

HYPER | trophic

Landscape

A Process of Forest Regeneration

BY

Renée Laura Lussier

A Practicum submitted to
the Faculty of Graduate Studies
In Partial Fulfillment of the Requirements for the Degree of

MASTER OF LANDSCAPE ARCHITECTURE

Department of landscape Architecture
University of Manitoba
Winnipeg, Manitoba

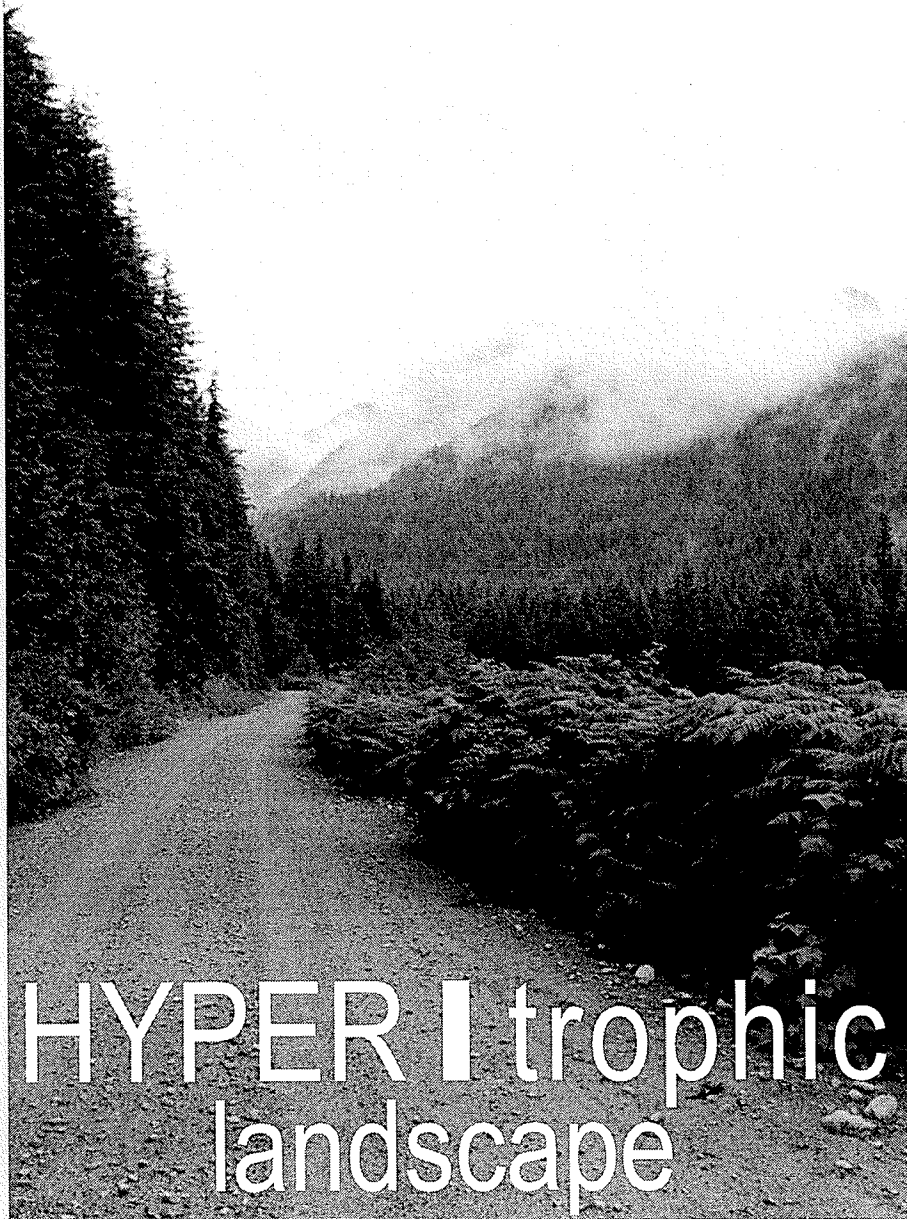
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**A Thesis/Practicum submitted to the Faculty of Graduate Studies of The University of
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To my family – Robert, Cheryl, Anna, Richard, Polly, Josie, and P'tit Bon. Thank you so much for your continued support throughout this project and throughout the 'years'. I love you all.

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abstract

The following practicum explores the notion of landscape scarring through the understanding of the human skin's healing process, both natural and surgical, as well as the socio-cultural meaning behind scars. Included in this exploration is the perceived role humans have in the environment, landscape as artifact, intention in design, and the purpose and value of landscape wounds. Site-specific design begins with conceptual exploration and continues with programme development, inventory, analysis, and synthesis for Block 1999 - B000 - 01, a partial-retention clearcut area in the Malcolm Knapp Research Forest. Finally a complete design that addresses the parallel between human skin and landscape; the tension between scale, material, and design; as well as the application of modern medical wound healing principles to the dynamic and temporal characteristics of the site will be presented.

introduction

“We live in an identifiable place. Our lives (as a species) are so intertwined within this community, ie: the ecosphere, that we cannot survive apart from the whole community – though the ecosphere can certainly survive without us. The community of All Life continually surrounds, sustains, and nourishes us, whether we are aware of it or not.”

Mark Burch from *Stepping Lightly*

The human presence on planet Earth is often characterized in terms of population growth, development of technology, and consumption in the developed world (Burch, 2000). The human population, for example, has grown to be “a thousand times larger than that of most other large mammals” (Gorham, 1997) and threatens to outgrow the only known planet that can support our species. According to Arthur Westing, the earth’s carrying capacity with a Western standard of living is estimated to be 2 billion; the carrying capacity with a Third World standard of living is 20 billion (based on per capita use of energy) (Gorham, 1997). Now that the world’s population has exceeded 6 billion, where does this leave us? While population growth is identified as one factor threatening global planetary function, our technocratic approaches to problem solving and our need to consume have been producing chemical wastes and “destroying habitats on scales sufficient to endanger entire classes of organisms or whole ecosystems” (Burch, 2000).

“Industrial culture has represented itself as the only acceptable model for development. However, application of this model and its financial and technological systems to all areas of the planet results in destruction of habitat, extinction of species, and destruction of indigenous cultures. The biodiversity crisis is about loss of critical species which perform necessary biological functions, and it is also about loss of multitudes of other values which are good in themselves and depend on preservation of natural diversity and wild evolutionary processes. Industrial society

is a monoculture in agriculture and forestry, and in every other way. Its development models construe the Earth as only raw material to be used to satisfy consumption and production to meet not only vital needs but inflated desires whose satisfaction requires more and more consumption. Its monocultures destroy cultural and biological diversity – both good in themselves.”

Alan Drengson from “The Deep Ecology Movement”

As a result of this consumptive and industrialized approach, humans believe they “wield supreme power in dealing with the natural world” (Katz, 2000), thus gradually losing their primal and natural connection to the landscape. This cultural rift means that humans no longer have a direct connection to the production of goods consumed, to the landscape, and to the environment. This continued exploitation impairs possibility of reconnection and reinforces the mentality that nature exists solely for human consumption.

“We cannot be the masters of nature, molding nature to our wishes and desires, without destroying the value of nature. The realization of this truth is the cure for human hubris, the acceptance of the limitations of human power.”

