# AN INDIGENOUS KNOWLEDGE GARDEN

## AN URBAN TEACHING GARDEN FOR THE PRESERVATION OF INDIGENOUS ENVIRONMENTAL KNOWLEDGE

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# AN INDIGENOUS KNOWLEDGE GARDEN
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BY

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of

MASTER OF LANDSCAPE ARCHITECTURE

The overriding intent of this practicum, is to develop an urban teaching garden that will facilitate the instruction of Indigenous knowledge. The environmental knowledge of Indigenous people, locally and globally, is rooted in the natural world. These are valid knowledge systems that can inform social reform, development practices, and environmental management, in a way that respects and values the natural world. Projects like the one proposed within, are important in preserving the knowledge of local Aboriginal people, which is quickly disappearing. This is most evident in urban centres, where the Aboriginal population has been cut off from their traditional teachings. For the most part, the knowledge of local Aboriginal peoples is not being taught in urban schools. Aboriginal people need naturalized urban settings where their knowledge can be passed on through traditional means.

Research for this practicum, began with an extensive literature review. Initial research focussed on the history, culture and social state of Aboriginal people in North America, and in Manitoba specifically. Information on this topic is quite extensive and readily available. This was followed by a review of the available literature on Indigenous knowledge. Documented information on this topic is limited due to the nature of the knowledge and the manner in which it is passed on. The available literature did reveal some general definitions of Indigenous knowledge, some barriers to its sustenance and some methods for the promotion of Indigenous knowledge. This literature review, was supplemented by conversations and interviews with members of the local Aboriginal community.

The Living Prairie Museum was chosen, as a suitable site for this project, because of its associated natural environment and its focus on environmental education. The director and staff have taken proactive steps towards the integration of Indigenous knowledge and Aboriginal people into the educational mandate of the museum. The physical design proposed here, uses traditional Aboriginal themes and/or metaphors to inform and order the proposed development. The design also treats the entire preserve site as a unified element, that is part of a greater environment. The design also advocates for the involvement of the Aboriginal community in the development of the garden. Artifacts and a narrative will be commissioned to members of the local Aboriginal community. It is hoped, that this garden will serve the Aboriginal community of Winnipeg, in promoting native culture and encouraging a sense of place.

I would like to express a sincere appreciation to my committee members, Professor Richard Perron, Jonina Ewrt, Landscape Architect and director of the Living Prairie Museum, and Professor Charlie Thomsen for their encouragement and guidance.

I would also like to acknowledge the guidance of the following members of the Aboriginal community, Elder Mark Thomson, Elder Laurence Hoole and Elder Terry Widrick, who are wonderfully insightful people, with a wealth of knowledge. These and all elders, deserve the utmost respect and recognition. Their contribution to this practicum in content and substance has been invaluable. I would also like to acknowledge Caroline Chartrand of the Métis Horticultural and Heritage Society Inc. and the staff at the Living Prairie Museum for their support and assistance.

I wish to thank all of the people that have helped throughout the research of this project, including Professor Wanda Wuttunee and Professor Fred Shore of the department of Native Studies, at the University of Manitoba, George Munroe of the Aboriginal Council of Winnipeg and Lee Caldwell, Winnipeg Wild Coordinator at the Fort Whyte Centre.

Finally, I would like to thank my family and friends for their endless support and encouragement.

In order to gain a working understanding of the complexity of Indigenous knowledge extensive research was required. This practicum presented the challenge of proposing a design which was to be used by both Aboriginals and non-Aboriginals alike.

A literature review of Aboriginals in Canada which focussed on their culture, social welfare and their history after contact, provided the necessary background material. This information is well documented and readily available. This lead to a literature review which focussed specifically on Indigenous environmental knowledge. Literature on this topic is limited but expanding. This information was augmented through discussions with urban and rural Native Elders, representatives from the Aboriginal Cultural Centre in Winnipeg, and Native educators in Winnipeg's school system. Information with regards to how traditional knowledge is transmitted, plays an important role in the programming of the garden's spaces.

Environmental consciousness has been gaining momentum in non-Aboriginal circles in the last 20 years. Literature on ecological systems theory, and environmental sustainability has been well received and documented. Information on this topic has been filtering through the school system and is passed on, in portion. Understanding the environmental relationships among ecological systems is not introduced until senior years, and often at the post secondary level.

Information regarding the needs of these two user groups, and their approaches to teaching environmental knowledge was compared in this study. Careful programming of the spaces was required to facilitate these two groups.

Several initiatives for promoting Aboriginal knowledge are taking place throughout Winnipeg. Fort Whyte Centre, in addition to the Aboriginal Centre of Manitoba are some recent examples which demonstrate progress towards this cause. Through the assistance of advisor Richard Perron, and Jonina Ewert, several sites throughout the city were identified where an Aboriginal teaching garden might be feasible. Initiatives by the Living Prairie Museum presented an opportunity to use the preserve to create an appropriate place for a teaching garden with regional identity.

The study of Aboriginal culture and spirituality, revealed certain thematic references that could assist in the development of a teaching garden appropriate for the presentation of Indigenous knowledge. These themes were then utilized to inform the physical design of the garden. The thematic references were used to invoke some meaning in this physical landscape, specifically in the eyes of the urban Aboriginal community.

## Introduction

The starting point for this project and this practicum, is the current state of Indigenous knowledge systems, and the current state of Indigenous populations. The knowledge of Indigenous peoples around the world is in jeopardy of disappearing. Further to this, rapid urbanization of the Aboriginal population is serving to further alienate Aboriginal people from their traditional life ways. This is alarming, when you consider the value of this knowledge and the potential contributions it could provide in the areas of sustainable development, resource management, and the practices of professionals generally, including Landscape Architecture. Relatedly, Canada and Manitoba's Aboriginal population, are presently in the midst of disproportionate social and economic adversity. The acknowledgment and integration of their system of knowledge into mainstream decision making could be a step toward the revitalization of Aboriginal culture and society.

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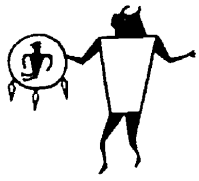
Indigenous knowledge loosely defined, is a body of knowledge accumulated about an environment over time, by a population that has maintained an intense relationship in and with that environment. Spirituality plays a major part in the definition of Indigenous knowledge. (Mcdonald, 1998) Aboriginal spiritual beliefs are derived directly from the environment and inform the culture, social order and knowledge of the people.

> *"The natural forms and forces are expressions of spirit whose qualities interpenetrate the life and process of human spirituality. For American Indians and Indigenous people as a whole, Nature is Sacred and its Spiritual Ecology is reflected throughout"* (Jacobs, 1996).

Unfortunately, the knowledge systems of Aboriginal peoples are in decline. This decline is due to several factors. Traditional Aboriginal knowledge passed on through an oral tradition has not been documented in other ways. If it is not documented or passed on it is vulnerable to extinction. Aboriginal youth, particularly in urban centres, have been alienated from their cultural traditions. This knowledge will never be thoroughly revitalized unless it is fully acknowledged and integrated into the educational curriculum of the dominant society. In order for traditional knowledge to survive, Aboriginal people, especially the youth, need to be exposed to it in their schools and universities. The traditional approaches of Aboriginal culture must be preserved in a way that acknowledges the past, while confronting the future through appropriate translation. While this acknowledgment is necessary, it must be prudent. Historically, the knowledge of Indigenous peoples has been exploited. Aboriginals must receive full recognition and compensation for their contributions to society.

The current social state of Aboriginal peoples is not only disturbing but threatens the very fabric of Indigenous culture and knowledge. Initially the first European colonists relied upon the local Aboriginal peoples for their survival. This early relationship, emphasized the importance of local Indigenous knowledge. This modest acknowledgement unfortunately evolved into a legacy of paternalism and assimilation. Contemporary Aboriginal people, are no longer in control of their own fates, and are experiencing unprecedented social, cultural and economic uncertainty because of it. Recent demographic statistics, fully illustrate the state of Canada's First Peoples. In 1995,

44% of the Aboriginal Population was below Statistics Canada's low income cut offs, compared with the national rate of 20%. Over half of the Aboriginal population reported themselves as North American Indian, and nearly half (48%) of them were in a low-income situation. The second largest group the Métis, had a low-income incidence of 39%. Three out of five Aboriginal children under the age of six were in a low income families in 1995, compared with the national rate of one in four. Among Aboriginal children aged six to 14, the incidence of low income was 48%, more than double the national rate of 22% (Statistics Canada, 1996 Census). The alienation of Aboriginal peoples from their culture, knowledge, and spiritual beliefs, has and continues to contribute to this social erosion.



There are specific aspects of Indigenous knowledge that distinguish it from traditional western models. These differences, may or may not contribute to its regeneration. The concept of holism and a close association with spirituality are two characteristic qualities of Indigenous knowledge that cause this knowledge to be either embraced or rejected by the mainstream. Today, some of the wisdom of Aboriginal peoples is beginning to gain credence with mainstream society. The World Commission on Environment and Development (WCED) recognize that Indigenous societies have a vast accumulation of practical knowledge, but still resistance persists. The challenge for non-Aboriginals, is to put aside their limiting views so that they can fairly assess the knowledge of other peoples.

The challenge for this particular landscape project is in accommodating the two intended user groups, The Living Prairie Museum and the urban Aboriginal population. The requirements of the Living Prairie Museum and the needs of the urban Aboriginal community do differ. Observation and research revealed through this practicum will demonstrate that these users do have some common requirements. Differences in theoretical basis and teaching methods reveal two very different approaches to passing on environmental knowledge. Essentially a holistic perspective versus a reductionist perspective. Typically, Western scientific theory and education has tended to be framed by a reductionist view, while Aboriginal culture and education is more holistic in nature. It should be noted, that the objective of this practicum is not to advocate Aboriginal environmental knowledge over current Western theory but merely proposes that it is equally significant, and valid and should be recognized as such.

The objective of this practicum, is to develop a teaching environment or 'Knowledge Garden' that can facilitate the instruction of Aboriginal environmental knowledge, in the urban context. The design for the 'Knowledge Garden' endeavors to enliven the museum grounds in the perception of the urban Aboriginal population, through the use of various Aboriginal methodologies that inform its ordering. The conceptual and the spiritual basis and some of its associated conventions are used to define the spaces and placement of the elements of the landscape. It is hoped that the urban Aboriginal community will be able to utilize this 'Knowledge Garden' in the perpetuation of their traditional environmental knowledge and culture. It is also hoped that the non-Aboriginal community, once exposed to this substantial knowledge system, will recognize its validity, and perhaps broaden their understanding of, and gain a greater appreciation for the prairie ecology.

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## *Indigenous Knowledge*

In order to comprehend the need for projects and developments like the one proposed in this practicum, it is necessary to have an understanding of the state, origins, and nature of Indigenous knowledge. The following commentary will provide some important background information that will assist in developing this understanding. The discussion will first define Indigenous knowledge and describe how it differs from the accepted perspective. It will then outline some serious barriers and misconceptions. There will then be a discussion of its validity followed by some recommendations for the preservation of these valuable knowledge systems

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The terms, traditional knowledge, indigenous environmental knowledge, native science, and or Aboriginal knowledge, will be typified by the term, Indigenous knowledge (IK). This merely simplifies this discussion and does not suggest that all Indigenous knowledge systems are the same. Indigenous knowledge is as varied and complex as the cultural and spiritual beliefs of Indigenous peoples. Research, though, did suggest that there were some general principles that most Aboriginal peoples adhere to throughout North America. It is reasonable to utilize these principles as a starting point, in the development of an understanding of Indigenous knowledge as a valued system of knowledge.

The Indigenous peoples of northern Canada have defined their knowledge system, as "a way of life, based on the experience of the individual and of the community, as well as knowledge passed down from ones elders and incorporated in indigenous languages. This knowledge is constantly being adapted to the changing environment of each community and will remain current as long as people still use the land and sea and their resources" (ICC, 1996). The Royal Commission on Aboriginal Peoples, a comprehensive report on the status of First Peoples in Canada, has defined Indigenous knowledge as " a cumulative body of knowledge and beliefs, handed down through generations by cultural transmission, about the relationships of living beings (including humans) with one another and with their environment. (RCAP, 1997)

The spiritual basis of Indigenous knowledge has also inspired some very emotive definitions. Definitions like this tend to be very expressive and illustrative relating the knowledge to natural elements or ethereal beings. The definition below equates IK, metaphorically, to the form and structure of a tree. The tree, holds some symbolic significance to most northern First Peoples.

> *"Native Science is holistic. Through spiritual processes, it synthesizes information from the mental, physical, social and cultural/historical realms. Like a tree, the roots of Native science go deep into the history, body and blood of the land. The Tree collects, stores and exchanges energy. It breaths with the winds, which tumble and churn through/greenery exquisitely fashioned to purify, codify and imprint life in successive concentric rings - the generations."* (Colorado, 1988)

There are some apparent differences between Indigenous knowledge and Western Scientific theory. These differences have encouraged a partition of the two paradigms. The evolution of IK, is very different from that of western knowledge. Indigenous knowledge as a whole,

is a more dynamic knowledge system than written theory, because of the way it is transmitted. In an oral tradition, the teacher, either consciously or unconsciously, alters and arguably enlivens the wisdom as it is passed on, reflecting the time in which it is told. IK is passed on through myth, a form of narrative that is enriched with the specific references of the cultural setting. Written knowledge traditions can be more static, relying solely on the abilities of the reader. In these systems communication is typically unidirectional.

In general, the learning approach of Western and Indigenous knowledge, is also very different. Western scientific thought has tended to take a more reductionist approach, where empirical data is revealed through the senses, dissected, analyzed, and then reassembled in a different way, to better understand the phenomena. This is an radical departure from the methodology of Indigenous people. Indigenous knowledge conversely, relies on a sensual perception of the whole, an inter-connectedness, and a reliance of all living things to one another. The parts, are not separate but constituent members of a whole, unified by a single guiding force. The approach is more holistic and can be more intuitive.

IK is primarily transmitted through, an oral tradition, which is a significant departure from that typical to mainstream practices. This knowledge is usually only divulged when a sincere interest is expressed by the recipient. The Elders, who present the knowledge, are not typically thought of as teachers but more as guides that introduce the individual to the knowledge. The real instructor is the environment and it's elements, the rocks, fire, wind and water are its catalysts (Colorado, 1988). The acquisition of indigenous knowledge is not an immediate process and is gained over an individuals entire life.

The esoteric nature or IK along with it's spiritual nature, have elicited some skepticism and resistance. Subsequently, over the course of the past century Indigenous Knowledge, has and is experiencing an alarming decline. The reasons for this decline are many, and range from the influence of westernization to the alienation of Aboriginal youth from their traditional beliefs.

The knowledge and culture of the Aboriginal population is possessed by very few and is being passed down to even fewer. "Traditional environmental knowledge is disappearing and the individuals who would continue the cycle of education are learning in universities far from their homes" (Johannes, 1989). This decline is accelerated by the urbanization of the Aboriginal population. Approximately 53% of the Canada's Aboriginal population, 42% in Manitoba, now reside in urban settings (Statistics Canada, 1996 Census). This urbanization coupled with sedentarization, has effectively severed the once strong connection Aboriginal people had to the land and subsequently "the practices and rituals which served to remind them of their obligation to nature are no longer widely used." (Fast, 1994)

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Indigenous Knowledge is also at risk because it is an oral tradition. Oral traditions are often forgotten when the people who possess them are gone and if they are not repeated soon after. Without careful written and or audio recorded documentation of this knowledge, it will almost surely die with its possessors. The complexity of IK and it's close link with Aboriginal culture, also threatens its survival. The scientific truths of this knowledge are at times concealed in its cultural traditions, making it difficult to comprehend or recognize apart from it's cultural context.

A formidable barrier to the recognition of Indigenous knowledge, are the attitudes of professionals generally, but more specifically professionals in the fields of resource management and environmental protection. Historically, these people discounted the knowledge of Indigenous peoples. The practitioners of western scientific theory, believed that they were better qualified to suggest management practices for a region than the local inhabitants of that region. Non-Aboriginal resource managers typically ignored the local wisdom of Indigenous peoples, and instead relied on documented western scientific theory. "It is difficult for the professionals involved in resource management to acknowledge another separate yet equal system of environmental knowledge that in some instances may be greater in scope than their own (Johannes, 1989). "The most difficult thing for an educated expert to accept is that poor farmers may often understand their situations better than he does" (Chambers, 1980).

