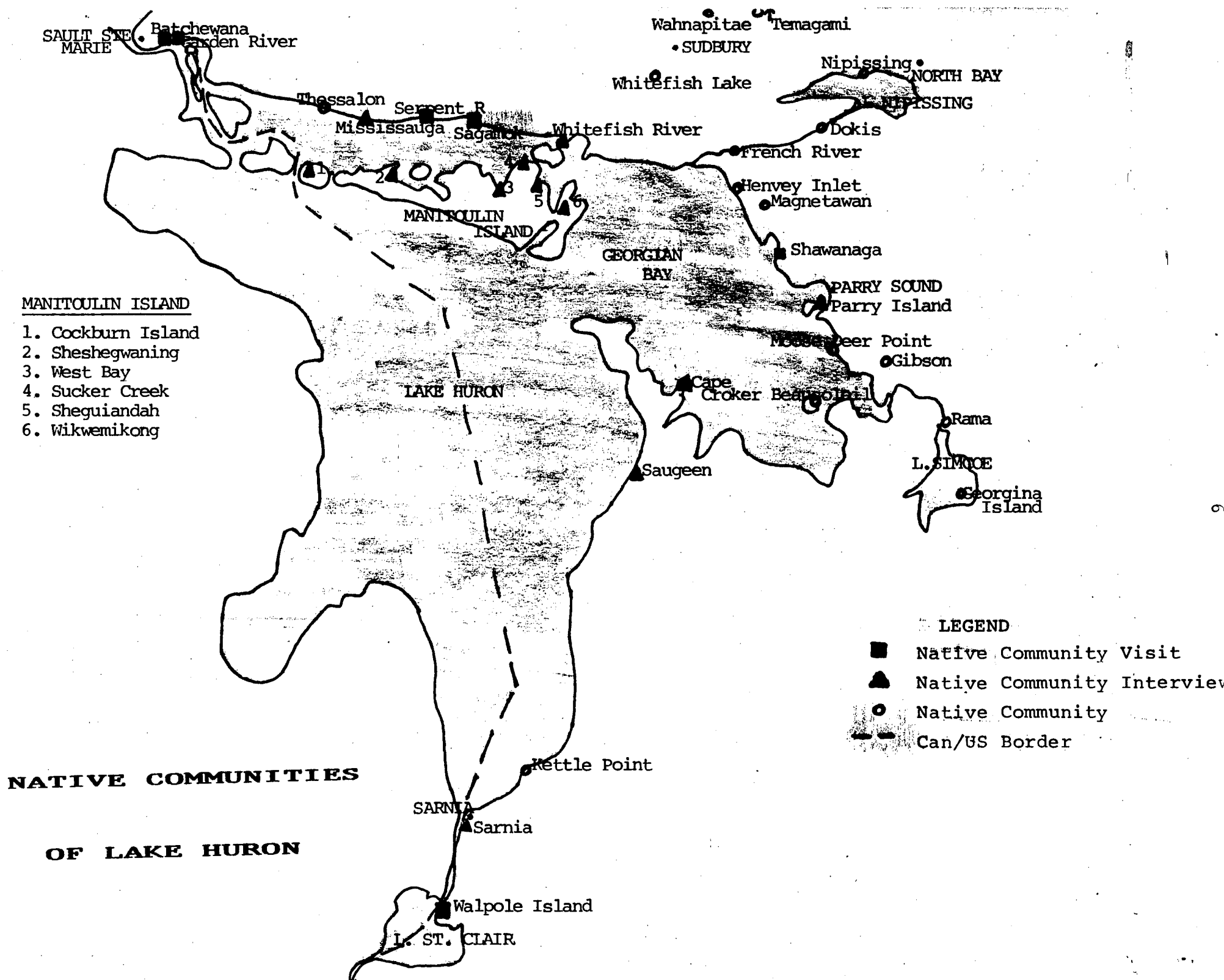
46. Goulais Bay (Part of Batchewana)
47. Obadjiwan (part of Batchewana)
48. Chapleau
49. Missanabie
50. Michipicoten
51. Pic Heron
52. Pic Mobert
53. Pays Plat
54. Red Rock/Lake Helen
55. Rocky Bay
56. McIntyre Bay
57. Gull Bay
58. Jackfish (Outposts)
59. Armstrong "
60. Mud River "
61. Ferland "
62. Aroland "
63. Fort William

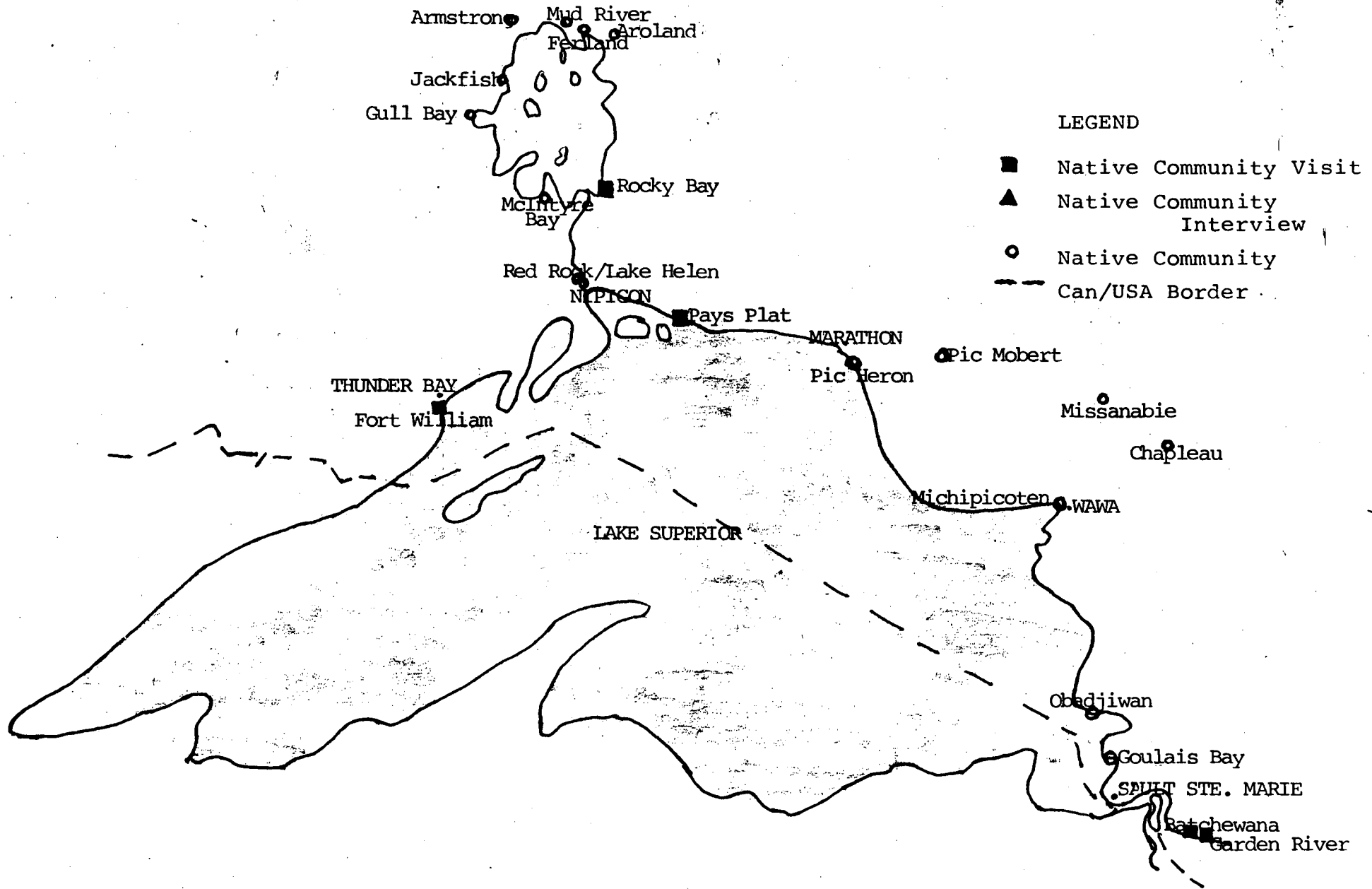
NATIVE COMMUNITIES OF LAKE ONTARIO AND LAKE ERIE



LEGEND

- Native Community Visited
- ▲ Native Community Interview
- Native Community
- - - Can/US border





NATIVE COMMUNITIES OF LAKE SUPERIOR

GREAT LAKES ENVIRONMENTAL IMPACTS ON NATIVE HEALTH

INTRODUCTION

The Great Lakes Environmental Impacts on Native Health project was funded by Health and Welfare Canada (HWC) to enable the Assembly of First Nations (AFN) to determine perceived environmental health risks to First Nations' communities situated in the Great Lakes basin in Canada. It is to be a partnership with HWC, AFN and the First Nation communities all being equal.