Eric Katz from “Another Look at Restoration: Technology and Artificial Nature”

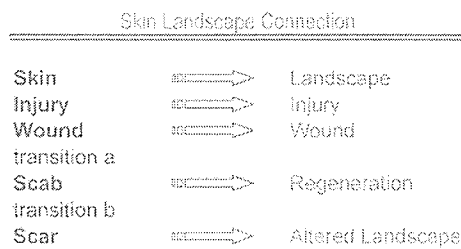
Paradoxically, while planetary fate is questioned and the interest in ecology and the health of the planet has been growing, those aware and concerned for planetary health look to science, and even to religion to find answers.

“God first planted a garden”. The statement expresses a deep psychological truth. Horticulture has its source – or at any rate one of its sources – in the Other World of the mind’s antipodes. When worshippers offer flowers at the altar, they are returning to the gods things which they know, or (if they are not visionaries) obscurely feel, to be indigenous to heaven.”

Aldous Huxley from *Heaven and Hell*

In searching for answers we may begin to question underlying human cultural values and approaches to environmental ethics. While many people of the Western world turn to mainstream Christian religions for guidance, perhaps looking to earth-based religions, such as Gaianism and aboriginal belief systems, could provide holistic and re-engaging interpretations of the human role on earth. Gaianism attempts to remind us about the cycles of life. While some view this religion as a powerful metaphor of earth as mother, others “truly believe in the sentience and power of the planet” (www.nada.kth.se/~asa/Game/BigIdeas/religion.html).

Earth based belief systems provide a basis for the notion of ‘planet as body’ and allows the transfer of body-centered ideologies to the planet. For example, the medical model and its focus on “health” is often applied to the body of earth such that some authors speak of “ecosystem health”. These medicalized notions of planetary health are intended to re-connect us with our concern for the state of the environment while embracing notions of physical integrity and survivorship. If notions of body and health may be transferred to planetary health we may begin to look at medical models and address the disconnection from the natural world. We may begin to examine environmental interventions as a form of environmental injury (habitat destruction, ecosystem dysfunction, degradation of beauty, and/or as a wound that needs to be healed).



Landscape wounds must heal naturally or be healed by human intervention. Paralleling environmental systems to human systems, consider the earth as “body” and the landscape as “skin”. The healing process of skin begins at

the result of an injury – the wound. A wound is described as a: “an injury to the body (as from violence, accident, or surgery) that involves laceration or breaking of a membrane (as the skin) and usually damage to underlying tissues” and b: “a cut or breach in a plant due to external violence” (Merriam-Webster Online Dictionary, m-w.com/cgi-bin/dictionary). Rehabilitation of the landscape can be achieved by interpreting the medical model for wound healing.

Wounds, whether natural or intentional in occurrence will develop a scab. A scab is described as a “dehydrated blood clot composed of platelets and red blood cells” (Stocum, 1995). What lies underneath the scab and what is revealed when the scab has fallen away is the scar, an area of the skin that has a new quality of surface.

Human skin wounds can be closed with sutures, skin tapes, skin clips, staples or wound adhesives. These foreign materials act to hold the wound edges in approximation until the wound’s tensile strength is increased to a degree sufficient to maintain wound closure without assistance (Smith, 1991). Skin grafts also aid in the healing of wounds and at various times, each component of the skin (ie: the epidermis, dermis, and subcutaneous fat) has been transplanted alone or in combination to achieve some reconstructive end. A split thickness graft is defined as consisting of epidermis and a partial thickness of the dermis, while a full thickness graft is defined as consisting of epidermis and the complete thickness of the dermis (Skouge, 1991). One must harvest a graft from a donor site on the patient’s body – the donor defect is this second wound. Virtually all grafts should be secured with a combination of suture or staple and support dressings, to ensure that the graft is connected to both the surrounding skin and the wound floor (Skouge, 1991).

A socio-cultural approach to landscape and human skin suggests that we also consider purposeful scarring to both skin and land. Cultural body adornment and self-modification such as scarification, piercing, and tattooing are ancient ritualized patterns on the human body; they communicate status in a society and personal life transitions (Sullivan, 2001).

“In our contemporary Western culture there is a yearning for a sense of community and belonging to a group, therefore there has been a great youth movement to tattoo, pierce, and even self-mutilate one’s body...Individuals who turn to cosmetic surgery to carve a more attractive appearance, like the Padaung women who elongate their necks with rings and the Africans who decorate their bodies with elaborate patterns of scars, are making a rational response to prevailing cultural values that reward

those considered more attractive and penalize those considered less attractive...It is about using the body to communicate power, group membership, individual status, and social identity.”

Deborah Sullivan from *Cosmetic Surgery The Cutting Edge of Commercial Medicine in America*

Unlike intentional modification to the body, scars can present numerous social and psychological challenges for the bearer of the scar and the observer of the scar. Intentional scars are considered beautiful, while random or accidental scars are ugly (Austin, 1999).

“On a very basic level, we find ourselves riveted by scars and the terrifying or titillating stories they tell. To redeem an ugly scar, therefore, the wounded person must create a scenario that tells the story of the scar in an attractive and compelling light. People respond to them with a bit of fear, a bit of revulsion and a bit of excitement. When we see a scarred face, we instinctively find our eyes drawn to it, and our minds drawn to the story that scar may tell; a few insignificant decades of socialization are no match for millions of years of natural selection.”

Elizabeth Austin from “Marks of Mystery”

A scar is defined as collagen deposition (Smith, 1991) and reorganization of the dermal matrix (Garg, 2000). Collagen 1 fibers become organized into thick bundles oriented perpendicular to the edges of the wound. This reorganization is accomplished by the “breakdown of collagen fibers by collagenases produced by (the) fibroblasts, with the subsequent cross-linking of the fibres into bundles by the enzyme lysyl oxidase” (Stocum, 1995). Human intervention in wound healing is more specifically referred to as plastic surgery. The medical model of wound healing can lend important and appropriate information for the rehabilitation and design of a landscape wound.

The landscape scar is a rehabilitated landscape wound. By identifying similarities between skin and landscape through the medical model of wound healing and body adornment, the reconnection to the environment may begin to occur; the landscape scar reintegrates into the greater matrix – healthy, functional, and beautiful. By relating the ecosphere to our bodies, ourselves, we begin to bring our own values and needs to the care of the environment – feeling nature through our bodies and treating nature as an extension of ourselves.

“The Future is not a result of choices among alternative paths offered by the present, but a place that is created – created first in the mind and will, created next in activity. The future is not some place we are going to but one we are creating. The paths are not to be found, but made, and the activity of making them, changes both the maker and the destination.”

John Schaar, Futurist

goals and objectives

Goal

The goal of this practicum is to explore the physical effects and cultural meaning of scarring in human tissue and the parallel between the human skin and landscape scar. Through this exploration, the goal is to develop a design that applies modern medical wound healing principles to the dynamic and temporal qualities of a harvested forest block while incorporating recreational, experimental, and educational components on site.