Western scientific thought is the obvious accepted authority, and it's influence far outweighs that of other knowledge systems. Western scientific theory is so ingrained that other knowledge systems are at times disregarded as 'primitive', regardless of their inherent value. This ethno-centric outlook has significantly hindered the advancement of other viable knowledge systems. The socio-cultural biases of individuals within the dominant culture can prejudice them towards their own knowledge system. Admittedly, this is in most instances, an unconscious decision, but it does effect the acknowledgment of alternative knowledge systems. This cultural domination, can manifest itself in many ways, diminishing the importance and validity of these alternative systems. This is most evident when the practitioners of Aboriginal knowledge are referred to or described as 'quacks' or 'witch doctors', or when their tools and traditions are depicted as spiritual nonsense. When these terms are used, the knowledge system is belittled and debased. Notions like these only serve to reinforce the idea that traditional knowledge is primitive and of no worth (Colorado, 1988).

Photo by author

Another misconception that diminishes the worth of Indigenous knowledge is the notion that the environmental decisions of Indigenous peoples were and are not now conscious. The suggestion is that indigenous societies acted the way they did because they were forced to do so by necessity, and that innovation was purely the result of utility. Truly, this can be said of any scientific knowledge system, including our own. "Western Scientific knowledge has in fact at times arisen from a wish to solve a problem of a practical nature" (Brokensha, 1980). Everyone is familiar with the term 'necessity is the mother of invention'.

Indigenous knowledge is valid, and is valuable not only to Indigenous people, but to the population generally. Common sense alone would suggest that a body of wisdom about an environment, acquired and utilized effectively for centuries, would be of infinite value in the management, assessment and development of that environment. Knowledge like this, when used in congruence with western scientific theory, has extensive feasibility. It has the potential to greatly accelerate the evaluation, definition and assessment of environments. It has immense potential in the management of wildlife, water resources, forests and soils (Johannes, 1989). The various peoples of the

differing regions of this country, have detailed information on the natural history of the animals and their bio-physical environment. Information that cannot be duplicated by someone foreign to that environment.

The validity of Indigenous knowledge is intensified by our current environmental dilemma. Indigenous knowledge, because it is based in the earth and its preservation, can reveal the misdeeds of our reckless environmental practices. "The most fundamental aspect of traditional knowledge is a respect for the earth and all creation" (Clarkson, 1992). Indigenous people, are dedicated to the preservation of the environment for future generations. Indigenous societies are the progenitors of the environmental movement and are probably one of the few truly democratic, classless, caring societies. Indigenous philosophy, promotes sharing, ensuring the welfare of all of societies members. This is the opposite the mainstream societal view, where wealth is accumulated by and for the few (Clarkson, 1992).

The final implication of this discussion, is not that the methods and ideologies of Western thought should be abandoned. Rather, that within the framework of Indigenous knowledge, there is a vast, unrecognized body of environmental knowledge. It is patently unwise to dismiss it as irrelevant. IK must be acknowledged as a valid system of knowledge and, along with Aboriginal people, should be integrated with other accepted practices to inform more responsible environmental practices. There are good and bad practices in all the associated disciplines, including western theory. Some of the incorrect and misguided beliefs and traditions of Indigenous peoples have had some disastrously negative effects on the environment (Johannes, 1989). But to simply dismiss an entire system of knowledge, based on this argument is simply irrational. Every society has at some point embraced a misguided belief that has ultimately lead to disaster.

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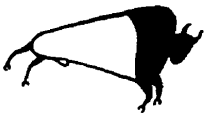
Indigenous knowledge, needs to be recognized and promoted by everyone so that it can flourish. For this to occur, proactive steps must be taken to ensure the survival of the knowledge and the manner in which it is passed on. J. T. Inglis in his edited book, *Traditional Ecological Knowledge: Concepts and Cases*, outlined some procedures for the promotion of Indigenous knowledge. "Courses on traditional contemporary environmental knowledge should be widely available in all learning institutions, particularly in regions where the social inequities of indigenous peoples are most apparent and advanced. Perhaps this type of environmental knowledge should be mandatory for all students, University, high school and elementary schools alike. Involving students in the collection and recording of this knowledge system is one way of ensuring its survival (through research done with elders etc.)."

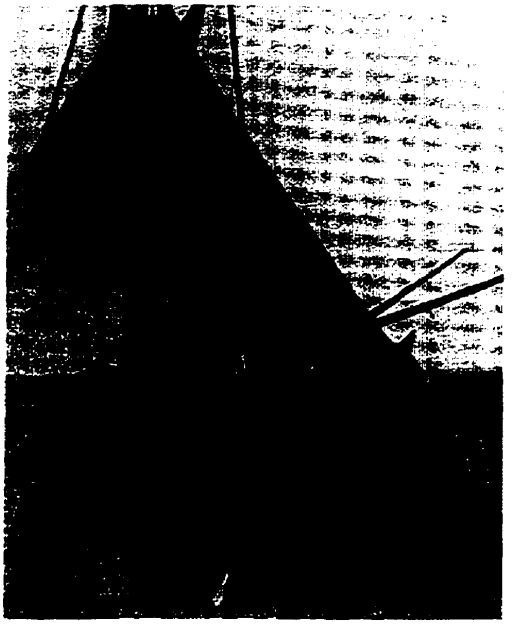
The recognition of Indigenous knowledge is not a new idea. In 1962, Claude Levis Strauss, a renowned anthropologist, stated that Indigenous people have an internal system of knowledge that is no more or less valid than any other system. (Berkes, 1997). Attitudes about the validity of IK are changing, along with its acceptance by the mainstream. The Brundtland Commission, in their report on the environment in 1989, reveal an example of how the western scientific realm has begun to

embrace the sustainable knowledge of this source. Still there is a resistance by people outside of the Aboriginal cultural realm. This opinion was aggressively advanced by Albert Howard and Frances Widdowson in an article in a 1986 issue of *Policy Options*. They equated the use of indigenous knowledge in environmental impact assessments to forcing the religious beliefs of a single group on the national interests of an entire country (Widdowson, 1997).



Non-Aboriginals must put aside these prejudices and begin to accept this complementary world view, which may guide us toward a more sustainable future. Programs that are developed for Indigenous and mainstream peoples, should include the following aspects; protection of traditional life ways, documentation, protection and promotion of Indigenous knowledge, and the development of healing programs. Indigenous people must be at the forefront of this process. The recognition of indigenous medicine as an equal, by modern medicine is a first step in this process. Indigenous people must undertake the documentation and transmission of indigenous knowledge. The dissemination of this knowledge must respect the traditions of Indigenous people. This includes preserving the method of oral tradition and the cultural spirituality that the myths are derived from. Modern multimedia technologies might be utilized in this capacity. Video and audio as well as written documentation of Indigenous knowledge may assist Aboriginal people in passing IK within their own culture as well as having far reaching abilities that can promote it generally.

In closing, it should be noted that any acknowledgment or acceptance of Indigenous knowledge must be obligatory and respectful. Indigenous knowledge will have to be protected from future exploitation, to ensure its survival. This can be done through partnerships and legal agreements between Indigenous peoples and the mainstream society or governments within which they currently reside. Finally, before this rebirth can occur, we must begin to correct the injustices of the past, by recognizing and compensating Aboriginal peoples for their forgotten contributions.



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*Indigenous Spirituality*

The spirituality of Indigenous peoples is reflected in all aspects of their culture. This spirituality continues to reinforce their relationship with, and debt to the natural environment. Their spiritual belief systems, permeate and inform all of their actions, their medicine, their management of plant and animal life, and their social structure. Essentially, spirituality is the governing medium of Aboriginal life. The following is a description of the spiritual world of one Aboriginal person. It was derived from *Cry of the Eagle*, a book by David E. Young, recounting conversations between the author and a Cree healer. It is included to give the reader an cursory understanding of the spiritual basis of one Aboriginal persons world view. Without some understanding of the spiritual world of Indigenous people, there can be no substantial acknowledgment of Indigenous knowledge.

There are two realms in the supernatural world of Russell Willier. There is the realm of the Great Spirit, and the realm of the elemental grandfather spirits, which includes animal spirits, plant spirits and the spirits of the rocks. The elemental spirits are made up of the primary spirits, which includes the Sun, Wind, Earth and Thunder. The elemental spirits also embody elements like tornado, and earthquake. Theoretically, all of creations creatures have a spiritual counterpart. The animal and plants spirits are of particular importance. These spirits allow humans to take their earthly cousins for food and medicine. The plant and animal spirits are not resentful of this, as long as they are used purposefully. It is a requirement, that an offering be left for an animal spirit, when the animal has been slain for use in a healing ceremony. This custom is an illustration of the respect that Indigenous people have for the animals that they are dependent upon.

A medicine man or woman, the practitioner of Indigenous medicine, will engage the assistance of the spirit realm in the healing process and each medicine person will engage a separate set of spirits. The spirits, are not controlled by the medicine people, but rather invited or requested to participate in the ceremony. During the healing, various spirits manifest themselves in different forms; either as plants, animals or in human form. It is essential that both the recipient of the healing and the healer, have a clear mind so they are able to perceive the spirits which ensures success in the process. This clarity is often achieved through fasting, visions and/or sweats. A patient may also prepare for a ceremony by burning sweet grass or of certain funguses. The spiritual realm can be contacted through dreams or visions. This can be a dangerous method of visitation because it is believed that mortals, easily tempted into the spirit realm, may find it impossible to return to their own world.

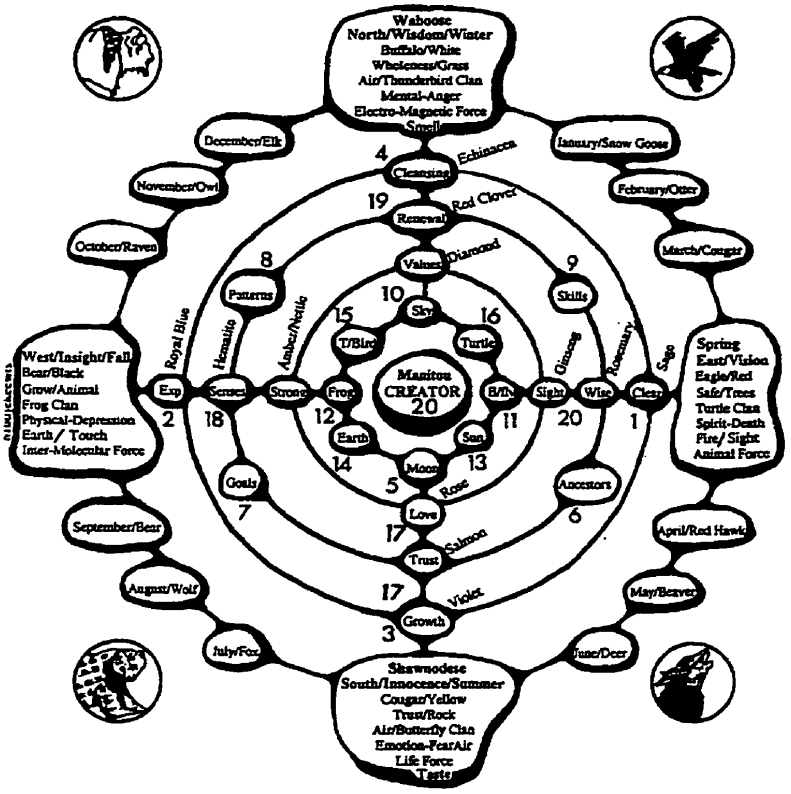
Spirits are summoned or asked to participate for four main reasons. To assist a medicine person in a healing ceremony; to give a medicine person and those taking part in a healing, spiritual guidance; to provide the medicine person with knowledge of the future; and to assist the healer in changing the events of the future. (Young, 1989)

All of the spirits, with the exception of the Great Spirit, have an evil counterpart. The power of the good spirits far outweighs that of the bad spirits, the dilemma is that the good spirits are often difficult to summon and are not easily controlled. The bad spirits conversely are always willing to participate and are easily summoned. Healers must resist the assistance of the evil spirits for if utilized, they may never again summon the good spirits. For the Cree, the most feared of the bad spirits is the Wittigo. The Wittigo, is a cannibal spirit that wanders the forest devouring humans. Evil spirits, can also be summoned when a taboo has been violated or when a ritual or ceremony is performed improperly.

## *The Medicine Wheel*

The following description of the 'Medicine Wheel' is one perspective, adhered to by Russell Willier ,a Cree healer. There are numerous variations of the wheel and numerous associated elements within the four quadrants. The diagram below, illustrates one physical interpretation of the medicine circle and the associated elements of its quadrants. Interpretations of the wheels differ, between tribes and between individual elders or healers. Most elders or healers though, do use the wheel or another cyclical form to represent the passage of life.

**The Medicine Wheel of Vision - *Red Owl, Spirit Seeker***
*Illustrator/Instructor B. P. Monette, based on universal Medicine Wheel concept.*




The medicine wheel is divided into separate but equal quadrants with the four cardinal points, north, south, east and west. Each of these quadrants are metaphorically represented by an animal with distinct qualities representative of that facet of life. The Buffalo, in the Northeast quadrant, represents education, occupation and or special skills. The Eagle, the northwest quadrant, represents far sightedness and the ability to plan for the future. The Mouse, found in the southwest quadrant, symbolizes the acquisition of material possessions, the home and spouse, whereas the final quadrant, southeast, is represented by the Bear, which personifies happiness with children and family life.

Translated simply, the Medicine wheel is a metaphorical representation of the life journey. This journey is a cyclical process, and occurs along and within the rings of the medicine wheel. Complete fulfillment, a closed circle, will depend upon the level of achievement that a person has attained within the four quadrants, or aspects of life. The ultimate goal is to close the circle, thereby fulfilling all aspects of life. Some people are not able to reach fulfillment and never close the circle, primarily due to the distractions of modern living. Drugs and alcohol are two distractions that prevent some individuals from closing the wheel and living a fulfilled and happy life. Theoretically, a persons progression along the wheel can be revealed by the colour that they emit. It is believed that a medicine person, with assistance from the spirit world, is able to observe this color and therefore perceive a persons position in the life journey.

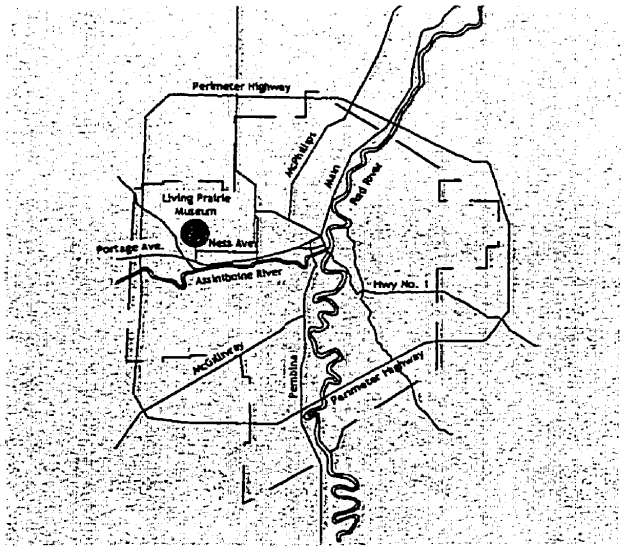
## Introduction

The most challenging aspect of this design is accommodating the needs of both of the proposed user groups. Each of the intended users have different needs and different methodologies with respect to preservation and presentation of environmental knowledge. The Living Prairie Museum, has as their mandate, the protection and preservation of one of few remnant tall grass prairie plant preserves in Manitoba. The other potential user of this site is the Aboriginal community of Manitoba whose primary objective, is the preservation of a culture and system of knowledge indigenous to the Manitoba landscape. The following discussion will outline the differences between the two client groups and their congruencies.