It was recognized that AFN should conduct this study because Native people with the appropriate academic background and credentials, are capable of carrying out this project successfully. They are also capable of training others to do the work and can get better results because of their firsthand cultural knowledge of native communities.

Concurrently, two other sections exist to this study. Dr. Kate Davies, Ecosystems Consulting, is completing a bibliography entitled "Preliminary Study on Human Exposure and Associated Health Effects of Selected Hazardous Agents in Native Peoples in the Great Lakes Basin". Dr. Paul Corey of the Department of Preventive Medicine and Biostatistics, University of Toronto, is developing models for the 5-year research protocol, in consultation with members of the steering committee. An unofficial steering committee was formed with representatives from HWC, AFN, University of Toronto and Ecosystems Consulting.

The Environmental Impacts on Native Health study consists of two parts, PHASE I and PHASE II. PHASE I is the preliminary effort to define the basis and provide data for the studies or research in the second phase.

This report will be divided into four areas:

- Lake Superior;
- Lake Huron;
- Lake Erie; and
- Lake Ontario/St. Lawrence

because each region has a geographic and cultural identity of its own.

BACKGROUND

The seeds for this project were borne a few years ago when Henry Lickers from St. Regis Reserve, Quebec; and Laurie Montour, working for Walpole Island, Ontario; independently carried out numerous studies on the impacts of organic chemical contamination to their particular Native communities, which had never been done before in the Great Lakes, especially by Native scientific researchers. These studies were presented at numerous scientific conferences, thus attracting the attention of the Great Lakes scientific community.

Since then, it has been consistently stated that Native people are at higher risk from environmental contaminants in the Great Lakes than the average resident because of greater exposure through:

- generations of living in one location;
- consuming wild meat, fish and other traditional foods;
- drinking raw and inadequately treated water;
- swimming;
- inhaling air and volatile substances;
- working in industries that pollute; and
- growing and consuming plant foods in gardens.

Anyone familiar with Native communities can easily understand the pressures put upon chiefs, councils and small reserves. Quite often, there is just no opportunity for initiating awareness of Great Lakes issues until a local environmental impact is so overwhelming that one must learn out of necessity. Furthermore, even when Native people have spoken out about changes observed in their surroundings, these warnings have been ignored. Therefore, the inherent obstacles are: firstly, a lack of awareness; secondly, when that lack is diminished through increasing awareness, there is little ability or resources to do anything. Thus, First Nation communities are unable to contribute to any research prerogatives. On October 12, 1989, a speech to that effect was made to the International Joint Commission by the Assembly of First Nations in Hamilton, Ontario at their biannual meeting (see appendix).

Meanwhile, the Great Lakes Health Effects Program began a year ago under the auspices of the Great Lakes Action Plan, which in turn, gets its marching orders from the 1987 Great Lakes Water Quality Agreement.

Canada's Green Plan was concurrently released at the end of 1990. Its Health and Environment Action Plan mentions, among other things, that the federal government will undertake a comprehensive study in co-operation with Native people in the Great Lakes basin. It will assess the health risks that contaminants pose for Native health, and develop mechanisms to protect their health.

Last year, Dr. Brian Wheatley of Medical Services Branch, Health and Welfare Canada approached the Assembly of First Nations to do this project in partnership. It has been understood from the

beginning that a cooperation would exist with no one faction dictating the direction research would take. Expert advice from both traditional knowledge and western science will be used.

PURPOSE

The purpose of PHASE 1 was to determine whether Native people are in a high exposure/high risk group due to environmental contaminants in the Great Lakes. To collect information to this effect, it was necessary to go to the communities and reach as many of its members as possible, increasing environmental awareness along the way.

Descriptive profiles for each community were made up including: demographics, sources of exposure to contaminants with an emphasis on traditional use of wildlife and plant resources, and the general health status of the community.

Relevant past studies were noted and, where possible, collected. This material is to be combined with present findings to provide the foundation for PHASE II.

Members from each region were identified as possible representatives to sit on the Great Lakes Health Impacts steering committee.

GOAL

The response from the Great Lakes Native communities will justify a five year workplan designed to address as effectively as possible, those issues identified by respondents. The underlying approach with this project is to not only let the local communities dictate what they would like to see done, but to make employees more valuable to their own communities by enabling them to utilize their own skills with those of a western scientific nature.

A secondary goal of Great Lakes human health impacts research is to increase an awareness of not only its abilities, but also its limits. At a minimum, an awareness psychologically eases fears of the unknown. A long-range view of this research may provide the impetus to gain greater knowledge so that Native individuals can take a proactive stance in reducing their personal health risks.

Lastly, a byproduct of this project is the creation of a network amongst Great Lakes Native communities, and perhaps the addition of a large voice towards the clean up of the Great Lakes.

METHODOLOGY

Any learning is first encouraged by an awareness of the issue; this may be the most important step since, if it is not done correctly, could immediately turn off your intended audience. If it is done right, this leads the way for understanding the issue, eventually learning enough of its breadth and depth to become knowledgeable about it; so that finally after much research and experience, one attains wisdom.

Thus, if one word can be used to describe the approach taken with Phase I of this project, it is INFORMAL. It was understood right from the beginning that going directly into the communities and getting people's opinions was the only way to find out what is really going on.

Yet people generally do not like being surveyed, or being asked "a lot of nosy questions", therefore the intention was to utilize four purposely vague questions, in concert with the display, which would leave the respondent to interpret and answer as he or she sees fit. During the session, there was no evidence of papers, pens, tape recorders or anything that would make the respondents feel that they were being recorded for posterity. Another obstacle that had to be overcome was the well earned suspicion that the responses could be used against the respondents.

Consequently, two Native people with stamina, excellent memories, a science background and writing and interviewing skills were chosen for the task. There is an immediate bond with other Indians, even strangers, which resolved our two obstacles - guaranteed anonymity and easier flowing discussion with others of your own kind.

Another angle to our approach was to ensure that the first step in the project was simply to exchange information on the state of the Indian communities within the Great Lakes Basin. It was stressed that we could not offer immediate solutions, but that the project will be over a few years and depends on the community's willingness. For example, both community members and employees are seen as equals who have their own valuable knowledge to share, even though they each possess different types of information.

A community member has the opportunity to observe the proceedings of what we called the Open House, listen in on someone else's comments, participate singly or in a group, all depending on how comfortable he or she feels.

The Open House is made up of a portable exhibit with colourful graphics and little written material, a map of the local reserve with items to be marked on by community members, a refreshment stand, a kids' corner, videos and widely dispensed freebies.

The method used is to approach a person either upon entering the Open House area or while he or she is looking at the display. First of all, the person was gently directed to the local map and asked to outline on- and off-reserve pollution sources, and areas to be protected. The questions are as follows, in variations:

- 1 What do you think health is?
- 2 How do you feel about
 - a) your health?
 - b) your community's health?
- 3 Do you feel
 - a) your health has changed?
 - b) your community's health has changed?
- 4 What do you think are the reasons for the change?