Objectives

1. Provide hypertrophic tension structures that act as scabs to cover and heal the area becoming a scar.
2. Provide a pathway, a scar, that acts as a permanent feature on Block 1999 – B000 – 01.
3. Provide a Green Trail extension from the Research Forest's Main Gate for pedestrian access to Block 1999 – B000 – 01.
4. Provide rest points on site for pedestrians and motorists.
5. Provide trail markers that act as wayfinding elements for the pedestrian.
6. Provide vehicular markers that act as rest points and points of interest along K Road and B Road.
7. Provide Entrance Gates at the Main Entry and Golden Ears Provincial Park Entry to Block 1999 – B000 – 01 to highlight the transition into the hypertrophic landscape.
8. Provide hypothetical site plans for +1, +5, +10, and +20 years highlighting the new vegetation growth on site.
9. Remove fabric panels from the Hypertrophic tension structures as new vegetation encroaches upon such panels.
10. Provide interpretive signs on Block 1999 – B000 – 01 to highlight the natural and designed features of the site.

methodology

- i. **Background**
- ii. **Conceptual Explorations**
"Sutures"
- iii. **Programme Development**
Recreational Component
Experimental Component
Educational Component
- iv. **Inventory and Analysis**
Inventory
 - A. Site and Context
 - B. Site Access
 - C. Slope, Elevation, and Drainage
 - D. Vegetation
 - E. ViewsAnalysis
Analysis Diagrams
- v. **Synthesis**
- vi. **Design Intentions**
- vii. **Design: Presentation Boards**
- viii. **Discussion**

i. background

“We are essentially inseparable from the earth, from its creatures and from each other. We are they, and they are us, and when any one person, species, or ecosystem is impoverished, we are all impoverished.”

Donella Meadows, 'A Reaction from a Multitude' from "Human Impacts on Ecosystems and Landscapes"

Diverse cultures and communities around the world have multifaceted understandings of the landscape and their impact on it. Attitude and perception allow a variety of approaches to human maintenance of and interaction with the landscape. Donald Worster and Bryan Norton (Gorham, 1997) explore the different approaches individuals and communities have toward use of environmental resources. Worster divides human populations into two classes: a. arcadians – aesthetic nature and living in harmony with all other inhabitants, and b. utilitarians – nature as resource for human benefit (Gorham, 1997). Norton, however, subdivides these two antithetical views further. He categorizes the utilitarians as either 'exploiters' or 'conservative users'. Exploiters believe all resources “are either available in abundance or infinitely substitutable through advances in science and technology and can therefore be used up in pursuit of economic and material goals” (Gorham, 1997). Conservative users, on the other hand, believe that renewable resources are not infinitely substitutable and should be managed effectively to benefit society. Norton then categorizes the arcadians into 'naturalists' or 'preservers'. Naturalists believe that because of our lack of ecological knowledge, we do not know how stress exerted on our ecosystems will affect them and that solely serving human society interferes with ecosystem health. Preservers believe “all species have a right to exist and that human beings do not have the right to knowingly cause their extinction, particularly in the pursuit of short term economic and material ends” (Gorham, 1997). The human species keeps growing at an exponential rate and our consciousness, capacity for learning, and our communication skills have allowed for a rapid cultural evolution that far outpaces biological evolution (Gorham, 1997); we have created a history and look to learn from

and exceed our historical footprint. This leads to increased use of the environment to sustain our cultural appetite.

Human beings are part of the natural world. Our bodies are composed of, consume, process, and produce organic materials. We also have the capacity, by development of our intellect, communication skills, and technological advancements, to build artifacts. An artifact is "something created by humans usually for a practical purpose as well as a product of artificial character (as in a scientific test) due usually to extraneous (as human) agency" (Merriam-Webster Online Dictionary, m-w.com/cgi-bin/dictionary). Therefore what we are is natural, but what we build and create falls within the 'spectrum of naturalness' (Katz, 2000). Eric Katz believes that in order to achieve restoration or "re-creation" of natural systems, there must be a focus on the origins of that landscape, its historical continuity, and authenticity. The lack of all three elements in wounded landscapes is due to human intentionality. To meet human needs, nature is modified and thus becomes an artifact – "when we consider the authenticity of a natural system, the presence or absence of human intentionality is the key determining factor of its value and ontological character" (Katz, 2000).

Deborah Sullivan believes that the human body is an artifact:

"The diversity of body customs has led anthropologists...to conclude that a body is both a physical and a symbolic artifact, forged by nature and by culture at a particular moment in history. Social institutions, ideology, values, beliefs, and technology transform a physical body into a social body. The resulting social body bears the imprint of the more powerful elements of its cultural context. Bodies, therefore, provide important clues to the mechanics of society."

Deborah Sullivan from *Cosmetic Surgery The Cutting Edge of Commercial Medicine in America*

The human body is a canvas for self-creation. Altering one's body, however individual this choice may seem

lies within a larger cultural and social context. This context, or larger society, influences body choices and gives them social meaning (Sullivan, 2001). The changing ideal of femininity highlights this influence.

“The homespun, republican idealism of the eighteenth century valued simplicity and naturalness in all things, including appearance. In contrast, the paragon of beauty in the rapidly industrializing nineteenth century was an ethereal, willowy, young woman dressed lavishly in layers of fabrics and trims. Her milk-white skin, small ‘bee-stung’ mouth, and hourglass figure were achieved by using homemade cosmetics, eating chalk and arsenic, drinking vinegar, and wearing a tightly laced corset. The ideal waist was a mere eighteen inches, small enough for a man to encircle with his hands. After the middle of the century padding was added to bosoms and hips to further exaggerate the desired feminine contour. Later, bustles highlighted women’s buttocks. Such heavy, constrictive clothing made work, exercise, and eating difficult. It also undermined women’s health by creating musculoskeletal problems and displacing internal organs. The custom persisted, despite attempts at dress reform by feminists and physicians, because it was imbued with social meaning.”

Deborah Sullivan from *Cosmetic Surgery The Cutting Edge of Commercial Medicine in America*

The perception of ideal masculinity is one of power, strength, and domination manifested in muscularity. The image of masculinity over the 19th and 20th centuries has grown in leaps and bounds due to chemical enhancements that hinder physical and mental health (Sullivan, 2001).

“Cosmetic surgery is at the cutting edge of a growing commercial sector in medicine. Like other commercial endeavors, cosmetic surgery is a business enterprise aimed at generating profit by selling a product for more than the cost of providing it. Maximizing profit depends both on profit margin and sales volume. As with other

commercial ventures, marketing is used to induce sales. It can take the form of paid advertising or unpaid public relations efforts to persuade the public that the product is desirable and worth the expense. The product in this case is surgery and the entrepreneurs are physicians.”

Deborah Sullivan from *Cosmetic Surgery The Cutting Edge of Commercial Medicine in America*

Artifacts and landscape wounds highlight the human presence and while “all body customs, whether temporary, like tweezing eyebrows and clipping nose hair, or permanent, like tattoos and cosmetic surgery, are forms of self-creation” (Sullivan, 2001), these alterations to the environment delineate our footprint and mark our history. Artifacts, whatever their basic composition, alter the natural state of the ecosystem. This altered state is a landscape wound and whether it is a “good” wound or “bad” wound depends on the intention behind the act of injury.

“Humans have (also) become great earthmovers, so that collectively they must now be regarded as a major geological agent, causing immense destruction of habitats.”

Eville Gorham, “Human Impacts on Ecosystems and Landscapes” from *Placing Nature Culture and Landscape Ecology*

Landscape wounds, in this case, are the result of human intentionality – of injury. Injury is defined as a. “an act that damages or hurts”, or b. “hurt, damage, or loss sustained” (Merriam-Webster Online Dictionary, m-w.com/cgi-bin/dictionary). Intentional landscape wounds like intentional human skin wounds are cultural markers.