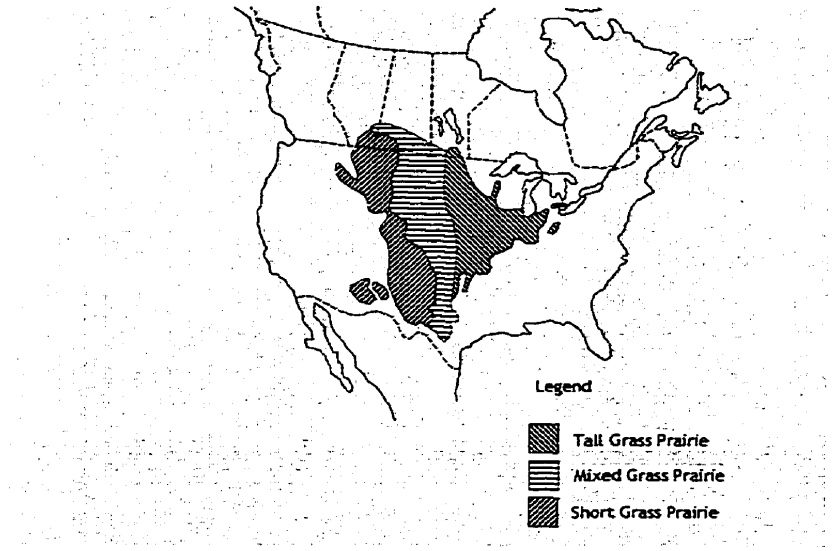
The following discussion outlines the goals and needs of the Living Prairie Museum and the guidelines that must be met to fulfill those needs. This will include a brief discussion of the museum's origins and its stated objectives and approach to instruction, followed by a discussion of the specific requirements for the physical design of the knowledge garden. This will then be followed by a discussion of the goals and needs of the Aboriginal community. This discussion will begin with a brief reference to the character of the Aboriginal community of Manitoba, and their association with Winnipeg and the site at the living Prairie Museum. Following this, a discussion of the methodological approach to the presentation of knowledge, taken by Aboriginal people, and the physical context that has been and is now being utilized for its instruction. Finally there will be a discussion of some associated programs and projects within the city of Winnipeg that have similar and differing approaches to the presentation of Indigenous knowledge in an urban setting.

## The Living Prairie Museum

The Living Prairie Museum and nature preserve was established in the late 1960's, when it was then a part of the city of St. James. The site , was a section of undisturbed prairie vegetation utilized by local artists and ecologists with a love of and interest in the preservation of such endangered environments. The establishment of this particular preserve site, was initiated by The International Biological Organization (an organization dedicated to the identification of rare biological communities), This organization, identified this site as one of four exemplary prairie sites, within the political boundaries of Manitoba. These four, in the opinion of this organization, were the best remaining examples of Manitoba's tall grass prairie bioregion. This designation and the urgings and campaigning of several local environmentalists and biologists lead to the inception of the tall grass prairie preserve. Several years after its inception, a museum building was introduced to the site, acting as an interpretive and management center for the preserve.




Living Prairie Location Map
Living Prairie Museum Interpretation Plan, p. 11




Grasslands of North America
Living Prairie Museum Interpretation Plan, p.12

The main objective of the Living Prairie Museum and nature preserve from the time of its inception, was and is the preservation of the existing undisturbed tall grass prairie. The secondary objective is environmental education with an aim towards increasing the perceived value of landscapes like that at the museum site. With this in mind, environmental education can only occur if it does not threaten the prairie and its associated vegetation.

The Initial instruction or interpretation of the prairie, typically occurred on an informal basis. Individuals arriving at the museum, entered the museum building, where they were introduced to the prairie through verbal, video and audio presentations explaining the physical constructs or geomorphology of the prairie, its vegetation, associated animal species, fire ecology and historic value. After this initial introduction, the guests were then taken, by a naturalist, out into the prairie where further explanation of the workings of the prairie were interpreted. This approach to the interpretation changed slightly in successive years. Educational emphasis, shifted away from occasional unscheduled visitors, towards more group interpretation, specifically in the spring and fall seasons. This interpretation included larger groups of local school children and some community groups, including the elderly, and the physically and mentally disabled.

It should be noted that the role of the naturalist is seen as vital in the interpretation of this environment. The Living Prairie's definition of "interpretation is any communication process designed to reveal meanings and relationships of our culture and natural heritage to the public through first hand involvement with an object, artifact, landscape or site." (Harburn, 1978) The following is a description of the prairie, adapted from *The Living Prairie Museum Interpretation Plan.* (Harburn, 1978) This particular description is illustrative of a approach that outlines the prairie, as a series of parts. The parts being the climate, plants, animals, soils, and insects, etc. In this perspective the parts once detached from the associated environment and the people who live there, appear to be distinct or separate elements. The naturalist's commentary therefore, plays a key role in drawing the appropriate relationships, in order to achieve a more complete understanding of the prairie.

The grasslands of and North America can be broken up into three specific types. These types are distinguished primarily by the physical character of the dominant species, namely the grasses. There is the short grass prairie, the mixed grass prairie and the tall grass prairie. In the context of Canada, these environments extend west to the foothills of the rocky mountains from eastern Manitoba and north from the international border to the boreal forest. The type most common to Manitoba region is the tall grass prairie. This classification is considered to be the true prairie typology.

The dominant species of the tall grass prairie, is Andropogon gerardi or big bluestem. This grass species is characterized by its size. There are records of this species reaching heights of up to 8 feet. There are obviously numerous plant varieties native to this environment. (Bird, 1961), identified some of the more important forbs of this specific bioregion, seasonally. They and are as follows.

Spring: prairie crocus, Anemone patens var. wolfgangiana, Richard's comandra, Comandra richardiana, prairie buttercup, Ranunculus rhomboideus, three-flowered avens, Geum triflorum, field chickweed, Cerastium arvense, long-leaved bluets, Houstonia longifolia, western ray-pimpernel, Androsace occidentalis, prairie everlasting, Antennaria campestris, northern bedstraw, Galium boreale, hoary puccoon, Lithospermum canascens. (Harburn, 1978)

Dalea Candida, Photo by author

Anemone patens
Plants of the Western Boreal Forest and Aspen Parkland, p.119

17

Summer: white prairie-clover, Dalea candida, purple prairie-clover, Dahlia purpurea, rose, Rosa sp., dotted blazing-star, Liatris punctata, black-eyed suzan, Rudbeckia serotina, bluebell, Campunala rotundifolia, white beardtongue, Penstenon albidus, Indian breadroot, Psoralea esculenta, silverleaf psoralea, Psoralea argohylla. (Harburn, 1978)

Fall: rough false sunflower, Heliopsis helianthoides, narrow-leaved sunflower, Helianthus maximilianii, bergamot, Monarda fistulosa, stiff goldenrod, Solidago rigida, low goldenrod, Solidago missouriensis, giant hyssop, Agastache foeniculum, yarrow, Achillea millefolium, pasture sage, Artemisia frigida, white sage, Artemisia ludoviciana var. pabularis, many-flowered aster, Aster ericoides, smooth aster, Aster laevis. (Harburn, 1978)

The animals that once made their home the prairies were an intricate part of its defining character. The dominant species of the prairie, like the buffalo, Bison bison, the pronghorned antelope, Antilorapra americana, the elk, Cervus canadensis, and the buffalo wolf, Canis lupis nubilis, are now a part of the tall grass prairie of the past. There are though, numerous species that continue to define the prairie albeit on a much smaller scale. Herbivorous species like the white footed mouse, Peromyscus maniclatus bairdii, voles like, Microtus pennsylvanicus subspp., and Microtus ochrogaster, the thirteen striped ground squirrel, Citellus tridecemlineatus, and the pocket gopher, Thomomys talpoides subspp., continue to make the prairie their home. (Harburn, 1978)

These smaller animals were preyed upon by some characteristic prairie predators including the coyote, Canis latrans Say, the red fox, Vulpes fulva regalis, and the badger, Taxidea taxus taxus. Birds were also prevalent on the prairie, and included smaller species like the western meadowlark, Sturnella neglecta, the horned lark, Eremophila alpestris, the vesper sparrow, Pooecetes gramineus, and the sharp-tailed grouse, Pedioecetes phasianellus, to the larger birds of prey, like the red tail hawk, Buteo jamaicensis, Swainson's hawk, Buteo swainsoni, the crow, Corvus brachyrhynchos, and the short eared owl, Asio flammeus. All of these birds were summer residents, except for the sharp tailed grouse, which lingered over winter in the riparian forests. The snowy owl, Nyctea scandiaca, was another occasional winter visitor. (Harburn, 1978)

Bison
Superstock images, CD, 1997

Gopher
Superstock images, CD, 1997

The invertebrate population on the prairie was extensive. King, in the *Ecology of the Aspen Parkland*, estimated the invertebrate population at approximately 7,300,300 species per acre. Insects, comprised 97% of this number and arachnids, were the most predominant of the remaining 3%. The insect population was dominated by the ant, Myrmica scarbrinnodis, at 86%. There were other insects though and they included species like the leafhopper, Dikraneura mali, the bug, Laccocdra vittipennis, the beetle, Stilbus apicalis, the striped cutworm, Euxoa tessillata, and the two-striped grasshopper, Melanoplus bivittatus. (Harburn, 1978)

The climate of the Winnipeg region and the prairie specifically is generally quite variable. The mean daily temperature in July, is 20 °C, and -18°C in January. The annual temperature extremes, range between -36 °C in the winter to 36°C in the summer, a difference of 72°C. Annual precipitation for the region is 200 cm, or 20". These climatic extremes illustrate the seasonal variability of this environment and the ability of the prairie species to adapt and thrive.

*User Needs*

From the inception of the Museum and preserve, there were plans for the creation of a garden that exhibited some or all of the native prairie plant species. To date, the garden, is allocated to single large plot on the east side of the building and several smaller planting beds adjacent to the building on the east, south, and west sides. The intent of the beds, has been to allow visitors closer observation of the various indigenous species, prior to the extended tour of the prairie. Tours, generally begin at the east entrance, where the existing garden is located. The larger gardens on the east side of the building and the smaller bed on the south side, are the beds most utilized, to this capacity. The remaining beds are utilized in a more aesthetic manner.

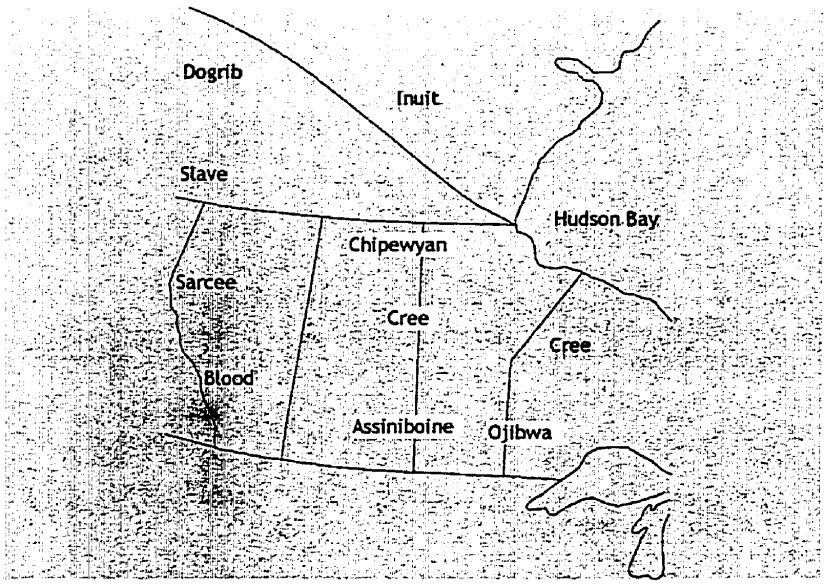
The director of the museum has expressed a desire for a more deliberate garden, that might be expanded, in area, from the original beds. There is also a desire, expressed by those involved in instruction, for one or several intentional gathering spaces that could accommodate groups of 15 to 20 people. Another issue of concern is accessibility. Certain individuals, are unable to navigate the grass trails through the preserve itself, subsequently, the museum and staff would like to accommodate these individuals in the vicinity of the immediate site, adjacent to the building. Development around or near the building must not threaten the preserve to the immediate north. Development on the north side of the Museum building must be limited to a distance of approximately thirty feet. Expansion of paths and or garden beds to the south of the building is acceptable with reasonable limitations.

Some members of the museum staff have also developed some initiative towards the inclusion of Indigenous knowledge in the interpretive mandate of the museum. At the time of writing, there was and agreement in principle, between the Living Prairie Museum and the Aboriginal Language Association, to engage four Aboriginal interns, two Ojibwe and two Dakota, in the instruction of Indigenous knowledge on the grounds of the museum site.

### *The Aboriginal Community*

Winnipeg's Aboriginal community is comprised of several tribal groups, including the Assiniboine, the Ojibwe, the Cree and Métis peoples. These four indigenous groups occupied the regions at and around the present location of Winnipeg. The map below illustrates tribal distribution throughout the prairies at the time of contact.

The Indigenous group that is most associated with the prairie ecology, is the Assiniboine or Stoneys. The Assiniboine peoples are a Siouan speaking people originating in the south, where they split from their relatives the Yankton Sioux, to move north and ally with the plains Cree. The Assiniboine were and continue to be inextricably linked to the plants, animals, and environment of the plains. The history, culture and spiritual beliefs of the Assiniboine were and are wholly derived from the plains environment on which their lives depended. The buffalo, as an example, was more than an environmental resource. The bison was a recognized equal, a cultural symbol, and a spiritual guide. The knowledge that the Assiniboine people held of their environment and their experience in the prairie context is unparalleled and invaluable. The natural history of the prairie bioregion cannot be completely understood without the inclusion of this Indigenous group.




Tribal Distribution, pre 1720
Living Prairie Museum Interpretation Plan, p. 19

The Ojibwe or Saulteaux, and the Swampy and Woods Cree, are Algonkian speaking peoples that are also closely linked to the Winnipeg context. The Ojibwe originated in the western lake forest regions of Ontario. This group moved west with the influx of European traders and the westward movement of their predecessors; the Cree. These groups occupied and understood the boreal forest and riparian woodlands common to this region and to the City of Winnipeg. Their culture, knowledge and spiritual beliefs are also drawn from the plants, creatures, and landscape of Winnipeg's associated environments.

The Métis are another historically significant Aboriginal group, who have maintained their environmental understanding of the Red River Basin, and the southern regions of Manitoba. The Métis are descendants of local Aboriginal groups and the early trappers of the fur trade. Before and after the establishment of Lord Selkirk's community, the Métis lived and thrived on the banks of the Red and Assiniboine rivers, supplying the purveyors of the fur trade with the resources of the buffalo, the prairie, and the woodlands.

### *User Needs*

The goals and requirements of a garden for the Aboriginal community differ from that of the Living Prairie Museum, however both clients can be accommodated in a suitable environment. The most evident departure between the two users has been the perceptual framework that guides the instruction of knowledge.

> *The "Native Mind" perspective tends to be holistic, multisensory and boundless in scope. Shamans (along with various medicine people, healers, artists, and other traditional figures of authority, who have long served as precious repositories of aboriginal knowledge) reach to embrace the entire cosmos through spirit, and not just the most tangible or accessible part of it. Images of the natural world are largely rooted in the rich soil of generations of*

> *revelatory personal encounters with the concrete, sensible aspects of the cosmos. The "Native Mind" yearns to envelope the totality of the world and brings a totality of mental capacities, beyond cool reason, to the task.* (Knudtson, 1992)

The way that the knowledge is transferred, will affect, the physical design of a garden designed for its presentation. Indigenous knowledge is traditionally passed on through oral interpretation, using myth, legend, dance and art as mediums. Oral interpretation, in the past, has typically been revealed through an expressive, narrative style.

> *"This," he said, pointing to the sky and around him, "what you see around you is a story. You, in time to come, will tell about me. Your children will tell about you - if you are foolish or not foolish - whatever they say about you will be a story. When your grandchildren come you will look back. You will see and know many things. This will be your story.* (Wolfe, 1988)

An appropriately designed Aboriginal teaching garden, will acknowledge and facilitate this tradition, so that it is retained. Oral interpretation, enlivens and makes the knowledge relevant for those being instructed. Appropriate outdoor, indoor and/or enclosed settings will have to be provided to continue this important tradition.