The responses were memorized as best as one could and recorded on paper or computer as soon as the employees reached their hotel rooms.

January to March is a good time of the year to do community visits because people tend to stay at home or close by due to the weather. Letters were sent, followed by telephone calls and confirmations by fax. Open houses were planned around the community's facilities and schedule, such as bingo and sporting events. Due to time constraints, it was decided to take representative communities from each region in which to have open houses.

COMMUNITY PROFILE (See Sample - Appendix I)

To ensure that data from each community was consistent and conformed to program requirements, a form was designed. This Community Profile was the only source of data input and addressed the following:

1. Community: Name, address, name, phone and fax numbers for the Chief, community health representative and any others involved
2. Demographics: membership on and off reserve and age groups (0-30, 30-60, and over 60)-the first group represents children and the majority of people having children
3. Employment and pollution sources on and off reserve
4. Previous studies done relevant to our project
5. Diet: amount and types of wild meat, fish, and vegetables consumed-this section also included drinking water sources and any changes in the plants and animals
6. Community Health Status: people's perceptions of their health
7. Local environmental contact: for future reference
8. any additional comments or anecdotal information

The first three parts were completed by phone prior to visiting the community to give us an idea of the size and specific concerns they might have. The rest of the profile was completed after each open house.

One recommendation would be to include geographic information such as nearby waterways, roads and the physical size.

EXHIBIT (For Layout - see Appendix II)

A lightweight, easy-to-assemble, exhibit was chosen because the display was to be offered to as many of the 60 communities as possible, with minimal time allowed for set up and at the most, two people setting it up. We had no difficulties with it during the 20 open houses we set up. The one problem we had, with the display toppling over if pushed to hard, was remedied with two ground stands that prevented it from falling.

Two colours were used in the panels, grey and blue, to offer light or dark backgrounds depending on the material that would be placed on it. These particular colours were chosen because alot of the material would have varying shades of blue in them, due to the nature of the project (Great LAKES). Lime green was used to border all the material and to highlight the signs, thereby unifying the entire exhibit.

The posters/information panels were designed using a minimal amount of words, making it comprehensible to the many people who are more comfortable with their own language than with English. In describing the panels the most basic descriptions were used: for example, the word "toxics" was substituted with "tiny pieces of pollution, so small you can't see them" after the first open house.

Following is a brief description of each information panel (see illustration):

1. Title "Great Lakes Environmental Impacts on Native Health" with AFN's logo and room for the project's logo
2. Water cycle (hydrologic cycle)
3. Sources/Pathways of Pollution - showing factories, agriculture, uptake by plants & animals
4. Toxic Cycle - more in-depth look at cycle of pollution in water
5. Uptake by Living Things - shows bioaccumulation of toxics from plankton through to fish-eating birds
6. Large map of native communities around the Great Lakes with the question "Can you find your community?"
7. Poster of pond life with the fact "Over 1/2 of all plants and animals live in the water"
8. A diagram illustrating the amount of water in the world that is fresh (2.5%) and the amount of that contributed by the Great Lakes (25%)
9. A poster of the fish of Ontario with the fact "Of the 10 most popular fish species, seven have almost completely disappeared"
10. A diagram showing what percentage of each lake's contaminants

come from other places (ie. are airborne), Lake Superior (90%), Lakes Michigan and Huron (50%) and Lakes Erie and Ontario (between 10 and 30%)

11. A population distribution map
12. A Toxic Hot Spots map with a question asking "Can you see the relationship between high population densities and areas with high pollution?"
13. A diagram showing that 75% of the human body is made of water
14. The statement "Nevertheless, traditional native foods can be healthy!!!"
15. The publication "Native Foods and Nutrition" from Health and Welfare Canada
16. A binder of nutrient bar graphs described as a teaching aid for learning the value of native foods, by Health and Welfare

The large map was in the center of the front panel to attract people to the exhibit and did so very successfully. The other four graphics on the panel showed contaminant sources and pathways, starting with the natural water cycle and progressing to the bioaccumulation in animals. Fluorescent yellow dots were used to signify toxics and were placed throughout the diagrams. People were able to grasp these concepts.

The back of the exhibit demonstrated how important water is to the environment, especially to plants and animals, with an emphasis on fish, the most popular food in native communities. The map of toxic hot spots, though big and colourful, did not attract many people. Perhaps they didn't want to get too depressed!

We wanted to end the exhibit walk-around on a positive note so we used literature that illustrated how a native diet can be very healthy. These documents were extremely popular, with many requests for copies and people waiting in line to read them.

Overall, the exhibit was a good attention-grabber, and because it required little explanation, it left us free to talk with other people.

MAPS

At each open house maps of the region and the community were displayed and residents were asked to point out sources of pollution on and off reserve. Each map was covered in acetate so they could be written on directly with special markers. A colour code was set up as follows:

- red for sacred areas such as burial grounds and for natural areas such as spawning grounds and migration routes
- blue for factories, mills, storage tanks, farms etc.
- green for these same things but that involved hazardous chemicals
- black for local dumps, water treatment plants etc.

- purple for miscellaneous things such as noise pollution, airports and military areas.

The maps turned out to be extremely successful. Residents getting together to complete the maps were often surprised at how many sources of pollution actually existed and many learned about things they didn't even know were there. By asking about animal and plant areas we learned alot about their diets without appearing too nosy. Many hunters and fishermen would only give out this information if it was promised we wouldn't give away their secret spots. The adults really enjoyed being able to draw with markers and usually had to be dragged away from the maps by others.

It is hoped that eventually a composite map of the entire Great Lakes can be created from this information.

VIDEOS

After screening many videos at the National Film Board, three short, informative but funny films were chosen and made into a composite video. Although none deal specifically with Native people they all deal with the lakes and environment.

The first film "The Rise and Fall of the Great Lakes" deals with the evolution of the lakes and compares the past and present conditions with an emphasis on pollution, using big doses of comedy. The second, "SPLASH", is an animated film that shows the travels of a group of raindrops from the time it leaves the cloud, through the entire hydrologic cycle and back to the cloud. It deals with toxic pollution in particular. This film was very lively and funny and was the biggest attention grabber. The third film in the composite, "Paddle to the Sea", follows a carved Indian and canoe, dropped into Lake Nipigon by a little Indian boy, as it travels through all the Great Lakes and eventually ends up in the Atlantic. It also deals with pollution and wildlife. All three films were enjoyed by everyone, elders and children alike.

We also brought films from the International Joint Commission that tackled issues specific to the environment of the Great Lakes, and were intended for the more environmentally concerned individuals. We found we did not have much time to play them but we did lend them out to be viewed at home. These included "Promises to Keep", "The Greatest Lakes" and "The Great Lakes in Crisis".

Hopefully, films that deal with Native people and their unique relationship with the environment will be found and, if necessary, made.

FOOD

In keeping with Native customs it was decided to serve refreshments including coffee, tea, hot chocolate, popcorn (for video viewers) and bannock (Indian bread that everyone loves). The refreshments did have the desired effect in that they attracted visitors that might not have come otherwise, people felt welcome and appreciated the efforts but most importantly, people were then more willing to participate, contribute input and stay longer.

Most food was purchased in bulk, beforehand, to provide consistent service and to reduce costs, especially when compared to small town prices. We paid a member in each community to make the bannock, thereby contributing to the local economy and ensuring community preferences were met. On the first half of the trip, it was found that food set up took too much time for us, so it was decided to have the bannock maker also help in set-up and clean-up, as part of the payment. Occasionally, donuts were provided rather than bannock, but is not recommended in the future, especially jelly or sugar coated, which can make a mess with the displays never mind the fact that they're not healthy.

It is recommended that something more healthy be served, perhaps fruit and cheese or baked bannock rather than fried.

REFERENCE LIBRARY

A table was set up to display literature that we had only one copy of. Included were:

- water and state of the environment fact sheets from Environment Canada;
- Remedial Action Plan information from the International Joint Commission (IJC) and Great Lakes United (GLU);
- recent reports from the IJC;
- a Great Lakes Atlas;
- the Ontario guidelines for sports fishermen;
- the Green Plan;
- lists of relevant publications; and
- other general information material from such agencies as Pollution Probe, the Sierre Club and the Ministry of Natural Resources.