“Cosmetic surgery reshapes healthy anatomical structures, the appearance of which falls within the normal range of variation...The goal is to make the patient’s appearance more closely approximate the contemporary ideal. Cosmetic surgery

shares techniques and some practitioners with reconstructive surgery, but the goal of reconstructive surgery is different. Reconstructive surgery aims to improve the function and sometimes the appearance of abnormal body structures. The abnormalities addressed include those caused by congenital defects, developmental aberrations, trauma, infection, tumors, or disease.”

Deborah Sullivan from *Cosmetic Surgery The Cutting Edge of Commercial Medicine in America*

In order to question our purposes and values concerning the environment as well as the fundamentals of our society's perceived role in the ecosphere (Drengson, 1995), we must adopt a set of criteria from which decisions can be made. To choose a set of criteria that would enable any culture and community, each principle must be separate from religious and political affiliations. The Deep Ecology Movement provides an easily adaptable and adoptable platform and is comprised of eight guiding principles:

The Platform Principles of the Deep Ecology Movement:

- 1. The well-being and flourishing of human and nonhuman life on earth have value in themselves (synonyms: intrinsic value, inherent value). These values are independent of the usefulness of the nonhuman world for human purposes.**
- 2. Richness and diversity of life forms contribute to the realization of these values and are also values in themselves.**
- 3. Humans have no right to reduce this richness and diversity except to satisfy vital human needs.**
- 4. The flourishing of human life and cultures is compatible with a substantial decrease of human population. The flourishing of nonhuman life requires such a decrease.**
- 5. Present human interference with the nonhuman world is excessive, and the situation is rapidly worsening.**

6. Policies must therefore be changed. These policies affect basic economic, technological, and ideological structures. The resulting state of affairs will be deeply different from the present.
7. The ideological change is mainly that of appreciating life quality (dwelling in situations of inherent value) rather than adhering to an increasingly higher standard of living. There will be a profound awareness of the difference between big and great.
8. Those who subscribe to the foregoing points have an obligation to directly or indirectly try to implement the necessary changes.”

Alan Drengson from “The Deep Ecology Movement”

By filtering all attitudes and perceptions through these platform principles, community leaders can develop guidelines for environmental decisions in their multicultural and multid denominational societies.

“Biodiversity contains the accumulated wisdom of nature and the key to its future”.

Donella Meadows, “Human Impacts on Ecosystems and Landscapes” from *Placing Nature Culture and Landscape Ecology*

Similarly to individuals marking their bodies in an act of self-creation, the human species marks the landscape as an act of creation. Once these acts are filtered through the platform principles and assessed as culturally and socially significant, the rehabilitation and maintenance of landscapes becomes important. The process of rehabilitation can have many forms and methods of approach. This practicum will examine the medical model’s treatment of human skin wounds as rehabilitation of the wounded landscape.

“Repair and regenerative processes are essential to the maintenance of life in all multicellular organisms, since every organism is subjected to injuries throughout the course of its existence.”

David L. Stocum from *Wound Repair, Regeneration and Artificial Tissues*

Wound healing and plastic surgery are medical processes that highlight the natural and human adapted process of skin alterations. Naturally, the body will heal transitionally from wound to scab and then from scab to scar. "Rapid wound closure and healing is adaptively advantageous because it prevents fluid loss and suppresses bacterial proliferation" (Stocum, 1995) and therefore early intervention (at the first transition) is more successful.

"The process of wound healing was a central focus in the medicine of the ancient Egyptians and the early Chinese, Indians and native Americans, and many different treatments were prescribed to promote wound healing. Honey, which has antiseptic properties was used by the Egyptians to treat wounds, and for 2000 years the Chinese have used a bread mold to treat minor burns. The Sanskrit text, Sushruta, describes the use of autogeneic skin transplants to replace severed noses and ear lobes."

David L. Stocum from *Wound Repair, Regeneration and Artificial Tissues*

From ancient accounts of wound repair to "accurate and detailed descriptions of embryonic and adult structure" (Stocum, 1995) by figures such as Da Vinci in the Renaissance, "these studies laid foundation for later understanding of form and function" (Stocum, 1995) in medicine.

The skin is the largest organ in the human body and is composed of the epidermis layer and the dermal layer (Stocum, 1995). Cells in the epidermis give the skin its colour, immune function, and is a tactile receptor that reacts to stimulus. The dermis extends capillary protrusions into the epidermis from its papillary layer and is composed of thin fibers. A second layer in the dermis contains coarse fibers as well as the occasional fat cell (Stocum, 1995). When an injury occurs, there are three overlapping phases of repair in an open skin wound that involves substantial tissue loss: a. inflammation, b. formation of granular tissue, and c. collagen remodeling (Stocum, 1995).

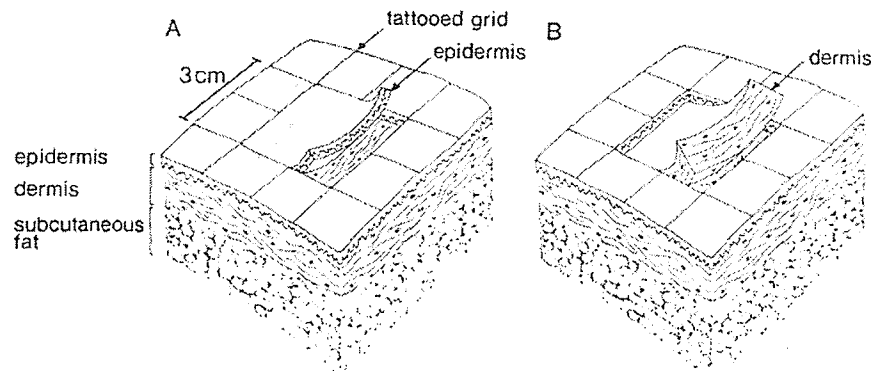


Figure 1: Layers of the skin.

At the inflammation stage, a blood clot or 'scab' is formed. Under this scab, "the edges of the epidermal sheet move...and meet to cover the wound". During the second stage, collagen is synthesized, oxygen circulates, and the scar is formed – the third stage (Stocum, 1995).

"The techniques of plastic surgery are most often applied to the skin and soft tissues. In their most basic form they relate to the excision of skin lesions, closure of skin wounds, skin grafts, flaps, and Z-plasty. However, the concepts learned from these techniques provide the basic principles of all surgical care, from nerve repair to coronary artery bypass grafts. These basic techniques and the principles derived from them should be mastered by all surgeons."

James Smith from *Grabb and Smith's Plastic Surgery Fourth Edition*

The closure of skin wounds by method of plastic surgery includes materials such as sutures, skin tapes, skin clips, staples, or wound adhesives (Smith, 1991). Sutures can be either absorbable or nonabsorbable as well as be monofilament or have multiple braided or twisted filaments. Absorbable sutures are made of "collagen, polyglycolic acid, or polydioxanone" and are capable of being "digested by body enzymes" (Smith, 1991). This dissolving process takes 30-90 days. Nonabsorbable suture types include "synthetic sutures (nylon, Dacron, or polypropalene), metallic sutures (stainless steel), or stainless steel staples" (Smith, 1991). Methods of wound closure with sutures include buried sutures, which help close a wound in layers; dermal or

subcuticular sutures, which help produce a fine line scar; and the continuous running dermal suture, which can be left permanently in the subcutaneous tissue or passed to the surface for removal in 2 – 3 weeks (Smith, 1991).