Ideally, the natural environment provides the best setting for the transmission of Aboriginal environmental knowledge, and the prospective student(s) would typically be instructed in this environment. The elders or 'instructors', journey through a natural site, using legend and myth, to reveal the relationships of the culture. Typically, In the Aboriginal context, knowledge is revealed only when an individual has expressed an interest in acquiring the knowledge, or when the individual has reached a critical time in their life cycle where the knowledge would be appropriate. Instruction of this type, has not typically occurred inside the urban setting.

The Living Prairie Museum and the surrounding environment can provide a alternate site for those Aboriginals, Métis, and others, who wish to immerse themselves in Indigenous knowledge and receive instruction in the semi-natural setting. This site is also conducive to traditional presentation methods. Currently, oral communication is utilized in the presentation of information at the Living Prairie Museum, with little interference from urban noise. Automobile noise generated by traffic on Ness Avenue is minimal, even at peak traffic times, and would not detrimentally affect the presentation of knowledge. Noise levels are generally low enough to allow comfortable conversation between instructors and those being instructed. Unfortunately, noise generated by planes and air force jets may have some impact on oral presentation methods. For the most part, this is unavoidable unless outdoor instruction were eliminated altogether.

In most instances instruction, for Aboriginal teachers, begins with an introduction to the landscape, allowing the observer to develop an understanding of the environment in its totality. Once the instructor is confident that some understanding of the environment as a whole has been achieved, only then can the individual properties of the plants and animals be cautiously revealed.

The needs of the Aboriginal instructor appear to be clear and uncomplicated. The holistic Aboriginal philosophy, will dictate the interpreter's movement through the site. Movement through this environment by an Aboriginal instructor may be quite different from that of the museum naturalist. Their approach to instruction may in fact circumvent teaching in the museum building itself. Due to the nature of Indigenous knowledge and the individuality of the elders, there may be no set pattern of environmental involvement ascribed to by Elders or Aboriginal educators generally. The Aboriginal instructor, is prepared to use the natural setting as it presents itself, at the time

of instruction. This may change from time to time, depending on the group, and the individual. It is this variability that makes the design of an educational garden, challenging. At best, the designer can build as much flexibility into the design as is physically possible. The success of such teaching environments will become apparent over time. The elders interviewed did not reveal any other specific site requirements, other than a quiet natural setting, for the facilitation of Indigenous environmental knowledge.

While respecting, this need for a natural setting for the transmission of Indigenous knowledge, Elders and Aboriginal educators alike also recognized the need for an urban educational environment where traditional knowledge can be communicated. The urban Aboriginal population is growing, and natural and ex urban prairie sites are disappearing. The Aboriginal community, at least those interviewed, agreed that sites like the one proposed are important.

A limitation, of the environment at the Living Prairie Museum, to the transmission of Indigenous environmental knowledge, is that direct physical contact with the naturally occurring plants, is limited to those plants within the cultivated gardens . Essentially, plants within the prairie preserve, excluding the woodlands, cannot be harvested, picked or removed from the site. Most of the Aboriginal people interviewed, though not always in agreement with this requirement, understood the need to protect these environments. One elder suggested that the plants at this site and other urban sites like this, and cultivated native plants generally, do not possess the medicinal and spiritual qualities of their naturally occurring counterparts. This elder did however concur that these plants and this environment could facilitate the instruction of knowledge in the urban context. It is hoped that these needs, the need to harvest the plants and the need for direct physical contact, can be supplemented by the cultivated species, with the understanding that these plants are not truly representative of the plants in their natural habitat.

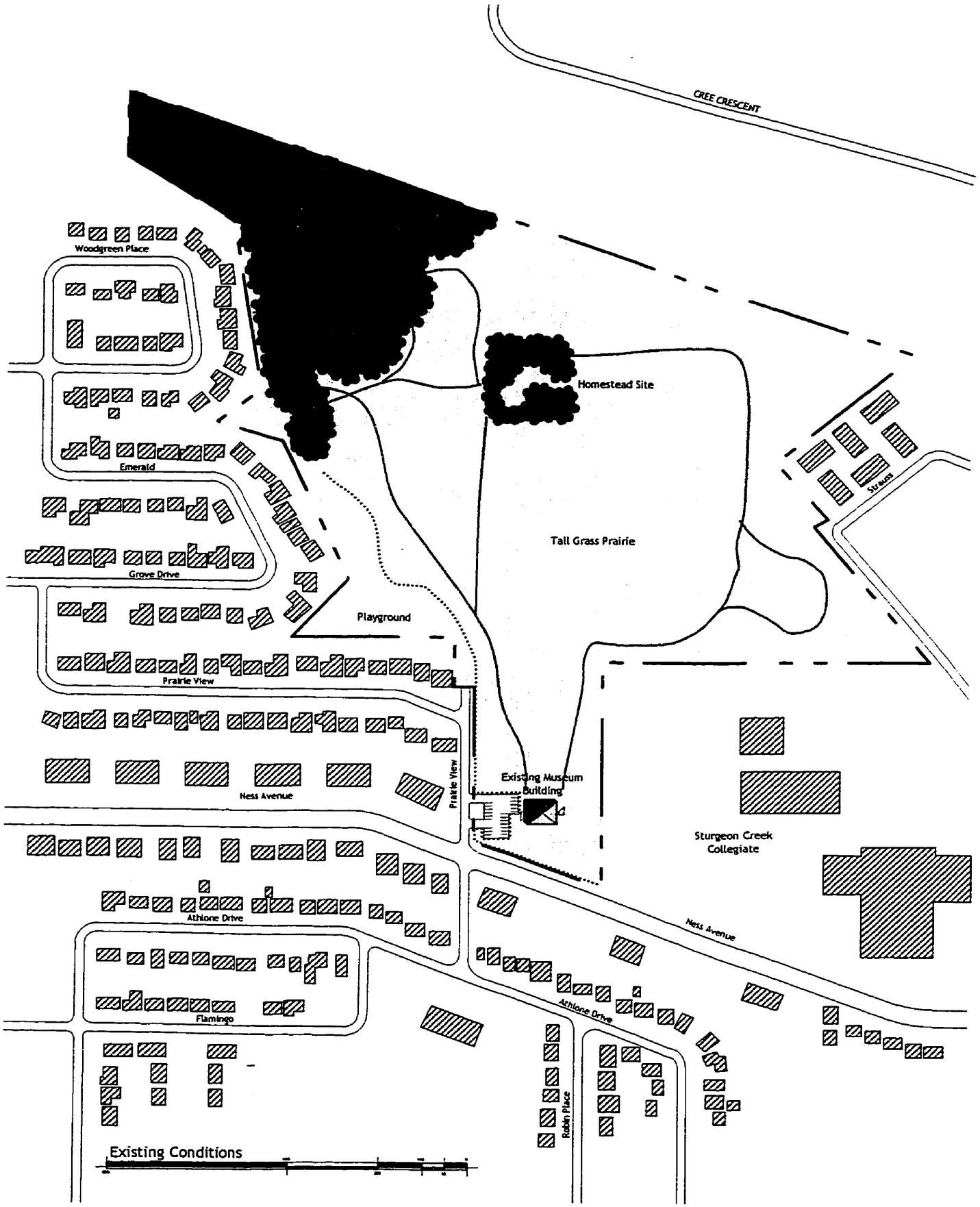
Aboriginal Environmental Knowledge is generally not currently a part of the urban educational curriculum. To date, The Children Of The Earth High School in Winnipeg's core area, is the only urban school identified, that includes the instruction of Indigenous knowledge within their curriculum. Aboriginal youth, at this school, are being exposed to the knowledge of their culture, but not in the urban environment. Students here, receive cultural and environmental instruction in several adjacent rural communities. There are some university level programs in the city that impart Aboriginal environmental knowledge. The Center for Indigenous Environmental Resources (CIER), enlists the expertise of three individuals in the instruction of Aboriginal environmental knowledge. Two university scholars, one Aboriginal and one non-Aboriginal, and an Aboriginal elder, instruct the students on the environmental practices of Indigenous peoples nationally. Participants in this program have been exposed to the environments of northern Quebec, northern Alberta and various local rural environments.

There is a project under way, at present, that has similar goals with regards to urban centered Indigenous environmental knowledge. George Munroe and Mary Richard of the Aboriginal Council of Winnipeg, and Caroline Chartrand of the Métis Horticultural & Heritage Society Inc., are currently involved in the development of an Indigenous garden, at the proposed Aboriginal round house. The goal of this garden, as with the proposed garden at the Living Prairie, is to provide an environment for the transmission of Indigenous knowledge in an urban context. This proposed development will include a sweat lodge, a long house, a children's playground, an art gallery, and a multi-complex for urban Aboriginal youth, interspersed within the native plant material. This project will be located in the vicinity of the newly established Aboriginal Centre of Winnipeg Inc., 181 Higgins Avenue, Winnipeg, Manitoba. Caroline Chartrand of the Métis Horticultural & Heritage Society Inc. is actively involved in this and other important urban garden developments throughout the city.

With these urban precedents in mind and acknowledging the need for a natural setting, there is opportunity to accommodate the instruction of Indigenous knowledge at the Living Prairie site. A garden of this sort, is probably not appropriate in a setting where naturally occurring environments are immediate and close at hand. There is no substitute for first hand experience in a natural environment, particularly for the instruction of Indigenous knowledge. But when you consider the growing number of urban Aboriginals and their limited access to their knowledge and natural environments, the proposed garden at the Living Prairie Museum, offers urban Aboriginal an opportunity to re-connect with their cultural traditions. This design hopes to serve the urban and rural Native peoples of Manitoba, in the instruction and preservation of Indigenous environmental knowledge.

*Summary*

Naturalist as oral instructor, is a relatively congruent method of instruction, comparative to that utilized in the oral traditions of Indigenous people. The naturalist plays a critical role in the interpretation and subsequent understanding of the information being transmitted. It is important to note the methods of interpretation invoked by the differing client groups. The actual physical content and approach of the two methodologies may be similar but the expression and perceptual basis of each are quite different. This practicum does not advocate one methodology over another, but merely attempts to express the nature of the different perceptual frameworks. It is more appropriate to illustrate the validity, importance and equality of both perspectives. The typical indigenous perceptual basis is based more on a holistic understanding of the environment. This differs from the typical approach of western scientific theory. As mentioned previously in this document, western society in the past has tended to examine physical phenomena, from a more reductionist perspective.


CREE CRESCENT
Woodgreen Place
Homestead Site
Emerald
Tall Grass Prairie
Grove Drive
Playground
Prairie View
Existing Museum Building
Ness Avenue
Sturgeon Creek Collegiate
Athlone Drive
Flamingo
Robin Place
Existing Conditions

## *Site Analysis*

There are three significant sites where development may be feasible for the location of an instructional garden. The homestead site, the playground site, and the site immediately adjacent to the Museum building, have all been considered (see appendix a, potential sites, p.36). All of these sites undergo a regular disturbance regime. They are all mowed at regular intervals, throughout the growing season.

Museum building and adjacent site, from Ness Avenue

Site A, the site immediately adjacent to the museum is the most practicable of the three sites. This site has experienced some disturbance historically, and during the construction of the museum building. It is close to the parking lot, the main museum entry. Therefore development here would not endanger the surrounding preserve. There are no trees or shrubby vegetation at this site. Subsequently there is little protection from prevailing winds. As this site is used primarily in the summer, wind exposure, is not a significant problem. There is little to no shade at this site, except that created by the building itself. This places some limitations on the vegetation type. Plant species requiring shade, will have to be placed on the north side of the museum building. This site is dominated by native and non-native grasses and forbs, typically kentucky bluegrass, Poa pratensis, and quack grass, Agropyron repens. Hawthorn, or Wolf willow, Elaeagnus commutata, is beginning to dominate the region directly to the south of the building. Views to and from this site are generally quite appealing, (see appendix a, views, p.41) except to the south where the site is bordered by Ness Avenue.

Development at this site, is limited to an area of approximately 2300 m2 (2700 yrds2). Additional garden plots or paths must not encroach on the prairie preserve to the immediate north of the building. The limit of development in this direction is approximately 10 meters (30'). Development to the south and east is feasible within reasonable limits. Development to the west is limited by the parking lot. The parking lot itself has an asphalt surface and will accommodate up to 19 vehicles, which is ample. The exiting garden plots directly adjacent to the building are to remain including the Argyle garden on the east side of the building.

Site B, The playground site (see appendix a, potential sites, p.36) in the western section of the preserve site has some potential for development. This site experiences a regular disturbance regime. It is relatively close to the parking lot and the main museum entry, approximately 95 meters (315 ft). Development here would not likely endanger the surrounding preserve. There are no trees or shrub vegetation on this site, but it is sheltered from prevailing winds by residential developments to the south and west. This site does receive some shade from this residential development and therefore is probably not suitable for the cultivation of prairie species. This site is dominated primarily by non-native grasses, typically kentucky bluegrass, Poa pratensis, and quack grass, Agropyron repens. Views to and from this site are quite appealing except to the south and west, toward the area of residential development.(see appendix a, views, p.38)

Playground site, from prairie preserve

Development at this site, is limited to an area of approximately 6300m2 (7700 yrds2). Any garden plots, paths or instruction spaces proposed here would be restricted to the area of disturbance. This site does lie within the boundaries of the preserve but falls under the jurisdiction of the City of Winnipeg. Subsequently development at this site would not be considered at this time.

The homestead site, Site C, (see appendix a, potential sites, p.38) is a previously disturbed site, dominated by a combination of native and non-native shrub species. Some non-native species present at this site are the caragana, Caragana aborescens, and the lilac, Syringa vulgaris and twinning honeysuckle, Lonicera dioica. Some of this vegetation is the remnants of the wind break that sheltered the homestead. The more predominant native species here include, the chokecherry, Prunus virginiana, american hazelnut, Corylus americana, and pincherry, Prunus pensylvanica. The understory at this site is in places, well developed and is mowed in others. The cultivation of native prairie species is not recommended at this site.

Homestead site, from prairie preserve

This site might be redeveloped because it is currently dominated by non-native species. Native species would not be jeopardized by development at this site. Development here is limited to an area of 4500m2 (5300 yrds2). It is approximately 290 meters (950 ft) from Ness avenue and the main entry. The site is generally sheltered, from the prevailing northwest and south winds. South, east and western views to and from the homestead are quite appealing.(see appendix a, views, p.41) Shrubs growth on the north side of the site obscure the industrial development in that direction. Views to the south fall directly over the prairie preserve. This area is well sheltered and private which could provide a gathering space for related events or ceremonies on occasion.

Its distance from the museum parking lot and entry presents a disadvantage for extensive development. Any equipment required for development of this site, even limited development, would endanger the adjacent prairie. Additionally, if a larger instruction space were to occur here, it would be accompanied by increased pedestrian traffic, through the preserve environment. Limited development may be feasible at this site.

The remainder of the prairie preserve will be excluded from development, because it is either protected or has been rehabilitated. Sites that are not protected or rehabilitated, namely the woodland area, have also been excluded from development. These sites offer an existing physical amenity that cannot be duplicated by development of any form. This area and the undisturbed prairie preserve, are far more beneficial if they remain in their present state, particularly if they are being used in the instruction of environmental knowledge.

*Conceptual Framework*

There are some overriding concepts that have contributed to the development and design of this garden. These themes are intended to inspirit this place in the eyes of the Aboriginal community and enrich the garden with meaning, by using traditional Aboriginal themes. The proposed design, also recognizes that is tis important that this place holds some meaning for all members of the community, as a reminder of their immediate bioregion. The intent, is to acknowledge both conceptual frameworks as important to the sustenance of a healthy natural environment.

The concept of holism drives the design of the garden. As previously mentioned, holism is an overriding theme in the world view and spirituality of Indigenous peoples. No place, object, or artifact, can be reasonably perceived in isolation, all things are part of a greater whole. The design attempts to communicate this holistic, inclusive ideal, through the placement of artifacts throughout the garden. Two circular and or cyclical forms are used in the design. They are intended to reflect the holistic nature of Aboriginal wisdom and the cyclical nature of the Indigenous world view, which includes seasonal cycles, lunar cycles, and life cycles, etc.