Many people showed interest in the Fishing Guidelines, of which, most had never seen before. Effort should be made to ensure that native communities receive copies of this each year and understand how to use them. The rest of the publications were looked at mostly by people with some environmental background or specific concerns. Anyone interested in obtaining a publication were told how to obtain it.

It is recommended that more material in the largest areas of concern: pulp and paper industry, chemical industry, agricultural contamination and water quality, be made available.

FREEBIES

A large table was set up with posters, pamphlets and buttons that could be taken home. This was very successful in not only getting people to come in, but getting them to stay (people feel guilty about taking things and running).

Available were:

- a large loon calendar/poster, which was a big hit;
- a water primer, a "What You Can Do to Help the Environment" booklet and "Stop Acid Rain" stickers from Environment Canada;
- information on the Health Commission at AFN;
- buttons with "If you have it in you to dream, you have it in you to succeed" and a food chart geared towards native diets entitled "Choices for a Healthy Lifestyle" from Health and Welfare Canada both of which were very popular;
- information pamphlets on each Great Lake;
- IJC pamphlets on Remedial Action Plans and the Water Quality Agreement; and
- various colouring posters on energy and an Enermagic magazine for children.

All the above items were donated by the various agencies. Recommendations for the future include supplying information pamphlets, buttons and, perhaps, fridge magnets specific to the project to keep us fresh in their minds. There was no time to have them made for the first leg of the project.

LAYOUT

The halls we worked in ranged from the cozy council hall with fireplace in Pays Plat to the large hockey arenas at Manitoulin Island. Usually, we set up in the community hall. Through trial and error, we came up with a fairly consistent layout that varied only slightly, from place to place.

At the entrance we placed our "who we are" poster along with our introductory letter. The large exhibit was set up near the front with bright lights on it to attract people in. At the beginning, we found people were not walking around it to see the back so we placed the food and freebies table behind it. This worked. Also in the beginning, we set up the kids colouring table near the front close to the television. This was changed because people looking in assumed it was an open house for kids and we found ourselves being treated as a drop-off for them. We moved the colouring station as far back as possible and placed the television away from it to encourage the adults to watch our videos. The map table was placed in the front because we found it drew alot of people to it and got them immediately involved. The reference table we placed close to the food so that people would notice the material while eating. Near the door was our guest/comments book.

The only recommendation is to try to book small halls because the arenas were too overwhelming and did not encourage dialogue.

KIDS CORNER

Recognizing that children are customarily a part of social activities in Native communities, a "Kids Corner" was set up. This kept the children occupied while allowing their parents to participate and was well received by both. Colouring books, 7 posters and sheets were obtained from Health and Welfare Canada, Environment Canada and Energy, Mines and Resources. Crayons and art paper were used to make posters about the environment and pollution that we displayed at subsequent open houses.

This part of the open house was very inexpensive; we only had to buy the crayons and paper, the rest was donated. It is recommended that health related colouring material be added.

ANALYSIS OF COMMUNITY PROFILES

LAKE ONTARIO/ST. LAWRENCE RIVER

GENERAL

Six First Nation communities exist in this region: Hiawatha, Alderville, Scugog, Curve Lake, Tyendinega and Akwesasne; of which the last two were visited. The remainder are located on inland streams that drain into Lake Ontario. At each of the open houses, approximately 30 people attended and were interviewed.

DEMOGRAPHICS

Akwesasne's membership is just over 8,000 while Tyendinega's is about two-thirds of that. The former has about half its members on reserve while the latter has about four-fifths. Tyendinega is entirely in Ontario while Akwesasne lies in five jurisdictions: Canada, USA, Ontario, Quebec and New York state.

EMPLOYMENT

These two communities have similar employment situations: council administration, school board employees, craft shops, gas stations and convenience stores. Tyendinega also has the First Nations Technical Institute that offers courses in computer software, aviation technology and pilot training. They also operate maintenance and refueling facilities at the airport. Akwesasne is home to the North American Indian Travelling College. Both communities have members that work off reserve in construction trades.

POLLUTION SOURCES

Both communities are on the St. Lawrence river which receives the accumulation of waters from all the Great Lakes. Each is surrounded by industries such as pulp and paper mills, foundries, chemical plants and oil storage facilities. Tyendinega is in the designated Hot Spot of the Bay of Quinte while Akwesasne is in the Hot Spot entitled the St. Lawrence River.

These communities both have an environmental awareness, as demonstrated by the existence of environmental offices in each, although Tyendinega's is relatively new compared to the 15-year old office in Akwesasne.

Wells and septic tanks are used in both places with problems arising during high groundwater levels. The wells are high in iron. At Raquette Point in Akwesasne, high PCB levels were found in the wells nearest the General Motors plant, and were subsequently closed. This company now provides the bottled water necessary for the residents affected. They were also advised not to eat their garden produce.

In Tyendinega, on reserve concerns include: a former Canadian Forces ammunition dump that may contain unstable explosives that

could be seeping; agricultural chemicals being used by non-resident lessees of farmland; and a plant using toluene, benzenes and resins; traces of which have been found in the reserve dump. Off reserve, are several dumps, a treated-wood product manufacturer, and a Domtar paper mill that dumps raw sewage into the Trent River.

DIET

Historically, both communities are heavy fish-eaters. Although some members have stopped eating it completely, due to concerns over contaminant levels, others still eat fish 2-3 times a week. Residents consume alot of cured/smoked/salted pork which is customarily added to soups and bean dishes. In Akwesasne, conflicting information was given by residents as to what they were advised to eat/not eat, above-ground or root vegetables.

HEALTH

Many residents indicated concern over the possible health impacts from chemical waste. Both places observed increasing numbers of respiratory complaints and people over the age of 40 with diabetes.

In Tyendinega people feel there is a high rate of miscarriages (some women have had several) and that a high mortality rate exists for children under the age of two. Autopsy results were inconclusive as to cause. In Akwesasne, skin rashes and a recent case of blood poisoning through an open cut were attributed to swimming in the river.

Akwesasne has been the subject of many studies including an inconclusive fluorosis study, a lead/cyanide levels in hair clippings study done by Mt. Sinai Hospital, and a Cornell University study that measured water contaminant levels. The levels of heavy metals in the bones of large fish were also measured by a government lab in Wisconsin.

NOTES

These communities would like to start a recycling program and need information on composting techniques and disposal of household chemicals. All would like to see vigorous prosecution of corporate polluters.

LAKE ERIE

GENERAL

In the Lake Erie basin, six native communities exist: Moravian of the Thames (Moraviantown), Chippewas of the Thames (Caradoc), Munsee-Delaware Nation (Muncey), Oneidas of the Thames (Oneida), Mississaugas of the Credit First Nation (New Credit) and Six Nations of the Grand River. None of them lie directly on Lake Erie but all are within 40 kilometers of the lake and consider it part of their traditional grounds.

All the communities are situated in heavily farmed areas. They are also surrounded by agriculture on three sides with a river making the fourth boundary, except for New Credit, which is land-locked within Six Nations. Moraviantown, Muncey, Oneida, and Caradoc lie on the Thames river downstream from the heavily industrialized city of London. Six Nations is situated on the Grand River, downstream from the cities of Brantford, Guelph, and Kitchener/Waterloo, all of which are also heavily industrialized.

DEMOGRAPHICS

We had the opportunity to visit only one of these communities, Moraviantown, due to time restrictions. Moraviantown is made up of Delaware people. Just under half of its population of 800 live on reserve. Just over half of its community is under the age of 30 (55%), approximately 40% are between the ages of 30-60, and approximately 5% or 40 people are over the age of 60. The percentage of people in this oldest generation is high relative to other native communities surveyed.