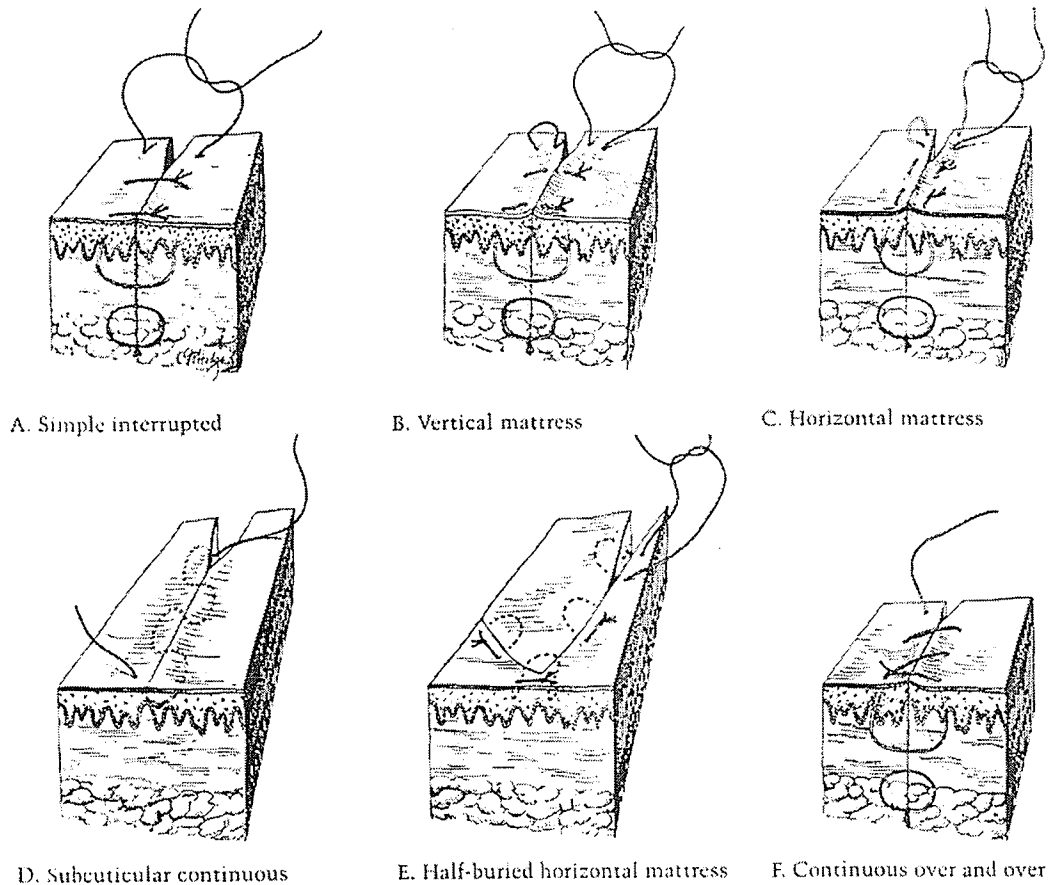


Figure 2: "Methods of skin suture. A knot is used to secure the suture in place" (Smith, 1991).

"Skin tapes that adhere to the skin surface across a wound are satisfactory for closure of skin wounds" (Smith, 1991). The tape has a superficial hold only, and sutures may be used in conjunction with tape to secure deeper layers of skin. Skin tapes are "applied perpendicular to the wound edge, first on one side and then on the other, so the edges can be pulled together" (Smith, 1991). Research has shown that when skin tape is used on a wound, healing occurs at a faster rate and can be removed from the skin's surface after approximately 3 days of healing.

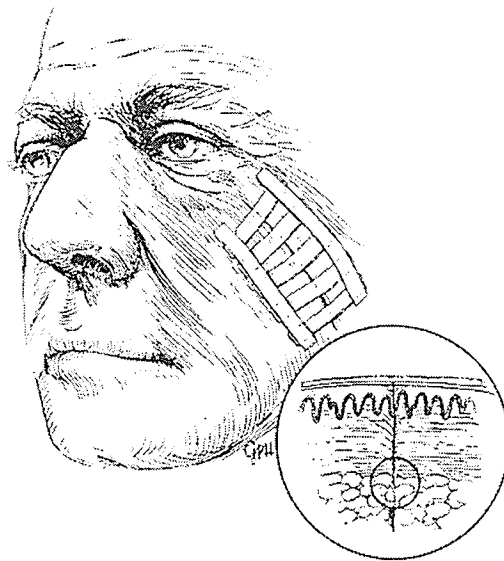


Figure 3: "A buried suture is usually necessary to approximate the deeper layers of tissue" when using skin tape (Smith, 1991).

Skin staples and skin clips are commonly used when adjusting skin position for wound closure. If used for permanent wound closure, they must be removed early as to not leave permanent staple marks in the skin (Smith, 1991).

Wound (tissue) adhesives have not yet been approved for general use in humans but have been available and tested since 1956 (Smith, 1991). The concept behind wound adhesives is to spray or paint a substance on to one tissue and allow it to adhere to a second tissue. The substance itself is in question, not the procedure. However, studies have shown that adhesives should not be used for skin closure due to the delays in or prevention of healing and the higher rates of infection they cause (Smith, 1991).

Wound healing techniques for the skin provide protection for the wound above the epidermis plane. Much like a scab, raised above the wound itself, hypertrophic structures in landscape design can act as synthetic scabs under which all healing occurs. Hypertrophic, from the word *hypertrophy* meaning "exaggerated growth or complexity" (Merriam-Webster Online Dictionary, m-w.com/cgi-bin/dictionary), characteristics of plastic surgery techniques or the model for wound repair can be used as an example for the process of landscape

repair. Landscape is one of many layers of the earth as human skin is only the most superficial of the body's many components. In its entirety, the Earth is composed of 4 main layers – the inner core, the outer core, the mantle, and the crust. The inner core is solid iron and 5200 kilometers from the Earth's surface; it is surrounded by the outer core that is molten iron with a temperature ranging from 3700-4300°C and is located 2900 kilometers from the surface. The Earth's third layer is the mantle. The mantle is 30-40 kilometers from the surface; it is a plastic material, and its temperature ranges from 1000-3700°C. It is the first layer to contain oxygen. The Earth's outermost layer is known as the crust. The crust is about 40 kilometers thick in continental regions and 5-10 kilometers thick when covered by oceans. The layers within the crust consist of soil (the upper and exposed layer), glacial materials, then finally igneous, metamorphic, and sedimentary rocks, which are closest to the Earth's mantle. (www.new.dep.anl.gov)

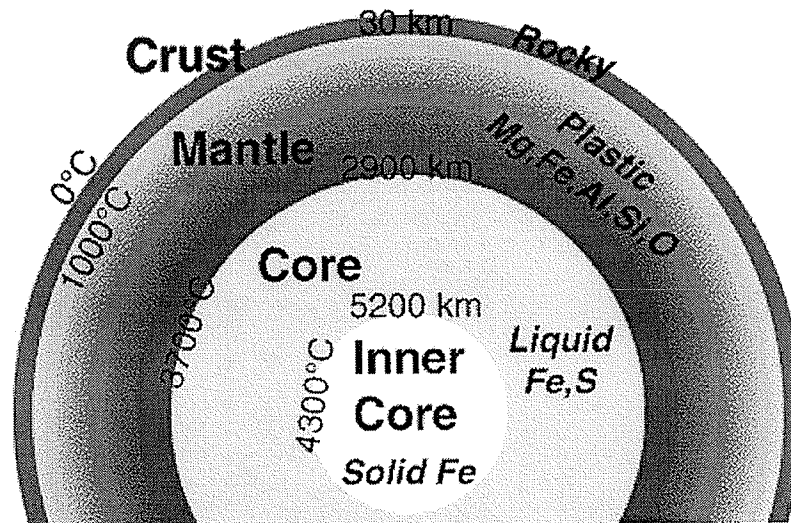


Figure 4: Layers below the Earth's Crust.