The narrative nature of Indigenous wisdom has also informed the design of the garden. The historic natural prairie, has an expressive narrative. Indigenous people are a part of that narrative, more so than any local ethnic group. The Aboriginal story of the prairie, can positively inform current impressions and enspirit it, with new meaning. The story of this garden, will be framed from the perspective of the urban Aboriginal community.

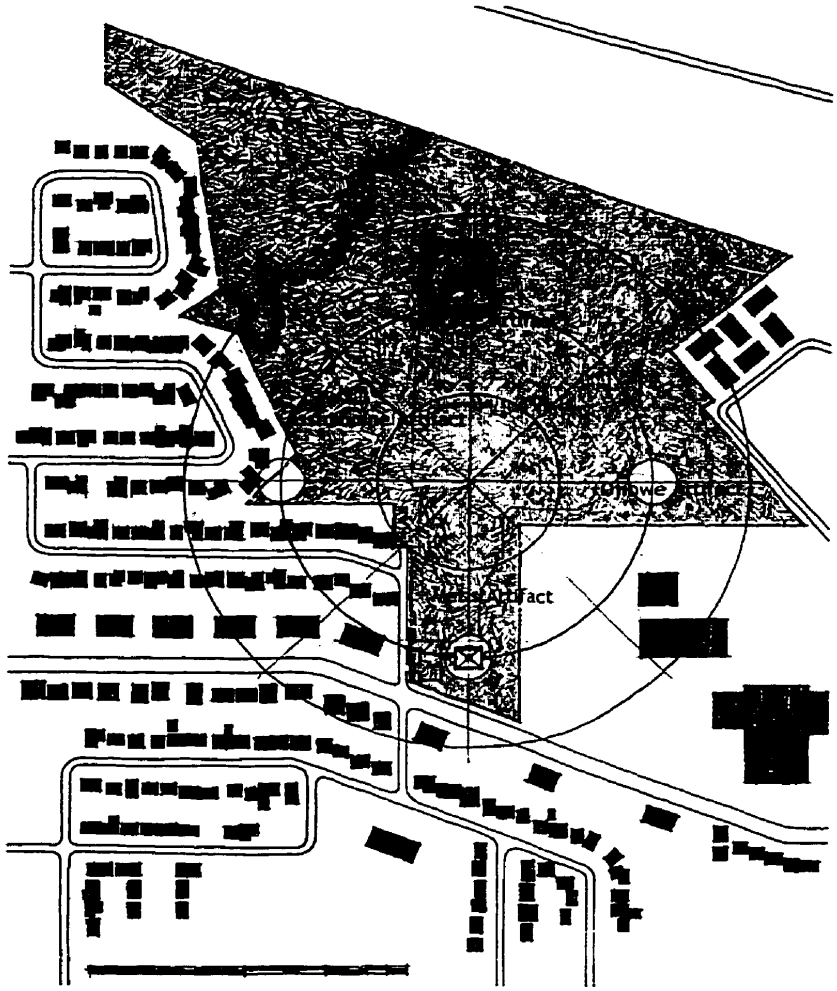
Another thematic reference that has informed the ordering of the elements of this garden, is the Medicine Wheel. The Medicine Wheel or, Medicine Circle, is a pervasive symbol in the culture of North American peoples. The medicine wheel once again expresses the holistic nature of Aboriginal spirituality. It represents their interconnection with all the aspects, elements, and creatures of the cosmos. It's physical expression is seemingly simplistic but its deeper meaning is complex and interwoven.

It is the encompassing nature of Native spirituality that informs this garden. The understanding that everything , every animal, every insect, every individual, is involved in a singularly unifying relationship. This typically Aboriginal perception, affirms that we at least acknowledge, if not understand, any and all 'wisdoms' before they are extinct.

This holistic approach has positive, and far reaching benefits for the population generally. It serves as a timely reminder of the fragility of our environment and demonstrates a sustainable way of living. It expresses a systems view which illustrates the complexity of our ecological systems and reinforces the notion that resources and natural elements such as wind, water, and soils are not politically bound and are shared by all. In understanding the complexity and interrelationship of natural and human systems, one is able to make more responsible decisions towards the natural environment.

## Design

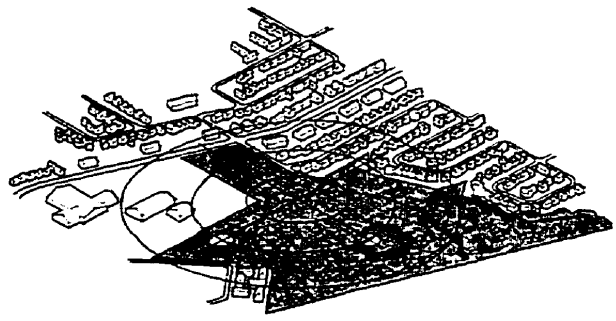
In the following discussion, the term 'garden' is used in reference to the entire landscape at the Living Prairie Museum, not just the proposed garden plots adjacent to the museum building.



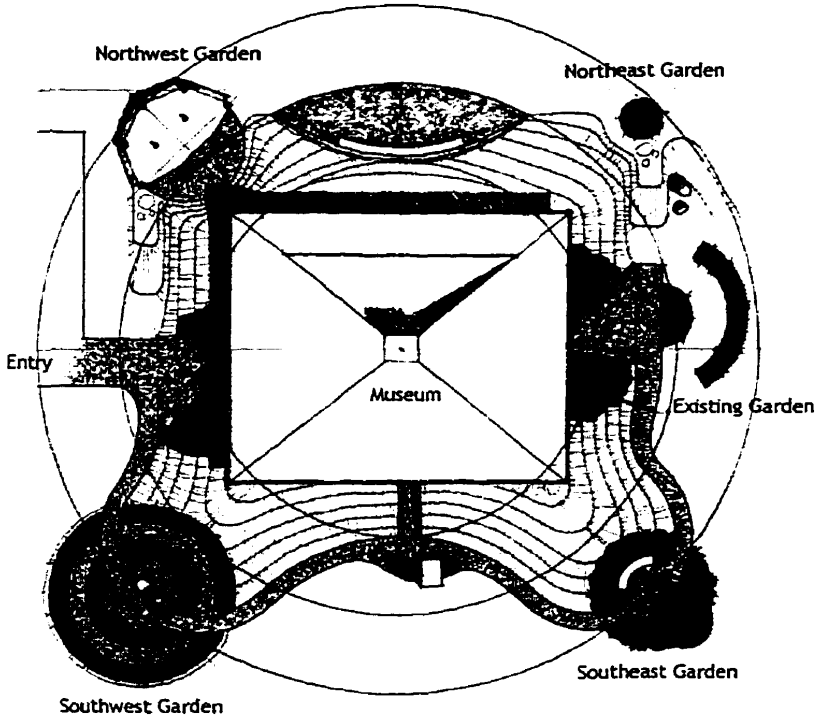
Overall Site Plan

Two methodologies serve to order, and unify the design and to emphasize the holistic aspect of Indigenous knowledge. A series of cyclical patterns have been superimposed over the larger preserve site. These larger circle forms, have been derived from two of the developed sites, the museum building site, and the homestead site. The overall intent of this aspect of the design, is to involve the Aboriginal community in the development of the garden and to unify the separate elements of the larger garden. Commissioned artifacts, will mark the cardinal points on the largest circle. These four artifacts, will be representations of their respective sector of the medicine wheel, as perceived by the commissioned Aboriginal artists. The artists will be chosen from the four Aboriginal nations indigenous to the Manitoba context. In the north, the Cree; in the east the Ojibwe; in the south, the Métis; and the Assiniboine, in the west. These artifacts are intended to suggest the preserves relationship to the larger environment

The other methodology that serves to unify the garden is the 'narrative'. A commissioned narrative will be engraved into eight stones throughout the garden, linking the various separate elements of the design. Four, within the smaller circle, associated with the museum, and four in the larger landscape. The stones, will placed both on the proposed and existing paths and nodes, throughout the garden. Again, this aspect of the design will involve one or several members of the Aboriginal community. The narrative is intended to illustrate a contemporary Aboriginal perspective of the prairie environment, in an abstract fashion. At the end of this journey, through the preserve and the learning process, a more fulfilled understanding of these environments will hopefully be realized.



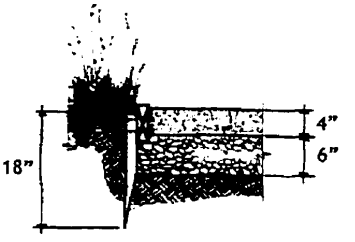
Site Perspective



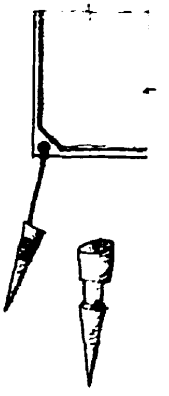

Museum Building Site Plan

There are four significant garden nodes, within the encircling rings of the immediate museum building site. (see above) The medicine wheel, is a generating symbol for these gardens and or instruction spaces. The placement and form of the gardens though, utilizes the cyclical nature of wheel more than its literal interpretation. The cyclical process has been translated to represent a process of learning. This process begins with an immersion into the local preserve environments, which enables a more holistic understanding of the environments. After this understanding has been realized, more detailed cognition can take place. Finally a synthesis of the presented information occurs, and then the process begins again. The objective of this ordering process is to characterize an Aboriginal approach to instruction.

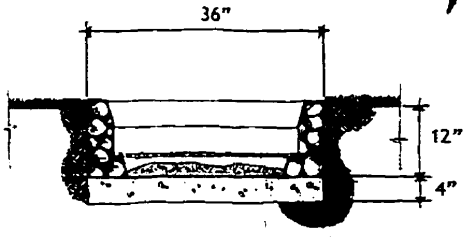
The gardens in the southwest and southeast sections of the museum building site represent the immersion aspect of instruction. These gardens frame and encircled those individuals involved in the instruction. The encircling garden plots of these gardens, will be planted with representative species from the prairie and the woodland. All of the species in these gardens will be planted in a manner, that comes close as possible to duplicating the natural setting. The plants in these two gardens are intended to be used for 'up close' teaching, supplementing the instruction that occurs in the larger environments.



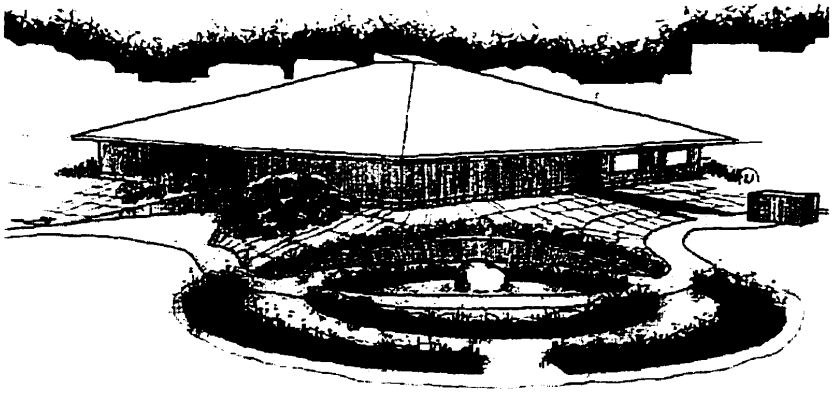

Edging Detail



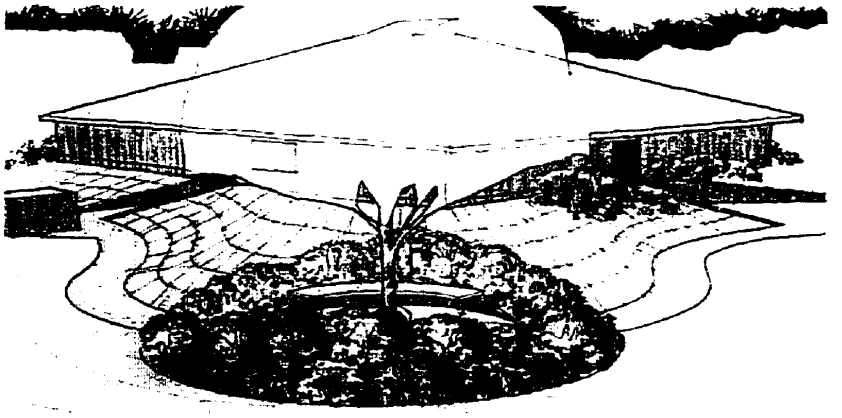
Peg Detail




Fire Pit Detail



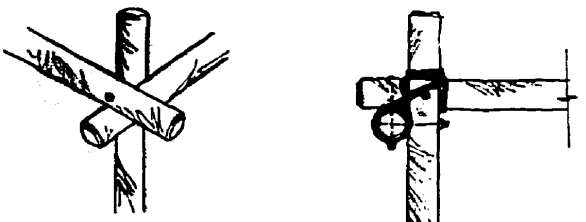
Southwest Garden Perspective



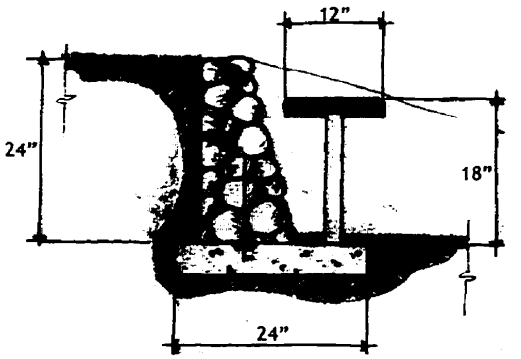
Southeast Garden Perspective

The southeast garden opposite the woodland will be planted with woodland species including bur oak, Quercus macrocarpa, american hazelnut, Corylus americana, saskatoon, Amelanchier alnifolia, etc., and associated herbaceous species. The circular central space in this garden will include permanent seating and the same hard surfacing as the path.This garden is also intended to represent the spiritual counterpart of the woodland, at the opposing end of the site. A more direct relationship would be developed through the connecting pathways and the narrative. The stone in this garden continues the narrative.

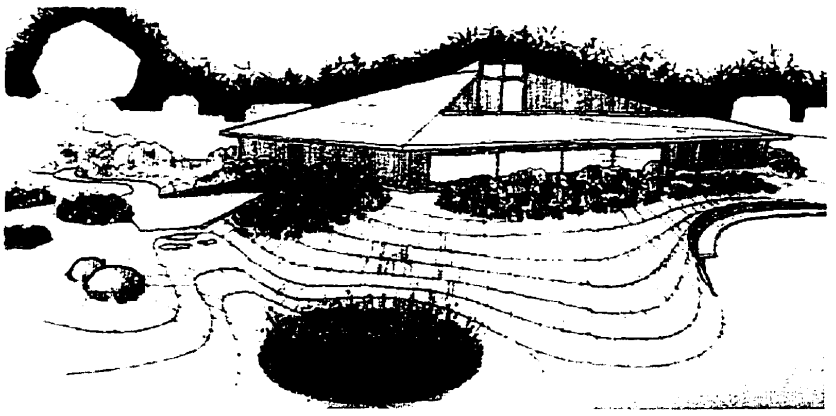
The southwest garden, (see southwest garden perspective, p.23) opposite the prairie, will be planted with grass and herbaceous species typical to the preserve, including big bluestem, Adropogon gerardi, little bluestem, Chizachysrium scoparius, alum root, Heuchera richardsonii, Indian breadroot, Psoralea esculenta, etc. The center of this garden will be a grass surface which will facilitate informal seating. One of the beds in this garden will be raised to allow closer observation by the physically disabled and the elderly. This garden, also initiates the narrative. The stones, which reveal the narrative, will also double as seating. This garden is intended to be a representation of the spiritual complement to the prairie.