EMPLOYMENT

Besides the council office administration, on-reserve employment also includes a gas station/store, a craft shop, a small construction company that does most of its work outside the community, a few small farms, dip-net fishing on the Thames river during March-April and fishing on Lake Erie during the rest of the year. Many of the members work off-reserve in factories that produce such things as small motor parts and clothing, usually on the assembly lines, as well as in the shipping and distribution areas. Very few work in the chemical industry.

Moraviantown is currently applying to have an industrial park created within their community, hopefully within the next five years. The only known industry, so far, is the processing and packaging of white corn which involves large amounts of lye.

POLLUTION SOURCES

As previously mentioned, the community lies in a heavy agriculture region, and is itself farmed involving approximately 30% of its acreage. Widespread use of fertilizer is common. Also contributing to on-reserve pollution is a large, central dump with

uncontrolled access not only to the members but also to neighbouring non-native populations. The dump is almost full and it is hoped that garbage will be shipped out in the future.

The majority of the community relies on three large wells although a few small wells still exist. Large septic fields are used with separate tile beds for each dwelling. Three of the smaller wells have exploded during the last year due to high levels of natural gas in the ground. People would like to see an in-depth well analysis due to the high usage of fertilizers in their area.

Just off-reserve, 1/2 mile upstream on the Thames, is a large truck cleaning facility (Markus Trucking) that cleans trucks that haul chemicals on the Sarnia-Toronto-Hamilton corridor. The wash empties into a basin that is supposed to be hauled away each night. Community members believe that the basin drains directly into the river through a culvert visible from the river. Not only have workers told them this but they have watched at night and no trucks come to remove the basin contents but it is empty in the morning. The company has been asked repeatedly for explanations but have refused to comply. The community did succeed in stopping the company's application to build large storage tanks for industrial chemicals. Moraviantown residents would like to see sampling of the river just upstream and downstream from this company's culvert.

DIET

Moraviantown is a high fish-eating community; approximately 80% of the community eats fish regularly, with even higher numbers in the spring. Pregnant women and children were advised not to eat fish at all by Health and Welfare Canada. Approximately 60% eat wild meat regularly such as deer, moose (from Northern Ontario) muskrat, raccoon and squirrels. Ducks are eaten during migration season but come from Walpole Island. Pheasants used to be abundant but are now rare.

Most people have gardens which successfully produce a wide range of vegetables. A favourite of theirs is the morels found in their yards.

HEALTH

Overall the health of the community is comparable to that of their non-native neighbours which includes increases in allergies and asthma. Members no longer swim in the Thames river due to rashes and sores that occur after swimming.

NOTES

This community would like to see more information on recycling and use of natural fertilizers and household cleaners.

LAKE HURON

GENERAL

Since Lake Huron has the highest number of Indian communities of all the Great Lakes, this report will divide the region into three separate areas:

- (1) North Shore
- (2) Manitoulin Island
- (3) Georgian Bay/Lower Lake Huron

LAKE HURON - NORTH SHORE

There are six Ojibway reserves in this area, either on the shore of Lake Huron or waterways draining into it: Thessalon, Serpent River, Mississagi, Batchewana, Sagamok (Spanish River), and Garden River. Except for Thessalon, all other reserves were interviewed and an open house was held at Sagamok and Garden River. It should be noted that while Obadjiwan and Goulet Bay (sometimes spelled Goulais) are situated on Lake Superior, they are satellite communities of Batchewana and will be included as such.

DEMOGRAPHICS

Sagamok is the largest community in this area with 1500 members. Batchewana and Garden River each have about nine-tenths that amount, while Serpent River and Mississagi have about half that of Sagamok. Garden River and Sagamok have about two-thirds of their membership living on reserve; Batchewana and Garden River both have one-third, while Mississagi has half.

In these five communities, the under 30 years of age spread is close: Mississagi and Batchewana having just over one-half, while Sagamok, Serpent River and Garden River are over three-fifths. The age 30-60 years category at Sagamok, Serpent River and Garden River is just under one-third of the population, while Batchewana's is just over one-third and Mississagi is slightly larger. The age 60+ group in Garden River, Serpent River and Batchewana is one-tenth, while Sagamok and Mississagi is half that amount.

EMPLOYMENT

Besides Council administration, all save Serpent River, have gas stations. Garden River, Batchewana and Mississagi have sawmills; a gravel pit and logging operation are located in Garden River territory. Batchewana has an industrial park with an autobody shop, wood veneer manufacturing plant, construction company and heavy equipment (road building) operation. Mississagi has a daycare facility and crisis centre. Only the Goulet Bay location of Batchewana reported a commercial fishery operation.

Off reserve employment is generally in resource extraction, with forestry and mining predominating. Major employers in the resource processing sector are: INCO, Algoma Steel and EB Eddy; while Mississagi states seven of their residents work at a local chemical

plant. Serpent River indicates that their area is economically depressed with many formerly employed residents unable to find work.

POLLUTION SOURCES

All communities reported that homes were on septic disposal systems. Each community has a railroad on or adjacent to their land and most commented on noise, fumes and safety concerns. Sagamok lies within the Spanish River Toxic Hot Spot zone with its Chief sitting on the RAP committee -- Serpent River is in close proximity. Garden River and the Obadjiwan location of Batchewana are concerned about auto emissions on highways that pass through their communities. Mississagi retains a lawyer specializing in environmental issues. All mentioned the INCO "stack" as a source of air pollution when winds blow from Sudbury towards their communities. Garden River commented that the St. Mary's River often has heavy foam on its surface and has deep sludge on its bottom.

Off-reserve Mississagi is concerned about a nuclear generating plant in Blind River (4 km. east) and a lime plant in Rio Algoma less than 10 km. away. The nuclear facility could affect all Native communities in this area if an accident occurred. Sagamok and Serpent River are concerned about 12 uranium mines in the Elliot Lake area which is 25 km. north. Other concerns are the EB Eddy plant in Espanola, clearcut logging on the Spanish River and nearby ore tailings ponds. All reserves indicated worry about effluent in their waterways.

DIET

All communities consume large amounts of wild meat, including deer, moose, rabbit, waterfowl and game birds. Garden River indicated up to 60% ate wild meat regularly but that they were not heavy fish eaters. Sagamok, Serpent River and Mississagi said they eat fish regularly using guidelines recommended by the Ontario Ministry of Natural Resources (MNR). Batchewana said MNR advised them not to eat organ meats.

Mississagi and Batchewana report some people have gardens, while Garden River says gardening has declined compared to 20 years ago because of poor soil conditions from extensive use of agricultural chemicals. Sagamok indicates gardens are difficult to grow these days. An elder said there used to be large vegetable crops years ago. All communities indicated a trend to buying vegetables in season, then freezing or canning them.

Garden River offered that deer and some fish stocks are down, while moose are increasing. Their reserve has habitat for moose, deer, pickerel, trout, sturgeon and salmon.

HEALTH

Garden River reported that many people have become diabetic since 1986 and that "swimmers itch" increased in the last 3-4 years (after swimming in the St. Mary's River). This was not known previously. The other communities mentioned no serious health problems. Only Garden River's Community Health Representative (CHR) was interviewed. All communities report wells supply their domestic water.

PREVIOUS STUDIES

Batchewana stated no known studies, but are working on a community evacuation plan with H&WC. Sagamok has had some studies and the Chief said he would send copies to the AFN when time permits. Garden River reported that H&WC did random tests for radon in some basements. The CHR will send a copy when results are released in May, 1991. Mississagi mentioned health histories, vegetation, air and water study done in the past. Serpent River said the Atomic Energy Control Board and Laurentian University conducted a research project 7-8 years ago that probably dealt with radioactivity. Also reported was a study of moose livers and beaver.

NOTES

Garden River reported spontaneous ignition of old sawdust piles that have been there for many years. Fire authorities know this to be common in decaying sawdust. The former sawmill owner advised that there were no chemicals used in any wood processed by his mill.