The crust's layer of soil is composed of inorganic and organic matter. "The inorganic components are weathered rock, air, water and minerals. The organic components are the decomposing (rotting or decaying) fragments of plants and animals. The spaces between the small particles that make up the soil are filled with air or water" (www.botany.uwc.ac.za). Plants, animals, and bacteria are also found in the soil and improve aeration and drainage along with converting nutrients into a form that plants can use as food. As plants that grow from and animals that live on the soil die and decompose, humus is formed. Humus acts as fertilizer and therefore enriches the soil's composition so that other plants can grow from and other animals can live on the

soil. Thus is the role the soil plays in the recycling of nutrients (www.botany.uwc.ac.za).

The formation of soil is influenced by many factors. The major factors being:

1. Climate – the effects of temperature changes, wind, and precipitation influence the weathering of mineral rocks. Depending on the rates of accumulation and decomposition, different layers are made. The climate also influences microorganisms, fauna, and plant growth. (www.petrik.com)
2. Animals and plants – these organisms accumulate and humify organic matter. The creation of different organic acids influences the weathering of the mineral rocks and differentiates layer composition. (www.petrik.com)
3. Mineral substructure - this with climate directly influences the clay type formed. Water percolation rate is dependent on this mineral substructure, in turn influencing layer formation. (www.petrik.com)

The soil will develop horizons during its formation. These horizons, or layers, are known as the soil profile. The soil profile is composed of three general horizons. Topsoil is rich in humus and is dark in colour. This layer allows air to move through it, soaks up water, reduces runoff and erosion, and promotes plant growth. Sub-soil is generally more clay-like and acts as a reservoir for plants growing in the topsoil. Bedrock or parent rock is the underlying layer from which the first two horizons are formed (www.botany.uwc.ac.za).

To draw a parallel from human skin to earth crust, we must examine each main layer. The epidermis can be paralleled to soil, the uppermost combination of organic and inorganic materials that support life (www.botany.uwc.ac.za). The dermis can be paralleled to the crust's layer of glacial materials, and finally the skin's subcutaneous fat can be paralleled to the crust's innermost layer of rock. What occurs above the crust or epidermis relates directly to external forces; injured areas of skin heal and form hypertrophic scars, for example. These scars are elevated from the skin's surface. Scabs also provide a hypertrophic element while the wound is healing.

Hypertrophic structures in the landscape can provide a rich basis for concept development. These elements can attempt to highlight and change our present role in the environment and help create a new footprint in the landscape. As landscape artifacts, hypertrophic structures allow environmental dynamism to prevail as well as the development of the notion of working with and "in" nature; they begin to address the tension between human and landscape. Finally, hypertrophic structures act as scabs under which the wounded landscape can heal.

ii. conceptual explorations

Stitched identity

I have a scar on my right cheek. Not a very big or obvious one, but still clearly visible for everyone who takes a closer look. I don't really take notice of it any more, and yet, sometimes people ask me about it. It always takes me some time to understand what they are pointing at, but once the scar reenters my consciousness, the story behind it appears before my eyes....

We get to know the individual parts' history that assembles into a complete picture of a stitched personality. At the same time, we get the story of a long struggle, of an emancipation that ends not in a mourning about the lost battles but in new strength, as the monster explains:

Scar tissue does more than flaunt its strength by chronicling the assaults it has withstood. Scar tissue is new growth. And it is tougher than skin innocent of the blade.

In fact, the scars become a new, living organ, opening up a new sensorium that goes straight into the chest of the monster. The scars are hot, responding to other people's input. And they have the ability to share their experience, to inscribe themselves on someone else's skin.

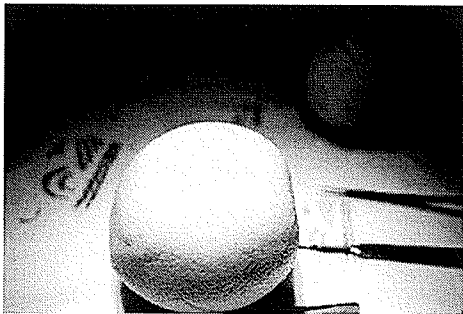
The scars hold together the individual parts, each one having its own history, and gain their strength from the parts' experiences. But they do not point back, they rather are signs of an active, progressive look into a future that has learned from history."

Lars Hubrich on Shelley Jackson's "Patchwork Girl", 1998

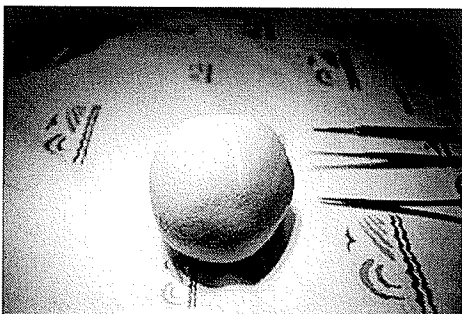
As a way to begin to understand the model of wound repair applied to the landscape, design explorations transitioned knowledge from the written idea to the physical and artful responses to research.

“Suture”

This exploration looked at using surgical tools to injure and repair the skin of a grapefruit. This act altered the natural state of the object by human intention and intervention, thus making it an artifact.



Grapefruit.



Injury / Wound.



First suture.



Second suture.

iii. programme development

Recreational Component

The pedestrian path proposed for Block 1999 – B000 – 01 will continue the Green Trail from the southwestern area of the Research Forest. By extending this trail, the visitor can explore a less developed area of the Research Forest. The total length of the path on Block 1999 – B000 – 01 is 200 meters. The total length of the path from the south west corner of the Research Forest is 5.5 kilometers. Rest areas as well as formal camping areas could be provided in the future. Along the Green Trail, K Road, and B Road to Block 1999 – B000 – 01, the forest character includes virtually undisturbed expanses of wilderness intermingled with evidence of logging activity and experimentation. Taking the vehicular route allows you to still view all conditions and a leisurely drive will take you between 10 and 15 minutes.

Access to Golden Ears Provincial Park increases the possibility of site usage. This provincial park's recreational components include camping, hiking, swimming, etc. and they are likely to attract the same visitor as would the Research Forest. Connecting Block 1999 – B000 – 01 by way of a simple gateway or entrance/exit marks the edge and transition area between of Research Forest and Provincial Park boundaries. The Main Entrance onto the site will accommodate both arrival by car and by foot. Parking is adjacent to the site and is informal – the current method of parking will be maintained. An arching stainless steel gateway introduces the site to the visitor. Elements that are incorporated along the pathway are present in this gateway.