Structure Details

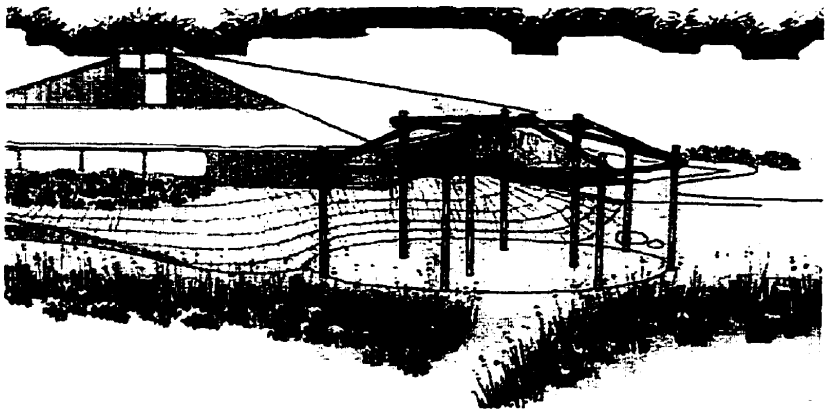



Retaining Wall and Bench Detail



Northeast Garden Perspective

The garden plot in the northeast corner of the garden, is smaller and encircled by the same hard surfacing paving as the path. This garden is representative of the detailed cognition stage of instruction. This garden will allow a more detailed interaction with plants of these preserve environments. Individuals involved in instruction, will be permitted and encouraged, to plant, remove and generally investigate the native species in this garden. The intent being, to allow detailed physical contact with the plants, the soils, and the processes that sustain them. From this point the path moves out into the preserve where the plants can be observed in their natural settings.

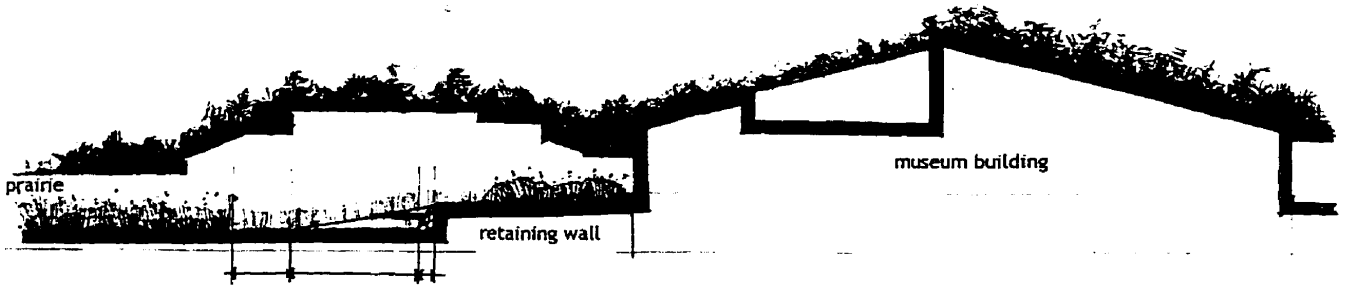


Northeast Garden Perspective

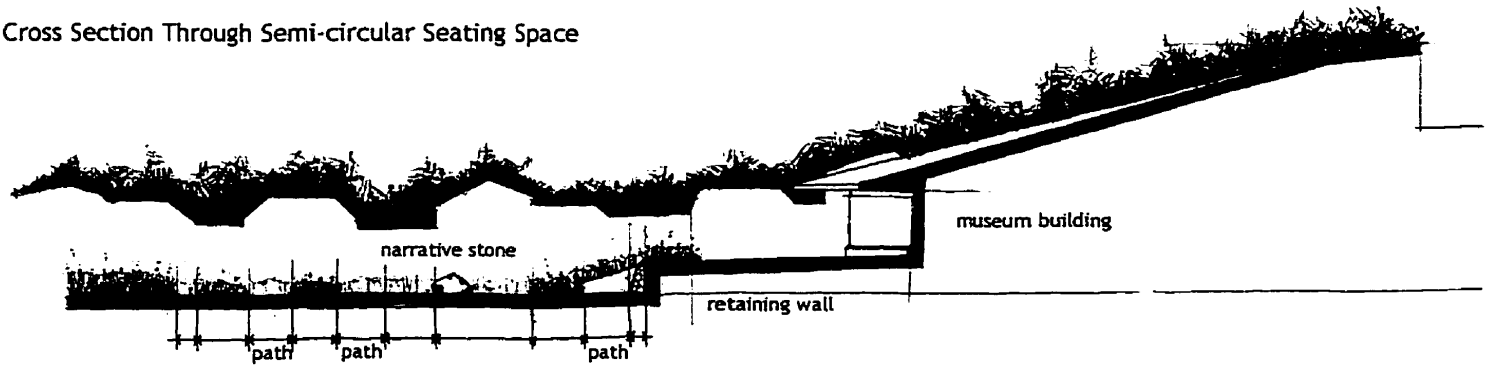
The synthesis stage of the learning process, is represented by the fourth and final space, and is located in the northwest corner of the immediate building site. This site will act as the primary instruction space for the larger garden. Here, the existing berm will be reshaped, around this space, to accommodate informal seating. This space will also include a temporary framed structure.(see details, p.24) This structure references the simply constructed sun dance structures of Aboriginal peoples. The structure will include a canvas cover and screen that will shelter, and or facilitate audio/visual presentations and instruction, within this space.

There is some additional development of the site that is related to the larger ordering circles. (see section below) The northern section of the museum building site, between the museum and the preserve, will become a permanent seating area. The short semi-circular field stone retaining wall (see details, p.24) here, is derived from the circular form ordering the larger site. The retaining wall and seating, cut into the existing berm around the building. The wall itself and the sodded area above the wall will also double as seating. A bed of shade tolerant herbaceous species will be planted in the shade of the building, backing the seating areas.

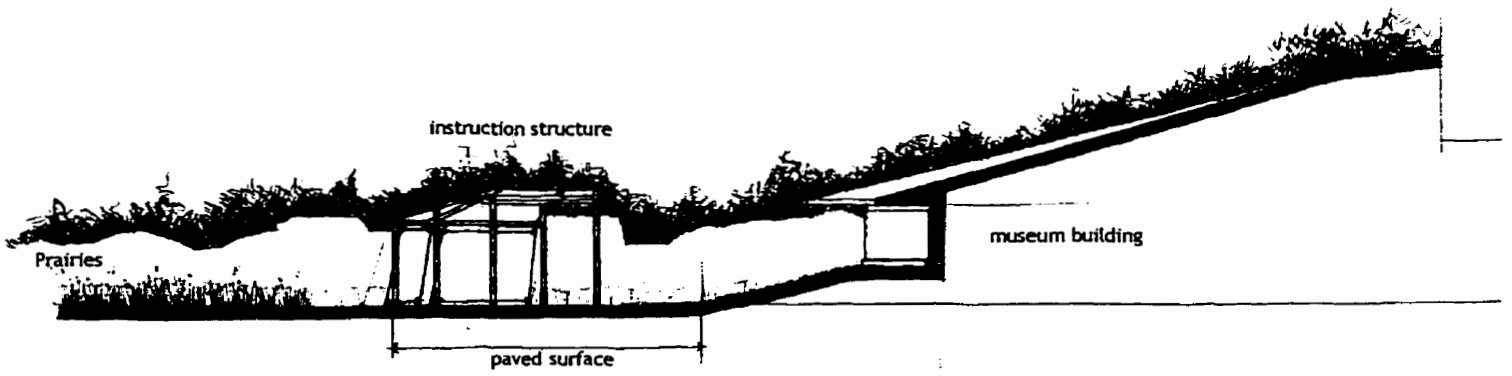
The space at the homestead site opposes the permanent seating area, on the north side of the museum building. This area is also derived from the the larger ordering circle. The home stead site will serve as an additional recreation and instruction space. Development at this site will include a permanent fire pit (see detail, p.23), moveable semi-circular seating and the previously indicated Cree artifact.




Cross Section Through Semi-circular Seating Space




Cross Section Through Southwest Garden



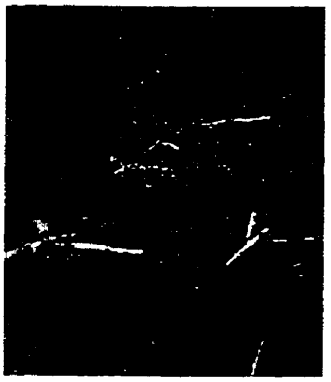

Cross Section Through Northwest Instruction Space

The path, that meanders through the gardens on the south side of the museum building, will be hard surfaced path, that can accommodate the elderly and the physically disabled. The existing and proposed trailways through the prairie preserve will remain as grass paths. The woodland and the preserve itself will be left undeveloped with the exception of the narrative stones. These areas are excluded from development because they offer a most suitable atmosphere for environmental instruction in their present state.

The design proposed here, as mentioned previously, uses Aboriginally inspired metaphors to apply some meaning to the site, for the urban Aboriginal community. The elements, their expression and placement are drawn heavily from the cyclical aspects of Indigenous Knowledge. The design also respects the importance of natural setting and their use for the instruction on environmental knowledge, specifically for Aboriginal peoples, but also for non-Aboriginals.

## *Indigenous Plants*

The plants of the prairie environment have informed and sustained the culture and knowledge of the First Peoples of Manitoba. The plants of the prairie bioregion were used throughout the culture providing food, medicine, and were important in ceremony. Leaves, seeds roots, were all used for various foods, tools and remedies. Typically, North American First Peoples were conscious of the manner in which they harvested the prairie plants. They took care in perpetuating their food sources because doing otherwise would threaten their survival. For instance, when it was necessary to harvest the root of a particular plant, parts of it were either left behind or the plant was cultivated, ensuring it and their survival. When it was necessary to harvest the root, only a portion was removed, in order to ensure the survival of the plant.



Andropogon gerardi
Photo by author

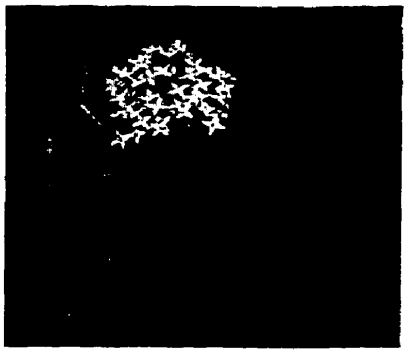
Prunus virginiana
Plants of the Western Boreal Forest and Aspen Parkland, p. 57

The following, describes some of the general uses of prairie plants developed and utilized by Aboriginal peoples. This is only a small sampling of the numerous species used by Indigenous peoples. It is included to give the reader an idea of the depth and validity of this knowledge system. It also illustrates the importance of these plants as a natural resource. This information should not be utilized for any purpose other than to enlighten the observer as to the value of the knowledge and the plants. These plants if used incorrectly or improperly can be potentially dangerous.
There are several significant plants in the prairie landscape, that were an integral part of Aboriginal life and culture. These plants hold an immense significance for Aboriginal people and their spirituality. Research has revealed the following significant plants of the prairie. The list is limited to native species specific to this Living Prairie site.

The most perceptible plant in the prairie landscape was without question, big bluestem, Andropogon gerardi. The animals that foraged on this plant, like the bison and antelope, were of utmost importance to native peoples of the prairie. Bluestem, was also important because it was used in the construction of the earthen lodges of many First Peoples. Additionally, the stems and awls, were used by the children as toy arrows. The stems of big bluestem were also used for switching during ceremonial sweats. Medicinally, a tea from the root was used for stomach aches and ash from burnt bluestem, was used to treat syphilitic sores. (Johnson, 1995; Kindscher, 1992; Kindscher, 1987)
The chokecherry, Prunus virginiana, was a very important plant to all Indigenous prairie peoples. The dried fruit of the chokecherry was a food staple of the Natives. The berries were pounded and dried to remove the hydrocyanic acid from the pith. The fruit of this plant was the principle ingredient in pemmican, a mixture of dried bison meat, animal grease and the berry, and sustained Indigenous peoples through the harsh prairie winters. These berries were also very rich in vitamin C, helping to prevent scurvy. The chokecherry also served to link the separate roles of the sexes, bringing hunting, a male task, and gathering a the woman's, together. This berry was also used in trade with neighboring groups and was in essence, the currency of the plains. Medicinally, the bark and roots of the chokecherry were used to treat everything from coughs, to colds and pneumonia. The bark was also used to clean sores and burns. (Johnson, 1995; Kindscher, 1992; Kindscher, 1987)

The saskatoon berry, Amelanchier alnifolia, was also used in pemmican. The dried berry and the leaves were used in soups and broth. The woods Cree used this plant to make arrows, canes, pipe stems, digging sticks, spears and rims for birch bark canoes. (Johnson, 1995; Kindscher, 1992; Kindscher, 1987)

Hawthorn, wolf-willow or silverberry, Elaeagnus commutata is quite common to this site and was also significant to the prairie peoples. The berries of the wolf-willow were eaten by some peoples but were generally considered to be famine food. They were mixed with blood and cooked with lard frozen and eaten raw or fried with moose fat. The bark from these plants was used to make chord and the dried seeds were used as decorative beads. (Johnson, 1995; Kindscher, 1992; Kindscher, 1987)



Cornus stolonifera
Plants of the Western Boreal Forest and Aspen Parkland, p. 54

Elaeagnus commutata
Plants of the Western Boreal Forest and Aspen Parkland, p. 55

Another very important plant to the plains natives, was the prairie turnip or Indian breadroot, Psoralea esculenta. The women of the tribe were responsible for collecting this plant. This species was so important that its presence influenced the movement of some of the plains natives. The edible root, was collected, dried and used to thicken soups or was roasted and eaten. Medicinally, the root was chewed and applied to sprains, or sore eyes and ears. A tea from the root was also used to treat sore throat, chest problems and gastroenteritis. (Johnson, 1995; Kindscher, 1992; Kindscher, 1987)

There were numerous prairie plants present at this site that were and continue to be used ceremonially. The following is a short list of some of the more important ceremonial plants found at the Living Prairie Museum site.

Artemisia ludoviciana, white sage, was an important ceremonial plant. This plant was used to cleanse the body and was burned as an incense. It was also used for crafts, like bracelets and as a deodorant and antiperspirant. Medicinally this plant was used as a moxa for headaches, and as an astringent for eczema. Tea was used for stomach problems and as a remedy for constipation and inability to urinate, a symptom of diabetes. (Johnson, 1995; Kindscher, 1992; Kindscher, 1987)

The Many-flowered aster, Aster ericoides L., was referred to as 'Big Love Medicine' by the Cree. This plant was burnt during sweats and used to revive an unconscious person. Medicinally, the roots were dried powdered and used in the treatment of cuts. Tea from the boiled root was used as an eye wash. Aster laevis, the smooth aster, was known as 'Small Love Medicine' to the Cree. It was also used to revive participants of sweats and a tea from the root, was used as eye drops. (Johnson, 1995; Kindscher, 1992; Kindscher, 1987)

The bark from Cornus stolonifera, red osier dogwood, was smoked alone or in combination with tobacco. Dogwood branches, were used to weave baskets and to make rims for birch bark canoes. The berries of this plant were occasionally mixed with other more appealing berries and eaten. Medicinally, the leaves, stem pith, and bark were used to treat dizziness, chest problems, and to induce vomiting.(Johnson, 1995; Kindscher, 1992; Kindscher, 1987)

Potentilla fruticosa, shrubby cinquefoil was an intricate part in the Contrary dance. The powdered plant protected the extremities from intense heat of the soup as they were plunged into it. The dried plant was also used as tinder and as a deadly arrow poison. (Johnson, 1995; Kindscher, 1992; Kindscher, 1987)

The compass plant, Silphium laciniatum, is present at this site but is not native to Manitoba's tall grass prairie. This plant was used as a ceremonial defilement. The dried root was used for head colds, while the sap was used as chewing gum. Smoke from the plant was used to treat colds, nerve pains and to reduce vomiting. (Johnson, 1995; Kindscher, 1992; Kindscher, 1987)
The ground plum, Astragalus crassicarpus was also served as a minor food source, either raw or boiled. Local peoples observation of this plant, when it flowered, indicated the appropriate time to plant corn. Medicinally, this plant was used in a tonic with other native species. (Johnson, 1995; Kindscher, 1992; Kindscher, 1987)

Dalea purpurea
Photo by author

Rosa acicularis
Plants of the Western Boreal Forest and Aspen Parkland, p. 58

The roots and leaves of Dalea candida, white prairie clover and Dalea purpurea, purple prairie clover were also eaten. Medicinally, these plants were used to treat measles and to relieve abdominal pain. (Johnson, 1995; Kindscher, 1992; Kindscher, 1987)

There are some additionally important food plants present at the Living Prairie site.
The fruit of the strawberry, Fragaria virginiana, was eaten fresh, or stored as jams or jellies. All of this plant was used medicinally for insanity, sores and skin disorders, as a mouthwash, to treat constipation, stomach aches and summer cholera in children.
The young roots of Glycyrrhiza lepidota, wild licorice were pounded and eaten. The root was also chewed during sweats and the sun dance for its cooling effects. Medicinally, these plants were used to treat diarrhea, upset stomach, flue, coughs, pain, sore throat and swellings. (Johnson, 1995; Kindscher, 1992; Kindscher, 1987)
The young stems of Heuchera richardsonii, alum root were cooked as a potherb. Medicinally, the root was chewed, boiled or powdered and used to treat diarrhea, sores of the mouth and generally, to speed healing. (Johnson, 1995; Kindscher, 1992; Kindscher, 1987)
The roots of the dotted blazingstar, Liatris punctata, were eaten as a food, and to increase appetite. Medicinally, tea from the root was used to treat heart pains, stomach aches and was applied to swellings. (Johnson, 1995; Kindscher, 1992; Kindscher, 1987)
Most parts of the rose, Rosa arkansana and Rosa acicularis, were edible, and were eaten when necessary. The inner bark was smoked like tobacco, and the fruit was used in the production of crafts, like necklaces and toy pipes. Medicinally, the roots, stems and petals, were used in an eyewash, to treat coughs, to dress burns, for diarrhea and stomach trouble, as well as many other uses. These plants were also very high in vitamin C, preventing scurvy. (Johnson, 1995; Kindscher, 1992; Kindscher, 1987)

Rubus idaeus
Photo by author

The fruit and tender young shoots of the raspberry, Rubus idaeus, were eaten with dried fish or fish oil, and were used to make tea. Medicinally, the raspberry was used to treat cataracts, cholera, dysentery and was used by women, before and after birth. (Johnson, 1995; Kindscher, 1992; Kindscher, 1987)

Research revealed that of the 192 plants species present at the Living Prairie, 86 were utilized in some capacity by the Indigenous people. All of these plants had some food, tool, medicinal, or ceremonial value. Most, if not all of the native plant species present at the museum site, were at some point used medicinally. The following species, are some of the more significant medicinal plants found in this environment.