LAKE HURON - MANITOULIN ISLAND

GENERAL

Manitoulin Island, the world's largest fresh-water island, stretches over 160 kilometers off the north shore of Lake Huron. It is home to seven Ojibway communities: Whitefish River, Sucker Creek, Sheguiandah, West Bay, Sheshegwaning, Cockburn Island and Wikwemikong; the latter of which covers the eastern one-fifth of the island. Although the island contains three large inland lakes, all the communities border directly on Lake Huron. Cockburn Island is inhabited mostly in the summer although a couple members live there year-round. The Native population of the island is approximately 8,500, and members tend to move around between communities.

At the time of our visit, a Little NHL (Native Hockey League) tournament was on, and it was decided that not only was this a good opportunity to see people from all over Ontario, but that most of Manitoulin Island would be there anyway. We set up our display at the Espanola arena one day and the Little Current arena the next. We interviewed members from all the Manitoulin communities except for Cockburn Island and found that it was a very homogenous group as would be expected from people living on the same island.

DEMOGRAPHICS

The community populations range in size from under 100 in Cockburn Island to over 3,300 in Wikwemikong. The five remaining are Sheguiandah, Sheshegwaning, Sucker Creek, Whitefish River and West Bay in ascending order. Almost twice as many residents of the two most remote communities, Cockburn Island and Sheshegwaning, live off reserve as live on reserve. The rest have half of their residents on and half off reserve (although they may be living on other reserves).

Most of the residents are under the age of 30, between 50-60% for all seven communities. The above-60 crowd makes up approximately 5% of the Native population, although both Sucker Creek and Sheguiandah had above-average numbers in the 10% range (40 and 12 members respectively).

EMPLOYMENT

The majority of the island's employment comes from tourism oriented industry; cottages/camping in the summer and as hunting/fishing guides in season. Each community has its own council administration, craft store, gas stations and small businesses. Some members work off the island in the mines and mills of the North Shore, but not many. There are at least five fish hatcheries, the largest in Wikwemikong at the mouth of the almost land-locked bay of South Bay, all employing some members.

POLLUTION SOURCES

The island is directly across the North Channel from the designated Toxic Hot Spot of Spanish River. The channel being only 30 kilometers wide, it can be assumed that the high levels of contamination found there contribute pollution, though not as much, to Manitoulin Island. This would include effluent from: the large pulp and paper mill in Espanola, the uranium mines of Elliot Lake and numerous smaller mills and mines between Sault Ste. Marie and Sudbury. This is supported by the fact that most residents prefer to fish anywhere but the North Shore area. Signs have been occasionally posted warning residents not to swim in these waters. As well, Sudbury, which is heavily industrialized with mines and factories, is just 100 kilometers to the east. Community members are concerned that air quality is diminished when the winds blow from that direction.

Each community has its own dump(s) which generally have no controlled access, although Wikwemikong now has access controlled whenever possible. All communities rely on wells and septic tanks to some degree though water treatment plants are in the works. Many small sawmills exist but because they are portable, their affects to the environment are minimized. One problem exists in the ever-increasing areas of clear-cutting. Notably, just outside of West Bay, approximately one-third of a hillside has been eroded due to this practice. Although only a small amount of the island is involved in this, very little of that reserve land, it could become a problem especially to an island that depends on its wilderness to draw tourists.

Some farms exist that use fertilizer but farmers across the island are being urged to implement new, less-hazardous methods of growing by the Manitoulin Crop and Soils Committee.

DIET

The majority of residents here consume alot of wildmeat including deer, moose (from Northern Ontario), and rabbit. There are no longer moose on the island although it is rumoured that five still exist. Partridge, duck and geese are also eaten during the migratory seasons. High fish consumption exists year-round, especially from the inner lakes. Community members have been warned to limit fish consumption but feel that fish from the inner lakes can be eaten without much concern to amount or frequency.

Most people have small gardens, with much success, especially with corn, carrots and tomatoes. The communities practice alot of traditional medicine and gather wild edibles.

HEALTH

Overall, these communities are relatively healthy although incidents of asthma, cancer and diabetes are on the rise. Rashes have occurred after swimming in the North Channel.

In 1982, a blood and hair clippings test for mercury were conducted after which, fish consumption warnings were given out. Wikwemikong is undergoing a study on the environmental impacts of establishing a quarry on their reserve.

NOTES

These communities appear to be very environmental aware. Their high wildmeat consumption and traditional ways combined with their possible exposure to contaminants from the North shore would make them an interesting candidate for future studies.

LOWER LAKE HURON AND GEORGIAN BAY

GENERAL

All seventeen reserves are situated on a shoreline: from Lake Nipissing in the northeast, to the majority of communities hugging the Georgian Bay, and the four along the east coast of Lake Huron and its tributaries. Nearly all are Ojibway, with Walpole Island having the distinction of being home to three First Nations, including Ottawa and Pottawatomi.

The Gibson Reserve is in the vicinity of the Sturgeon Bay Toxic Hotspot. Sarnia Reserve is at the head of the St. Clair River Toxic Hotspot, while Walpole Island is situated at the river mouth.

Only Walpole Island and Shawanaga were able to host to an Open House, although Parry Island, Sarnia and Saugeen consented to interviews. These communities only, are included for the purposes of this study.

DEMOGRAPHICS

Walpole Island has about 2000 on-reserve residents, with about 800 living elsewhere. Its youngest generation makes up nearly three quarters of the population, while a quarter makes up the middle generation and the elders making up only a tiny fraction.

Shawanaga has a comparatively small population of 350, most living off-reserve. It has a higher proportion of older people than Walpole Island, with the middle generation making up a little less than a third, and the under 30's crowd doubling that.

Parry Island's population is about half of the thousand or so of Saugeen and Sarnia. Even its on- and off-reserve population is evenly divided, which is also the case with Saugeen. Sarnia's situation is unknown.

Nearly all reserves except for Sarnia depended on the tourist related business for on-reserve employment. This includes motels, handicraft stores, marinas, guiding for duck hunting and fishing, and a fish farm. Shawanaga once had a lot of trapping, but it is no longer a healthy enterprise due to fur trade protests. The same could be said for Walpole Island. Sarnia works in the chemical and industrial plants on and surrounding its reserve. Saugeen rents six cattle farms off-reserve and hopes to begin commercial fishing.

POLLUTION SOURCES

Both Walpole Island and Shawanaga have the usual landfills, septic tanks, and gasoline storage tanks on reserve. The bilge water, small gas leaks, fumes, sediment stirring, high waves and backwash from recreational and commercial boat traffic contributes to water pollution.

Every spring, Walpole Island has piles of rotting muskrat carcasses in ditches or fields. An ongoing concern is the unmonitored use of pesticides by non-Indian farmers who lease nearly a third of the reserve land base. Off-reserve, the cumulative impacts to the Island's wetlands from what is known as Sarnia's Chemical Valley are unknown. An air monitoring station measures the emissions from the World's Largest Incinerator in Detroit. Complaints about the noise pollution and waterfowl disturbance from a nearby U.S. Air Force base is never resolved - a bomb was once even found in the marsh. Results are as yet unknown of a Canadian Wildlife Service leadshot study with ducks. An arm of their community-based research centre has documented many environmental impacts, although it is difficult to assess the risk from accumulation of toxic compounds from a variety of sources due to the complexity of the ecosystem.

Sarnia is significant out of the other three reserves with its own industrial park, including a chemical tanker truck cleaning facility; and land leased to other petrochemical industries. Like Walpole Island downstream from it, the community is surrounded by farmland. A variety of bad odours is taken for granted. It may be difficult to determine whether impacts are from on- or off-reserve sources, since the reserve is in the heartland of what is known as Chemical Valley.

The remaining two reserves' internal pollution sources are from garbage dumps, with tourists utilizing Parry Island's without any restraint, in spite of a 15 year old reserve recycling program. They suffer similar boating problems as Walpole Island. Saugeen has had soil and recreational water testing. In addition, Parry Island recently had old electric transformers removed, it also had garnet mines, a harbour utilized for a variety of purposes including iron ore shipping, cordite storage and potash. Entrails from their fish farm plus lime are layered to cook into natural fertilizer for the community.