The soft and informal pathway becomes an elevated board walk. The elevated pathway is a gestural attempt to raise the pedestrian closer to the scale of the fir trees. It is important to note the difference in scale between the Douglas fir stands, the "forest", and the human scale. A proposed canopy or "membrane" slopes diagonally from the tall height of the masts and trees to the human scale of the pathway. Site elements such as benches, trail markers, and interpretive signs enhance the pedestrian experience on Block 1999 – B000 – 01 and provides visitors with rest stops and information.

Experimental Component

Block 1999 – B000 – 01 is an experiment in vegetation growth over time. Proposed canopies or fabric “membranes” of tension structures are made of synthetic material – Polyester - and three permanent panels are coated with Teflon. These canopy characteristics will influence the growth habit and pattern of new vegetation on site. Vegetation growth should therefore be monitored on site for years to come. As vegetation encroaches upon or even penetrates a membrane, that panel should be removed. The vegetation is intended to dominate the site once all panels are removed and will determine the life span of the temporary fabric panels.

Educational Component

The design development of Block 1999 – B000 – 01 strives to bring awareness to the healing quality of the landscape. The growth characteristics of new vegetation highlight the natural processes of forest regeneration. With design intervention, the landscape is being covered by human-made fabrics with the attempt at healing a wound that was caused by humans and for human consumption. The pathway, the permanent scar, allows the visitor to be part of this healing process. He or she has the opportunity to walk under a human-made scab. This scab protects the new vegetation and prepares it for its breakthrough into the surrounding forest matrix.

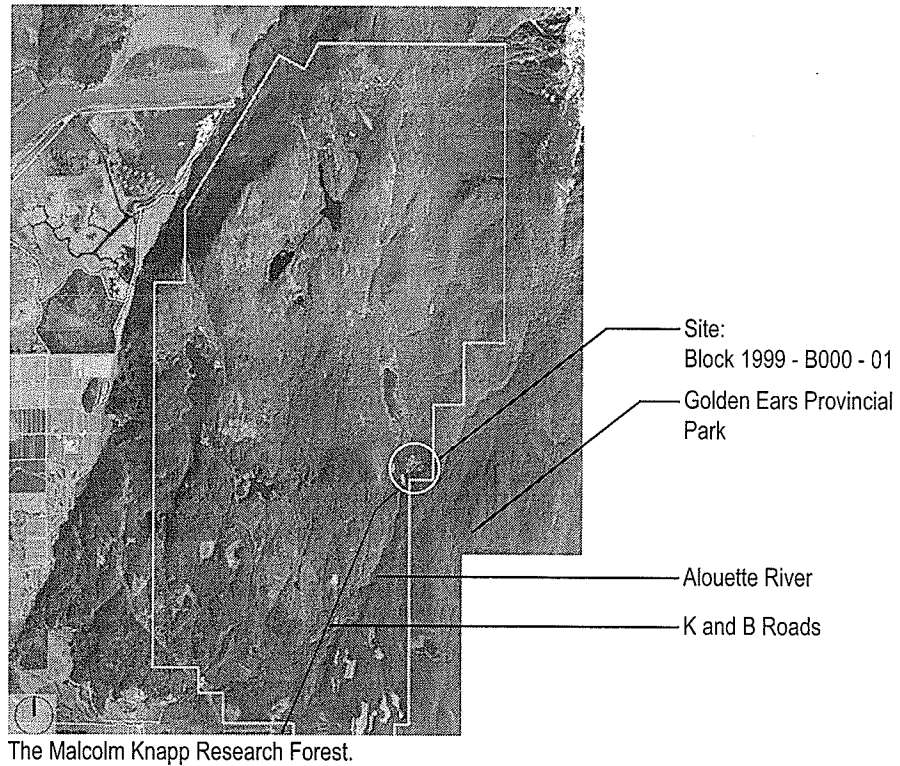
The final design on Block 1999 – B000 – 01 will be revealed in the future. Visitors have the opportunity to see the connection landscape architecture has to forestry and how closely designers can work with landscape processes. With time being such a strong design factor, it allows visitors to return to the site many times to see and experience something new and different. Repeated visits will hopefully increase the visitor's attachment to the site and increase their desire to see the site maintained. This attachment may in fact grow to other sites in the Research Forest, in Golden Ears Provincial Park, and finally to other sites throughout the provinces, the country, and the world.

iv. inventory and analysis

Inventory

The site, Block 1999-B000-01, is located approximately in the central region of the Malcolm Knapp Research Forest, closer to the west property line and adjacent to Golden Ears Provincial Park. The following information will relay inventory and analytic information in written and graphic form about the Research Forest area in general and in greater detail of Block 1999-B000-01.

A. Site and Context



To the west of the Research Forest there is agricultural land while to the east, Golden Ears Provincial Park invites campers and day visitors to enjoy its conserved landscapes. Larger expanses of forest lie to the north of the Research forest and the communities of Silver Valley and Maple Ridge lie to the south. The land uses surrounding the site include: north – forest and segment of another partial retention clearcut; east

– Golden Ears Provincial Park; south – forest; southwest – current harvesting, and; west – Alouette River and a harvested block. Within the forest there are patches of harvesting and other University of British Columbia related projects that sit next to healthy Douglas fir forest.

Golden Ears Provincial Park is one of the largest provincial parks in British Columbia with approximately 55,590 hectares of wilderness. The park was named after the twin peaks of the Coast Mountains – the Golden Ears. North of Golden Ears Provincial Park is Garibaldi Provincial Park. It is separated to the north from the former by mountain peaks and steep-sided valleys. While the vegetation is similar to that of the Research Forest, at higher elevations, forests give way to meadows and permanent snowfields. Activities in the park include camping, hiking, boating, cycling, and horseback riding. There are three campsites in the provincial park – Alouette Lake Campground, Gold Creek Campground, and North Beach. Hiking trails include the Alouette Mountain Hiking Trail, Mike Lake Trail, Lookout and Loop Trails, Spirea Nature Trail, Lower Falls Trail, East and West Canyon Trails, and the Golden Ears Trail. (www.britishcolumbia.com)

The Silver Valley Residential Area is a well developed community that maintains a heavily forested condition. The houses are grouped in “eco-clusters” – small bays that incorporate as much as the natural condition as possible while maintaining a modern way of life. Many groupings of “eco-clusters” form the Silver Valley community. The community of Maple Ridge is a growing area that attracts Vancouver commuters. It provides families with more affordable housing than Vancouver coupled with a more rural residential setting near the banks of the Fraser River.

Rivers in this area are considered important especially because of their salmon bearing capacity. Research on the salmon is conducted in this area in the Alouette River, which has been classified as a Heritage River.

“The Alouette River watershed is an important salmon-producing river...in the lower Fraser River valley. This stream supports four species of salmon, including pink, chum, coho and Chinook salmon. The upper section of the south Alouette River

receives stable water flows released from the hydroelectric dam located at the outlet of Alouette Lake. The upper section of river has had a number of habitat restoration projects undertaken over the past two decades that have increased its potential to provide productive habitat for salmonides.”