Achillea millefolium
Photo by author

Monarda fistulosa
Photo by author

The root of common yarrow, Achillea millefolium, was brewed and used to treat coughs, sore throat, stomach problems, Tuberculosis, heart trouble, tooth aches, sore gums and cataracts. The fresh leaves and stems of the common yarrow were also used in the practice of acupuncture.

Two varieties of dogbane, Apocynum androsaemfolium, and Apocynum cannabinum, were used to increase lactation, as laxatives, an oral contraceptive and to treat sore eyes, sore throats and apparently stimulated hair growth. The fibrous bark of these plants was used to make twine, fishnets, thread and bowstrings. (Johnson, 1995; Kindscher, 1992; Kindscher, 1987)

A tea, 'oswega tea', from beebalm, Monarda fistulosa, was used in the treatment of colds, fevers, coughs, sore eyes, pimples and swollen neck glands. This liquid solution was also used to induce vomiting. The chewed leaves, were applied to cuts to stop the flow of blood. (Johnson, 1995; Kindscher, 1992; Kindscher, 1987)

The inner bark of the trembling aspen, Populus tremuloides, was boiled, and used to treat coughs. The chewed leaves, were used to draw out insect venom. Aspen was also used to construct canoe paddles and toy whistles, and a lye extracted from burnt green poplar was used to tan animal hides

Populus tremuloides
Photo by author

These plants, are a small sampling of the many used by local and neighboring Indigenous peoples. This list, illustrates the importance of local Indigenous knowledge and of native plants generally. Indigenous people have much more to offer in the development of a healthy understanding of the natural environment. Access to these plants in an appropriate urban environment, will enable the urban Aboriginal population to perpetuate their knowledge of these plants and this environment to future generations of Native peoples.

## Summary

This project has been a challenging but insightful experience. It is at times, difficult to design for another culture. Through the research, I have begun to gain a clearer understanding of the problems and opportunities faced by Aboriginals in sustaining traditional knowledge. Aboriginals in urban centres are particularly vulnerable to losing these traditions. The recommended garden design provides a location where traditional environmental knowledge can be cultivated. The knowledge and spirituality of these people when incorporated into the design, helps to embed in the garden, a sense of place for the urban Aboriginal community.

The design accommodates the two identified user groups through flexibility of form and space. As a seasonal instructional garden, it is accessible to all users, particularly urban Aboriginals and the disabled. The Aboriginal artifacts reveal an alternate perception of the prairie, that adds another layer of meaning to the environment. Native spirituality emerges through the ordering and form of the garden and can be reinforced through traditional oral interpretation. The chosen plant materials for the gardens, support Native traditions and usage and are presently in the Living Prairie Museum environment.

The research has revealed a vast and complex system of knowledge, that is intimately tied to their culture and landscape. Native spirituality, is derived from the natural world and has been used as the basis for Indigenous Knowledge. Spirituality, determines the manner in which Indigenous knowledge is transmitted, where it occurs, when it should take place, and who is eligible to receive it. It is impossible to fully understand the complexity of Native culture unless one is completely immersed within it.

The learning of Indigenous knowledge is an ongoing experience in Aboriginal society. It cannot be realized or understood in the short term, and often takes a lifetime to fully appreciate. The Elders, who have acquired this knowledge over time, should be accepted and recognized as 'instructors' of environmental knowledge.

This system of knowledge can be used to inform environmental management practices and promote sustainable land use. A greater understanding of the properties of the prairie plants and grasses can broaden modern medicine. The Indigenous view of the environment can be adopted into modern western philosophy, by promoting a more holistic approach to the interdependence of nature and culture. There is a growing acceptance of Indigenous knowledge by professionals and non professionals in white society. This design is the starting point which can promote and encourage acceptance of Indigenous knowledge by non Aboriginals. More natural sites such as this are needed in the urban setting to provide an environment that will facilitate the perpetuation of Indigenous Environmental Knowledge. Landscape Architects should take a proactive role in promoting naturalization throughout the urban environment as it promotes regional sensibility. Indigenous environmental knowledge can inform this naturalization process.

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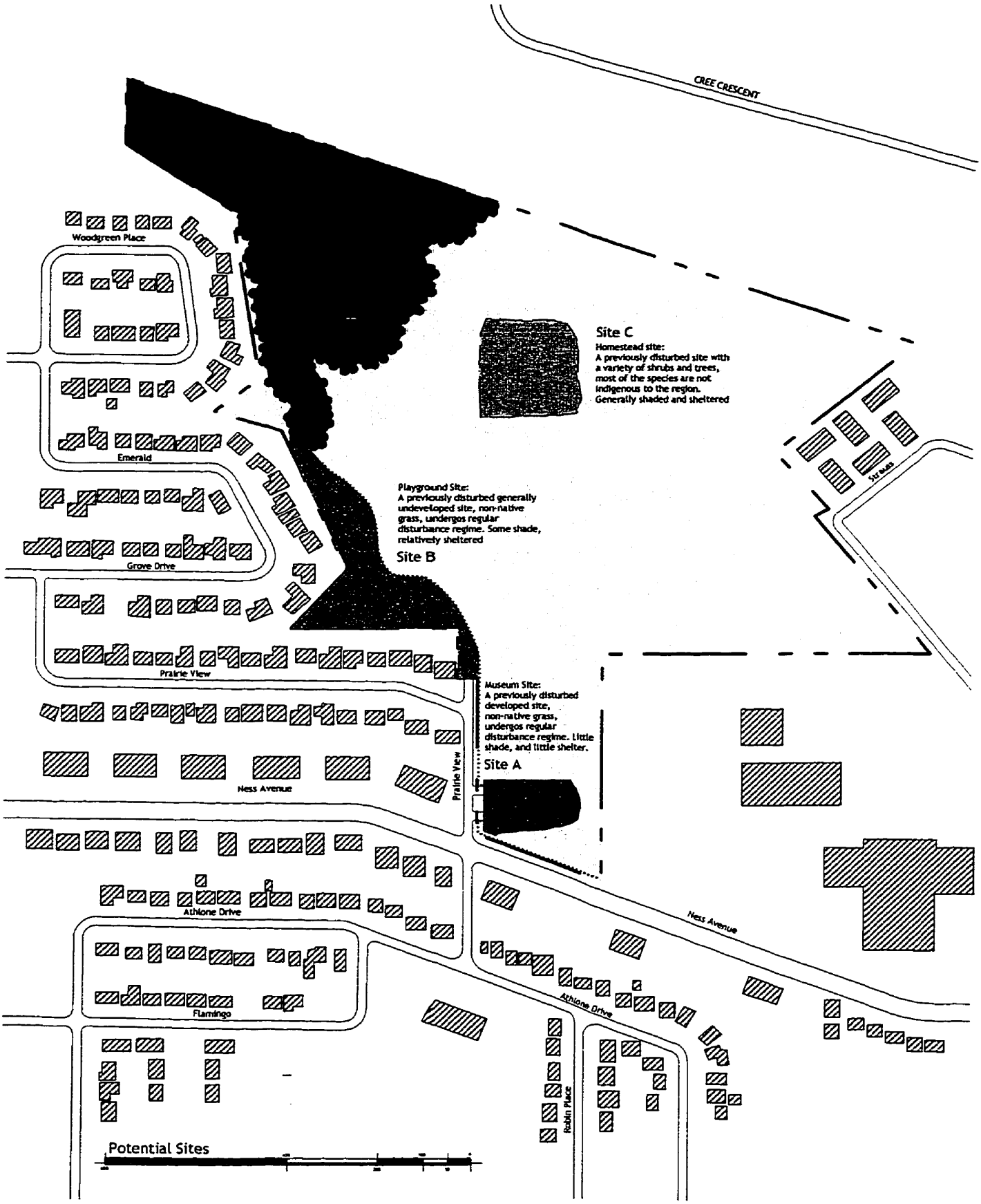
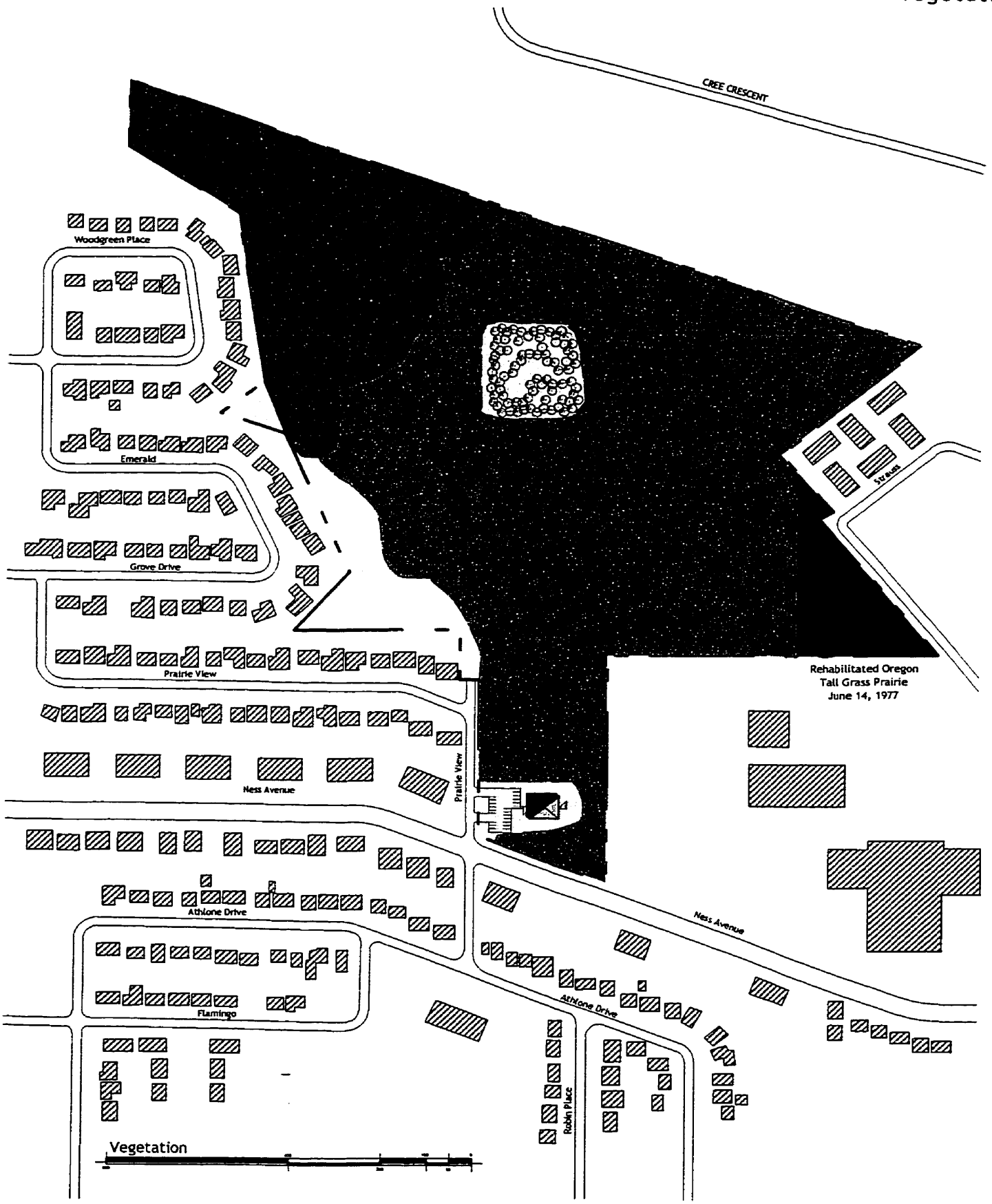
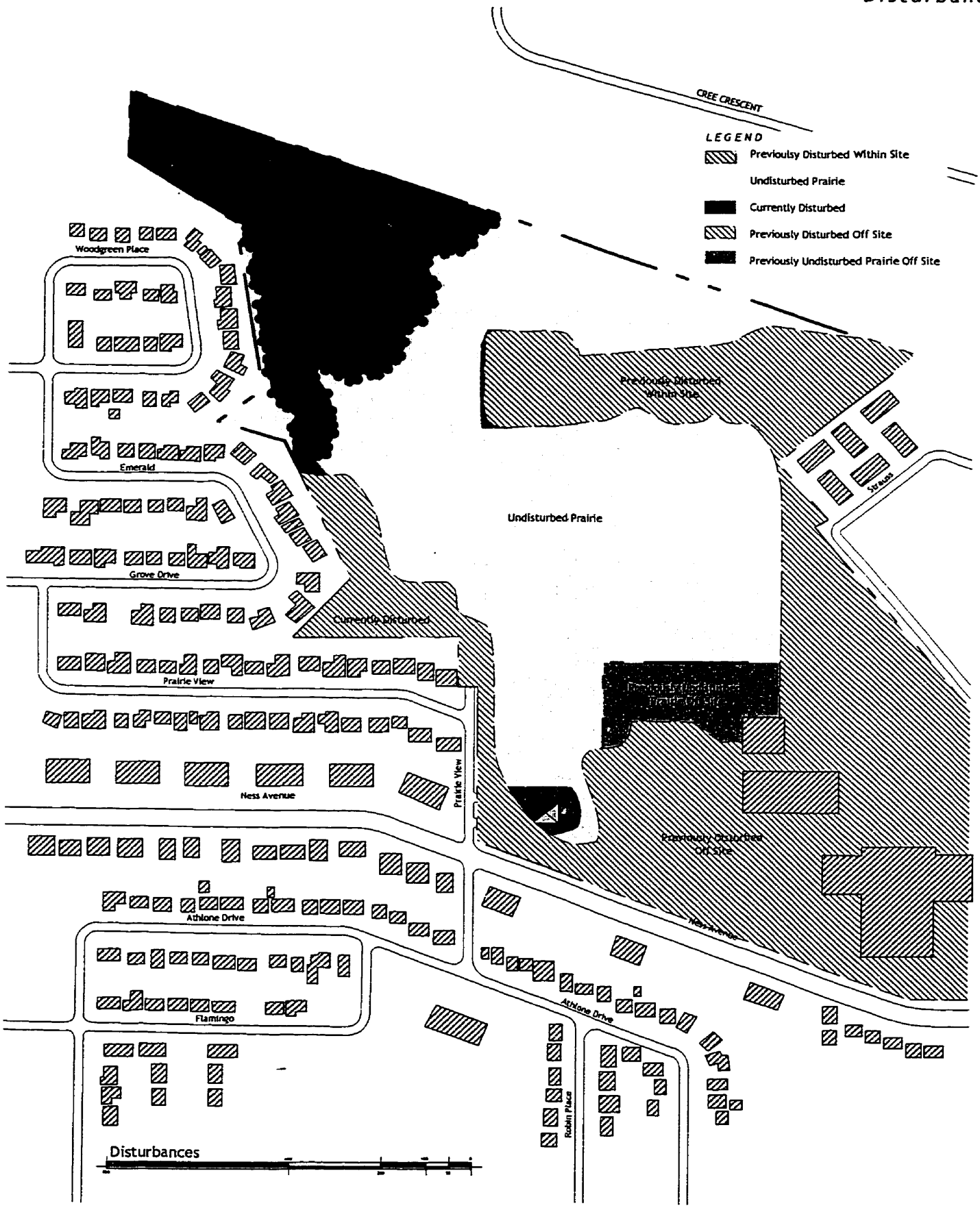
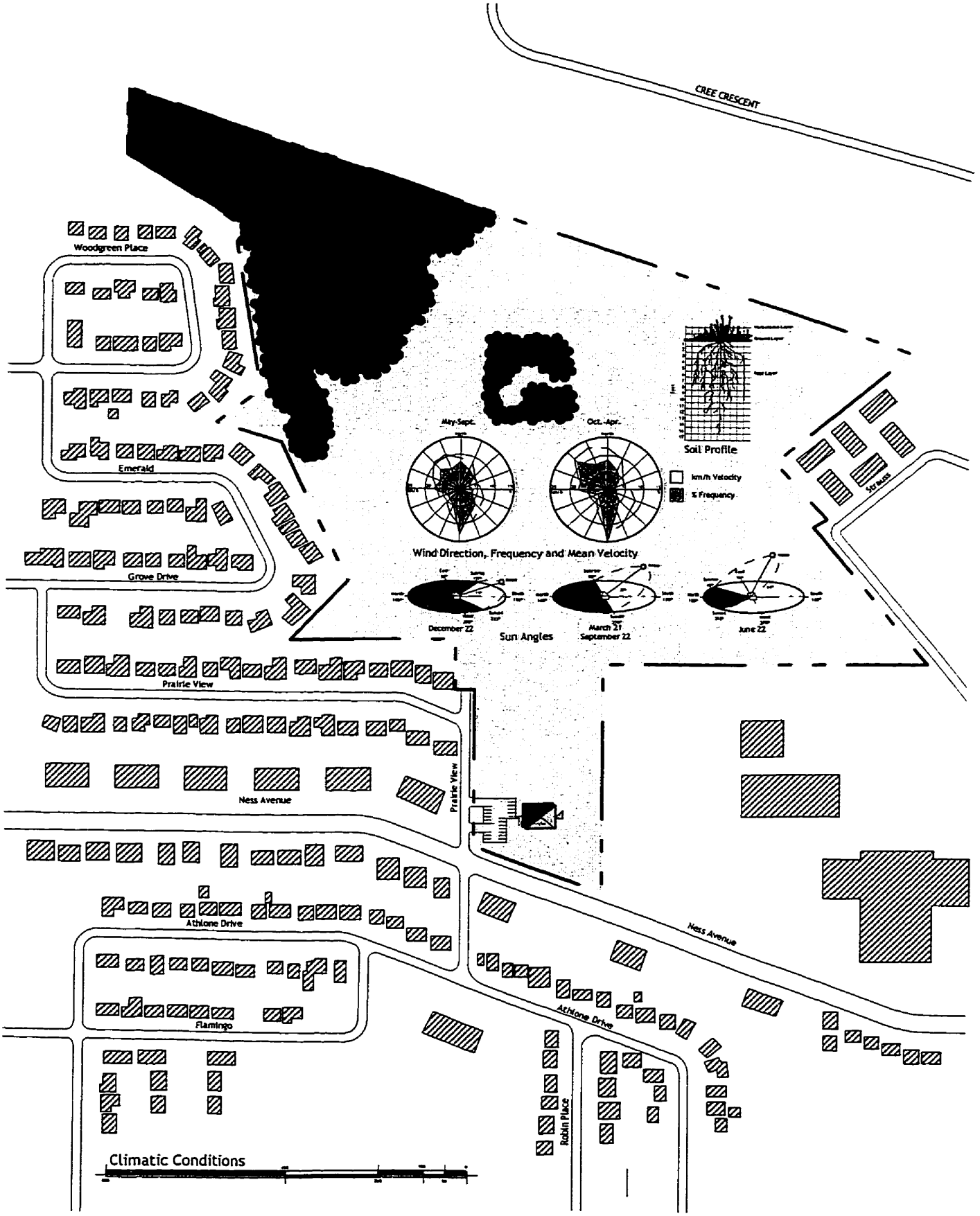
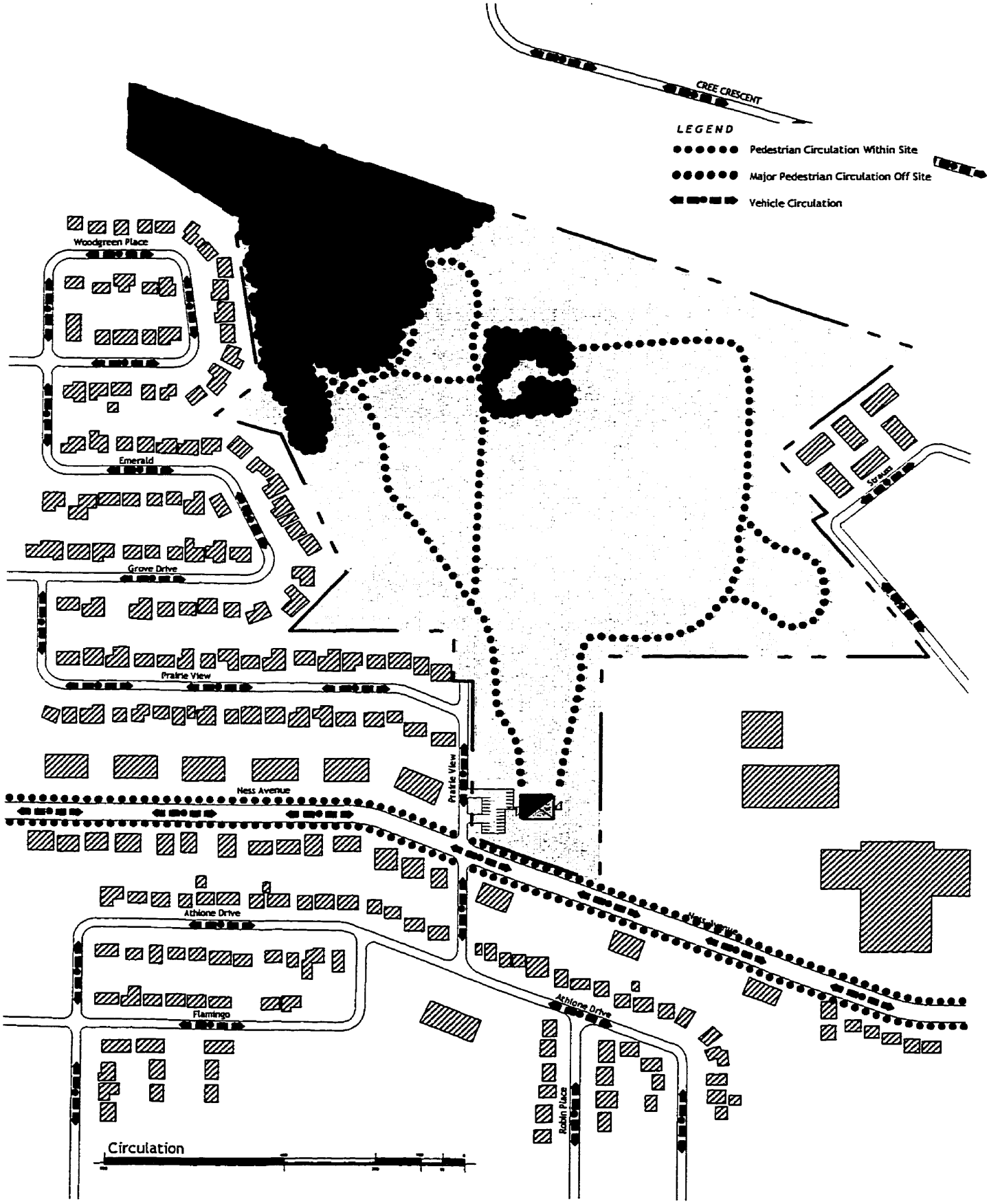