Saugeen, like most reserves in southwestern Ontario, is surrounded by agricultural land. The city of Parry Sound has its industrial area 15 miles to the east of Parry Island, and a hazardous waste site about 40 miles to the south.

DIET

About half of the community members in Shawanaga regularly eat fish, migrating ducks and geese, deer and moose meat. Health and Welfare and MNR have advised not to eat the livers due to cadmium, and to reduce their intake of fish to once or twice per week, even though they would like to eat it more. It is noticed that there are fewer migratory bird eggs, which are occasionally eaten, than before.

Roots are used for medicine, although gardens are not grown anymore because "both the land and the people have changed".

Walpole Island's consumption is similar to that of Shawanaga, where wildmeat is eaten at least once a week on average. Fresh fish is eaten even more, about two or three times per week nearly year round. Ducks and geese are eaten fresh often during the autumn hunting season, with the remainder portioned out from the freezer during the year. Occasionally pheasant, quail and woodcock are eaten too. One home in ten has a small garden plot, while the fertile lands are good for roots and herbs.

Only a fifth of Sarnia, by contrast, eats deer and rabbit with any frequency. This may be due to few animals to hunt because of the minimal forest cover. Although they are advised not to eat the fish, which "doesn't taste the same anymore", some still do. A few gardens exist.

Parry Sound also received fish consumption advisories due to possible mercury contamination. A lot of partridge and migratory ducks are eaten, and a quarter of the reserve population say that they eat deer, moose and rabbit regularly. Hunters have noticed weak eggshells of waterfowl. A wild rice farm did not fare well, but community gardens are successful. Well water is known for its high iron content.

Saugeen's residents have a slightly higher fish and wildmeat consumption pattern than Parry Sound, with half of the reserve eating fish regularly, and a third eating the usual deer, rabbit, ducks and geese. There are a lot of gardens with the field rotation method used and little commercial fertilizer. There used to be wild rice, but no longer.

HEALTH

Asthma and cancers have increased in Walpole Island, nevertheless, an elder thought that the overall health is better than ever. One elder, Silas Thomas, recently died a few days after the age of 100. Again, even though children were advised not to swim in the river and risk infected ears and mouth sores, they continue to do so. Ten years ago, swimming was fine. It was recently discovered that raw sewage drained into the river from the cottages upstream. It seems like there are many more sick babies with diseases that were previously unknown such as cystic fibrosis, respiratory problems, and allergies.

Shawanaga feels that its health is very good but is concerned about long term and hidden pollution problems which could lead to decreased health. At least twelve people have diabetes.

Saugeen swimmers suffer from the same symptoms as those from Walpole Island. Their water comes from a municipal supply but some deep wells are used.

A Parry Island member senses that there are high bowel, uterine and stomach cancer rates amongst those living around the harbour.

Sarnia's swimmers suffer from rashes, blisters and impetigo after swimming in the St. Clair River. There seems to be a lot of asthma. One member has moved away and her asthma disappeared, but reappears when she returns to Sarnia.

NOTES

Shawanaga was told by MNR that cadmium has not only entered the liver but also the muscle tissue of large mammals, depending on where they browse. It is thought that a high wolf population is depleting deer stock, while fish and wildlife as a whole have decreased by half in the past decade, according to an elder, who blames it on pollution and non-Native overharvesting. Larger fish have been found with growths around mouth, eyes and gills. Against MNR's counsel, it is thought that lampricides kill pickerel too; and that the community is advised not to eat larger fish because of contaminant bioaccumulation. MNR blasted river bottoms to relocate spawning beds, which only wiped them out. This was reversed when Shawanaga began supplying fish fry. The community wants to know about the water and sewage money made available through the federal Four Pillars and Green Plan announcements.

Walpole Island is subjected to zebra mussels and an increasing number of lampreys. The river water changes colours daily, frequently smells bad, especially in the summer. A greenish haze has been known to kill insects. Probably because of an enhanced awareness, the community is specific about its recommendations - wildlife contaminant testing, contaminant workshops, find out contents of barges, a bird replenishing program, and a spill emergency plan.

Saugeen fishermen detect a decrease in sturgeon, bass, trout, pickerel, but an increase in chinook salmon. They have been advised not to eat organ meats of fish and wildlife, and to wear gloves when skinning muskrats to avoid catching some kind of infection.

LAKE SUPERIOR

GENERAL

There are eleven Ojibway reserves situated on the waterways draining into Lake Superior or on the shoreline itself. The Fort William reserve is within the Thunder Bay Hotspot; Red Rock and Pays Plat are upstream of the Nipigon Bay Hotspot; and the Pic Heron Reserve is within the Peninsula Harbour Hotspot. While the Lake Superior region is probably the least inhabited in the Great Lakes, the little resource development that exists is heavily concentrated in pulp mills, zinc and gold mining, and logging. Three reserves were visited in February - Fort William, Pays Plat and Rocky Bay.

For the purposes of this project, Indian lands exclude Obadjiwan and Goulet Bay, which are officially a part of Batchewana (in the Lake Huron region) but are used primarily in the summer for harvesting and seasonal cottages. Few Batchewana people actually live there year round.

DEMOGRAPHICS

Fort William with 1000 people, had double the population of Rocky Bay and triple the population of Pays Plat. Additionally, nearly all of its members live on reserve, in comparison to Rocky Bay with over half and Pays Plat with one third, the remainder living in nearby towns in this case.

All three communities had stated that between 55-65% of their members are under the age of thirty, with about one third between the ages of 30-60, and a small fraction being over the age of sixty. In the case with Fort William, it is estimated that only 1% of their population, or about 10 people, are over the age of sixty.

EMPLOYMENT

Fort William may have the most diverse on-reserve employment with its auto body shop, rehab centre, housing construction and tourism. There is also a lot of hunting, trapping and fishing. Off-reserve employment consists of working in the mills or for the City of Thunder Bay.

Rocky Bay seems to be similar at the surface in addition to logging employment. Pays Plat has much harvesting, with salaried jobs only in the Council office or community store. Its off-reserve employment is with CP Rail, trucking, contracting and highway crews.

POLLUTION SOURCES

On-reserve pollution sources for Rocky Bay and Pays Plat were few, mostly originating from dumpsites. Even though it was not mentioned by the respondents, both of these reserves had railroad tracks with the requisite diesel fumes and noise as well as safety

considerations. In addition Pays Plat had Highway 17 running through it. Most of its off-reserve pollution sources originate downstream, but whether it is downwind from pollution sources is unknown.

Rocky Bay has a sewage treatment plant with an overflow pipe presumably leading into the Bay, with a fish hatchery next to it. It is unknown whether one has an effect on the other.

In comparison, Fort William has, on reserve, the Canadian Pacific Forest Products tree bark dump full of waste and black "liquor" which drains into ditches along the northern perimeter of the reserve. Other ditches serve the same purpose for questionable materials from nearby mills and chemical plants. Parallel to that are Ontario Hydro's high voltage power lines. Garbage pits border the east end from Chippewa Park, plus city residents dump their unwanted waste despite an agreement to trade Reserve garbage for the city's water supply out of the Reserve's Loch Lomond. A toxic waste dump for lake sediments only had a plastic liner added after the Council voiced fears of leaching. A high water table contributes to septic tank seepage during heavy rains. Residents refer to the dying forests, stunted trees and grass that horses refuse to eat. Yet a new purplish plant in the ditches may be an invader, the purple loose strife.

Nevertheless, the majority of environmental impacts are situated just outside of the reserve. Not once were there any environmental assessments nor even notification to the Fort William Reserve for any development in the area.