CREE CRESCENT
Woodgreen Place
Emerald
Grove Drive
Prairie View
Ness Avenue
Athlone Drive
Flamingo
Robin Place
Site C
Homestead site:
A previously disturbed site with a variety of shrubs and trees, most of the species are not indigenous to the region. Generally shaded and sheltered
Playground Site:
A previously disturbed generally undeveloped site, non-native grass, undergos regular disturbance regime. Some shade, relatively sheltered
Site B
Museum Site:
A previously disturbed developed site, non-native grass, undergos regular disturbance regime. Little shade, and little shelter.
Site A
Potential Sites

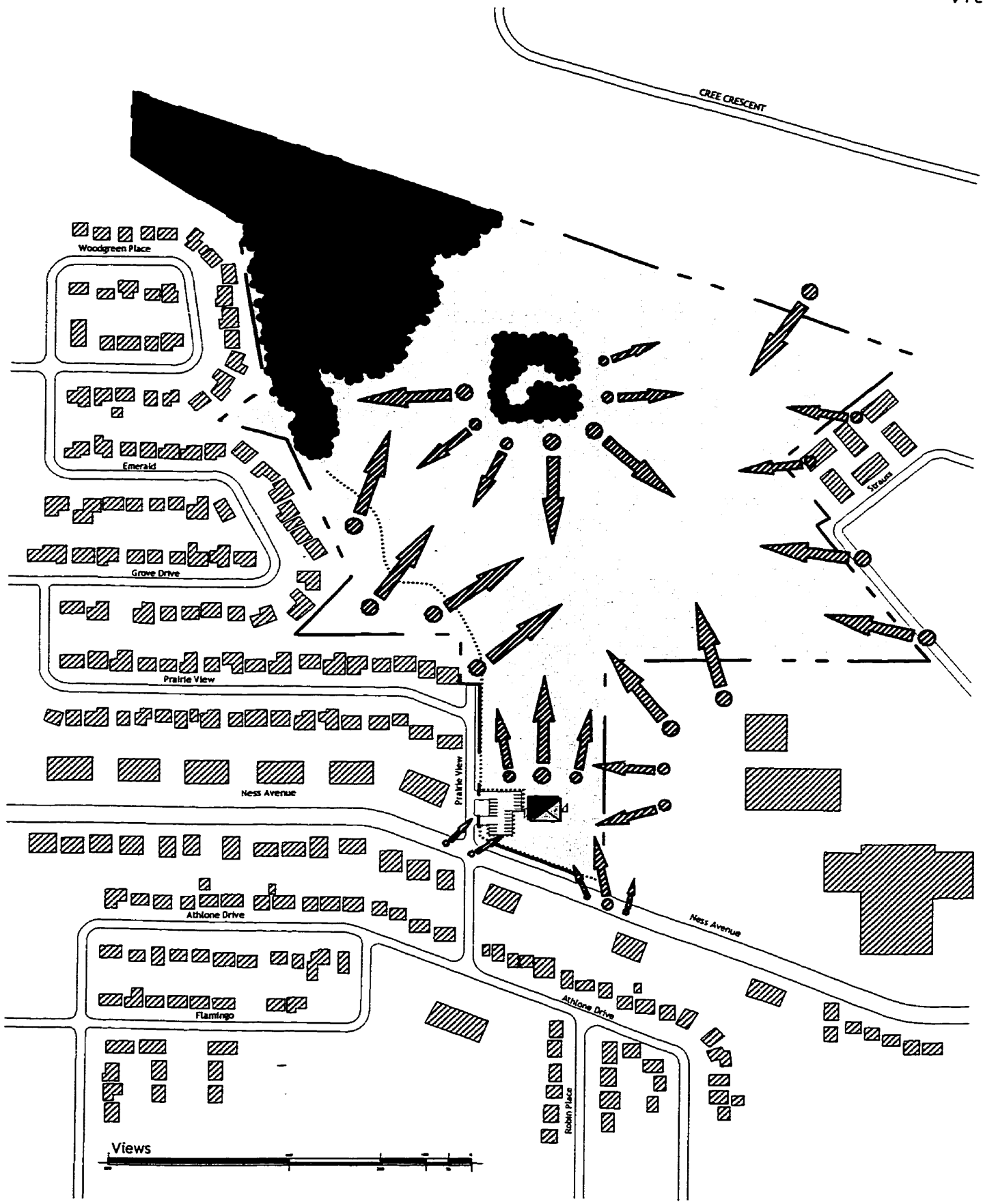

CREE CRESCENT
Woodgreen Place
Emerald
Grove Drive
Prairie View
Ness Avenue
Prairie View
Athlone Drive
Flamingo
Athlone Drive
Ness Avenue
Robin Place
Rehabilitated Oregon
Tall Grass Prairie
June 14, 1977
Vegetation


CREE CRESCENT
LEGEND
Previoulsy Disturbed Within Site
Undisturbed Prairie
Currently Disturbed
Previously Disturbed Off Site
Previously Undisturbed Prairie Off Site
Woodgreen Place
Emerald
Grove Drive
Prairie View
Ness Avenue
Athlone Drive
Flamingo
Robin Place
Undisturbed Prairie
Currently Disturbed
Previously Disturbed Off Site
Disturbances


CREE CRESCENT
Woodgreen Place
Emerald
Grove Drive
Prairie View
Ness Avenue
Athlone Drive
Flamingo
Robin Place
Soil Profile
km/h Velocity
% Frequency
May-Sept.
Oct.-Apr.
Wind Direction, Frequency and Mean Velocity
December 22
March 21
September 22
June 22
Sun Angles
Climatic Conditions

## Circulation




CREE CRESCENT
Woodgreen Place
Emerald
Grove Drive
Prairie View
Ness Avenue
Prairie View
Athlone Drive
Flamingo
Ness Avenue
Athlone Drive
Robin Place
Views

July 22, Telephone Interview, Mark Thompson
- Discussed Indigenous knowledge generally.
- Discussed the proposed project.

August 10, Personal Interview, Mark Thompson
- Discussed the proposed project generally.
- Discussion of Mr. Thompson's medicinal background in the treatment of certain diseases, diabetes particularly.
- Also discussed the intern agreement between Manitoba's Native Language Association and the Living Prairie Museum.
- Also discussed the effects of current environmental practices on the environment.

August 24, Telephone Interview, Mark Thompson
- Discussed approach to teaching.

September 9, Telephone Interview, Mark Thompson
- Received feedback on written portion of practicum.

September 16, Telephone Interview, Laurence Hoole
- Discussed indigenous plants.
- Discussed project generally.
  Recommended that urban plants not be used medicinally, but only for instruction.

September 17, Personal Interview, Mark Thompson
- Discussed teaching methods and reviewed comments on the written portion of the practicum.
- Discussed proposed design for the garden.
  Suggested that I talk with some urban Aboriginal elders.
  Suggested that I not include specific remedies and or Aboriginal name, for reasons of safety and clarity.
  Thought that non-Aboriginal community might not be ready to accept Indigenous knowledge.

September 23, Personal Interview, Caroline Chartrand
- Discussed project generally.
- Discussed design generally.
  Was concerned about the exploitation of Indigenous knowledge.

September 23, Personal Interview, Laurence Hoole
- Discussed project and design generally.
  Was concerned about the use of one interpretation of the medicine wheel in the design.
  Also suggested contact other members of the Aboriginal community.

September 28, Personal Interview, Terry Widrick
- Discussed project and design generally.
  Suggested I talk with other Aboriginal elders.