The Department of National Defense has a rifle range a quarter mile from residential areas, which poses safety and noise threats. Another company, the Canadian Pacific Forest Products, dumps unknown waste into the water and air, sometimes under questionable methods. Abitibi Paper Mill is on the mouth of the Kaministikwa River draining into Lake Superior. Ontario Hydro's coal generating station emits airborne particulate matter, which lands in water and soil; while Valley Camp Coal ships out its product in addition to sulfuric compounds. A truck chemical spill last fall from Reichold Chemical had seepage along the Mission River, close to the Lake Superior shoreline. Lastly, the source of drinking water for both the Reserve and Thunder Bay comes from Loch Lomond. Its quality is now questionable, even though it was clean a few years ago.

A report done for Fort William by Latham recommended that no homes be built along the buffer zone because of the risks from methane gas, PAHs (polychlorinated aromatic hydrocarbons) and other undetermined toxic chemicals.

Thus it is safe to state that Rocky Bay is relatively clean and healthy, while Pays Plat is subjected to effluent from sources not within the immediate vicinity. Fort William, in comparison, is

heavily subjected to on- and off-reserve effluent within its immediate vicinity.

DIET

All communities consume large amounts of wildmeat, which includes moose, deer, rabbit and birds, Rocky Bay in particular for its ducks, geese, partridge and pheasant. Deer consumption is reduced in Pays Plat due to taste change in recent years; while in Fort William, there is an increase in discolored meat which even the dogs refuse to eat. The Ontario Minister of Natural Resources (MNR) advises not to eat moose liver and organs. All communities eat lots of fresh fish in the summer and frozen fish in the winter. Rocky Bay specifically lists predator fish such as pickerel, trout and pike, along with whitefish and smelts.

There are a few home gardens in Pays Plat and Rocky Bay, with the produce being canned; while most Fort William residents purchase their fresh fruits and vegetables in Thunder Bay.

Pays Plat has occasionally been advised to boil their drinking water due to "beaver fever", most likely giardia. Water had also been delivered during two incidents after highway trucks dove into the river. There are possibly high mercury levels in lakes above the community. Rocky Bay has regular water testing, although the water/sewage treatment operator would like more training.

HEALTH

Overall, it is no surprise that Rocky Bay Reserve feels that its health is good because there is so little nearby environmental impact. It was interesting to note that the pollution such as foam shown in the videos brought confused looks - they have such limited exposure to it. The health may change in the future due to Domtar's clearcuts creating shoreline erosion and water turbidity. A hydro dam is being built on nearby Blackwater River. If any reserve could be a "control" group, this is the one.

Pays Plat newborns are generally healthy. Their CHR noticed increased insulin-dependent diabetics, hypertension and cardiac diseases. There were also several gallstone cases in the past year. There was a real sense of community closeness, and people enjoyed the videos.

On the other hand, Fort William may be a good example of a community whose health is deteriorating in direct proportion to its declining environment. The children seem to bear the brunt with seizures, skin problems from swimming, and most homes containing a ventilator for asthma. Most problems were unheard of until recently. Adults seem to suffer from increased incidences of leukemia, lung, and liver cancers over the past 15 years.

NOTES

It seems that Rocky Bay is able to continue practising its cultural traditions like hunting, fishing, trapping and use of herbs for medicines. The only noticeable decline over a few decades are reduced fish stocks, but even that seems to be improving over the last decade. The community feels relatively pollution-free and healthy. Perhaps this might be a good case for protecting the ecosystem from any further impacts by limiting resource development.

A recommendation for Rocky Bay and Pays Plat is to find out what is transported along the railway, and whether there are any emergency evacuation plans.

SUMMARY

Profiles were drawn up on 21 of the possible 63 communities in the Great Lakes Basin through the input provided at the 13 open houses held. Because communities were chosen as representative in size and region, we feel the following overviews are fairly accurate.

DEMOGRAPHICS

Based on the known populations of one-third of the communities, it is estimated that over 100,000 Natives live in the Basin, with just over half living on reserve, with some seasonal fluctuations. The population of Natives over 60 is much less than that of non-Natives (approximately 5% compared to 15%)* but the amount under the age of 30 is much higher (60% compared to 40%).*

EMPLOYMENT

Many Natives still depend on traditional work such as fishing, hunting and trapping and the tourist trade that accompanies them. Few actually work in areas with high exposure to contaminants even when living in close proximity to such industry. The level of unemployment is very high, especially in the winter.

POLLUTION SOURCES

Many communities are situated on waterways, especially at the mouths of rivers (prime locations when they were first established). Most industries rely on the very same waterways to remove their effluent, and are, in many cases, in close proximity to the communities. Mining and the pulp and paper industry are major concerns in Lakes Superior and Huron, with agriculture and heavy industrialization a concern for Lakes Erie and Ontario. Very few communities are as remote as we first thought they would be.

On reserve, all communities have dumps, most with uncontrolled access. Most also use individual wells and septic tanks. Quite a few places were concerned over local cottagers on leased Indian land dumping raw sewage into the communities' waterways. Most people, especially children, swim in the lakes and rivers, polluted or not; swimming pools are very rare.

DIET

Native people in all regions eat a lot of wild foods such as deer, moose and rabbit, and especially fish, year round. The highest fish consumers appear to be in the Georgian Bay, although 80% of Moraviantown residents were estimated to eat fish regularly. Nearly every community had residents who consumed well over the advised amounts of fish. All expressed grave concerns over contaminant levels in wildlife and most observed changes, whether in stock numbers or physical abnormalities.

*Statistics Canada, 1989

Although a lot of gardens were found in the southern areas, most people buy their produce from the local store. Manitoulin Island residents were found to harvest a lot of traditional foods and medicines. Many areas reported changes in soil conditions that affected plant growth. Residents in Akwesasne have been advised on what types of vegetables from their gardens they should not eat, due to high PCB levels in the soil.

HEALTH

Across the board, incidents of diabetes are on the increase. Asthma is also more prevalent than before, especially in the communities bordering heavily industrialized areas (Fort William, Sarnia and the St. Lawrence communities in particular). Rashes and sores occur after swimming, in many of the communities.

Health awareness is increasing perhaps due to more Native nurses, dieticians and community health representatives being recruited. Some definitions of health received: "contaminant free", "spiritual and physical well-being" and "feeling good".

Based on these overviews, the Basin communities with the lowest and highest apparent exposure to pollution sources are Rocky Bay, on Lake Nipigon, and the communities near heavy industry, such as Fort William and Sarnia respectively. Rocky Bay is recommended for a control group.

CONCLUSIONS

Most Native communities are in areas of high exposure to contamination and most Natives eat high levels of wild meat, especially fish. The largest age group of the Native population (under age 30) is comprised of children and most of the women bearing children.

Therefore, it is felt that the PHASE I objective was successfully met. Yes, Native people are in a high exposure/high risk group due to environmental contamination of the Great Lakes.

Due to the large turn-outs at the open houses and the requests for more information it can be assumed that the Native people will be more than willing to participate in the continuation of the project.

RECOMMENDATIONS

Firstly, because we were unable to reach all the communities, and many expressed interest in having us, it is recommended that the display be brought to the rest of the Great Lakes Basin, with particular emphasis on the communities within the designated Hot Spot areas.

Secondly, many people expressed concern on specific issues and requested more information. Reference pamphlets should be designed addressing concerns such as waste disposal management, water quality, dump management, recycling procedures, the numerous contaminants that pose problems, composting and alternate cleaning products, all with Native people in mind.

In particular, the Ministry of Natural Resource's fishing guidelines for Ontario should be distributed widely with attention paid to showing how to use them and why they are necessary. Opinions on why guidelines exist ranged from "they're saving the bigger fish for the sportsmen" to "they just want us to buy the more expensive meat in the stores".

Thirdly, due to the large amount of harvesting, demographics and distribution pattern data that needs to be collected, a personal computer with mapping capabilities is necessary. The Geographic Information System (GIS) is recommended.

Fourthly, a logo, that is easily identifiable with the project, should be designed and placed on buttons, letterhead and business cards. It is also advisable to budget for advertising money for local newspapers, newsletters and flyers just before our open houses.