Matt Foy from www.mala.bc.ca

The criteria for selection of heritage rivers includes natural heritage values, cultural heritage values, and recreational values. Physical examples of evolutionary processes, and/or ecosystems or species of particular interest must be present in a river to qualify under natural heritage values. The river must also provide an influential role in the historical development of British Columbia, be significant to traditional territories or life styles of First Nation peoples, and be associated with people, events, movements, ideas, or beliefs of significance to the cultural heritage of people today to qualify under cultural heritage values. Finally, to qualify under recreational values, the river must support recreational activity, and be accessible to a large and diverse group of recreationists, and provide high-quality recreational experiences. The Alouette River was awarded heritage status in 1998. (www.bcheritagerrivers.ca)

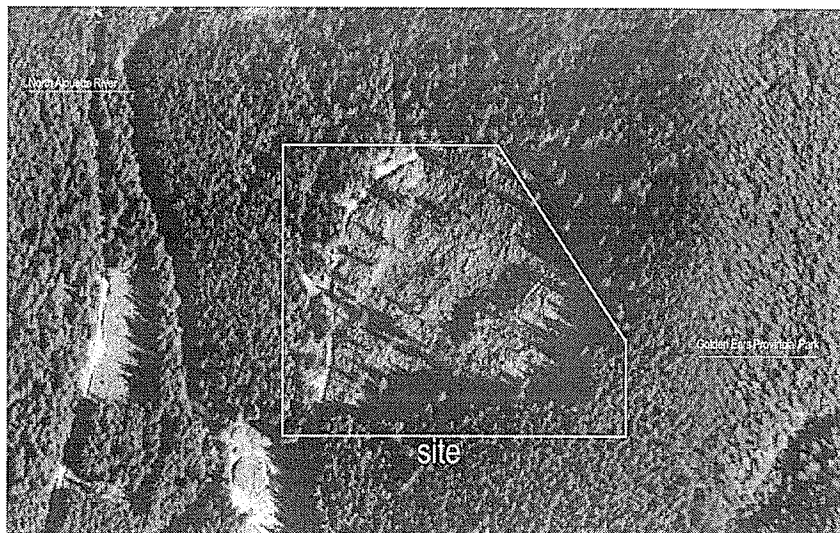
The adjoining roads to Block 1999-B001-01 are K Road and B Road. Both are rough, gravel roads. Like most roads in the forest, K and B are logging roads with a maximum speed of 40 km/h. These roads are heavily used when harvesting in the area and have minimal public use but are heavily used by the Forest's researchers. Vehicle access to the forest is restricted at all times to those who have an access code. Daily hours of the Research Forest are from 8:30am – 4:30pm, Monday to Friday.

Logging vehicles have the right-of-way on all roads in the Research Forest. There is no other road or vehicle hierarchy and the primary means of arriving on site by vehicle is from the main gate, then northeast on K and B Roads.

The identity and character of the Malcolm Knapp Research Forest is one of multiplicity. It can take on different

identities at different times and its character is one of experimentation, exploration, and education. The Research Forest has many projects of varying size and quality. Students and researchers from the University of British Columbia conduct studies relating to silviculture and geography. Their projects can range from controlled burns to establishing clearcutting methods for future commercial endeavors. The Research Forest is a working and active forest - commercial logging does occur in certain parts. Block 1999-B000-01 was harvested for its high quality and healthy Douglas fir timber. The silvicultural method used on site was a partial retention clearcut. This means that mature examples of Douglas fir stands were left on site to help preserve some of the original integrity of the forest matrix. In 1999 – 2000, Block 1999-B000-01 was revegetated and is intended to slowly return to its pre-clearcut state. The site is dangerous to penetrate on foot due to the possibility of abandoned logging equipment, such as cables, under the new growth of vegetation.

The whole of the Research Forest is an outdoor research facility for the University of British Columbia. It has at its major entrance a main gate, main gate office, utility building, and caretaker home and office. The adjacent Golden Ears Provincial Park is the largest recreational function in the immediate context of the Research Forest and of Block 1999-B000-01.



Site: Block 1999 - B000 - 01.

B. Site Access

The Malcolm Knapp Research Forest is located 60 kilometers east of Vancouver, British Columbia.

Assigned Block:

- Block 1999-B000-01, partial-retention clearcut, harvested and revegetated in 1999/2000
- Research time period: April 2003 – August 2003, sole researcher on assigned block

Malcolm Knapp Research Forest protocol:

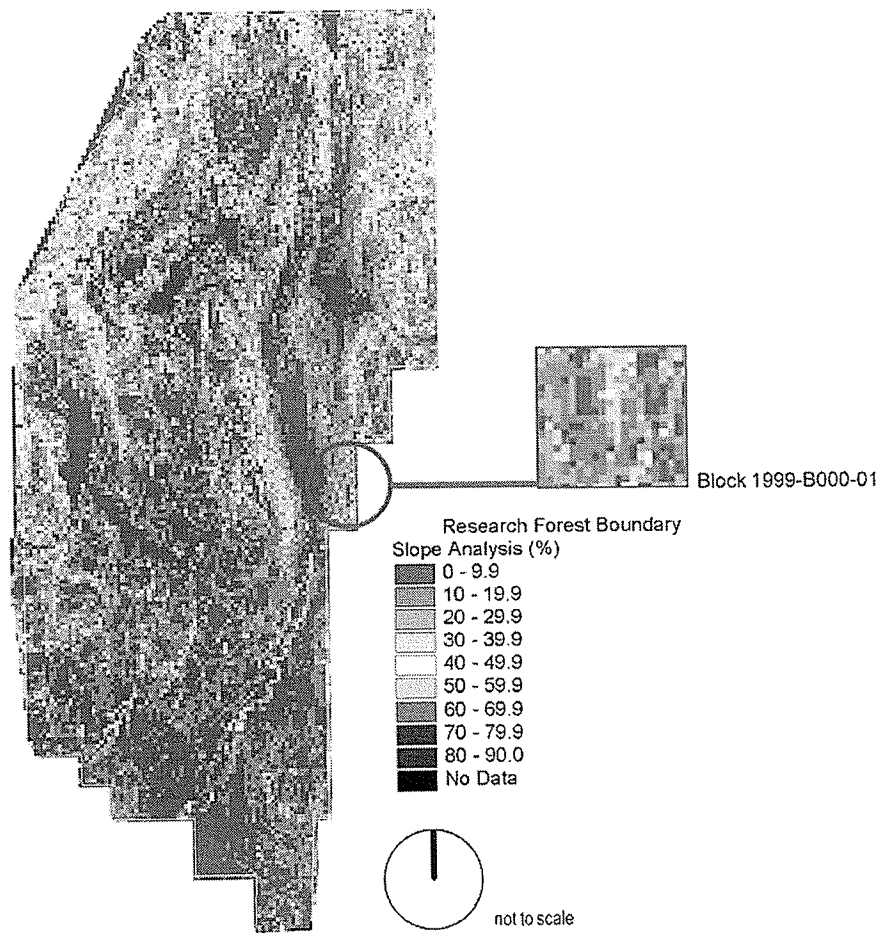
- Sign-in upon arrival, sign-out upon departure
- Researcher must carry 2-way radio when in the Research Forest, sign-out radio upon arrival, return upon departure
- Researchers must carry Bearspray when conducting research – encounters are rare, sightings are frequent
- Cougar and bear warnings should be read and understood
- On all roads, logging vehicles have the right-of-way
- Researchers are assigned an after hours gate entrance code

Access to Block 1999-B000-01:

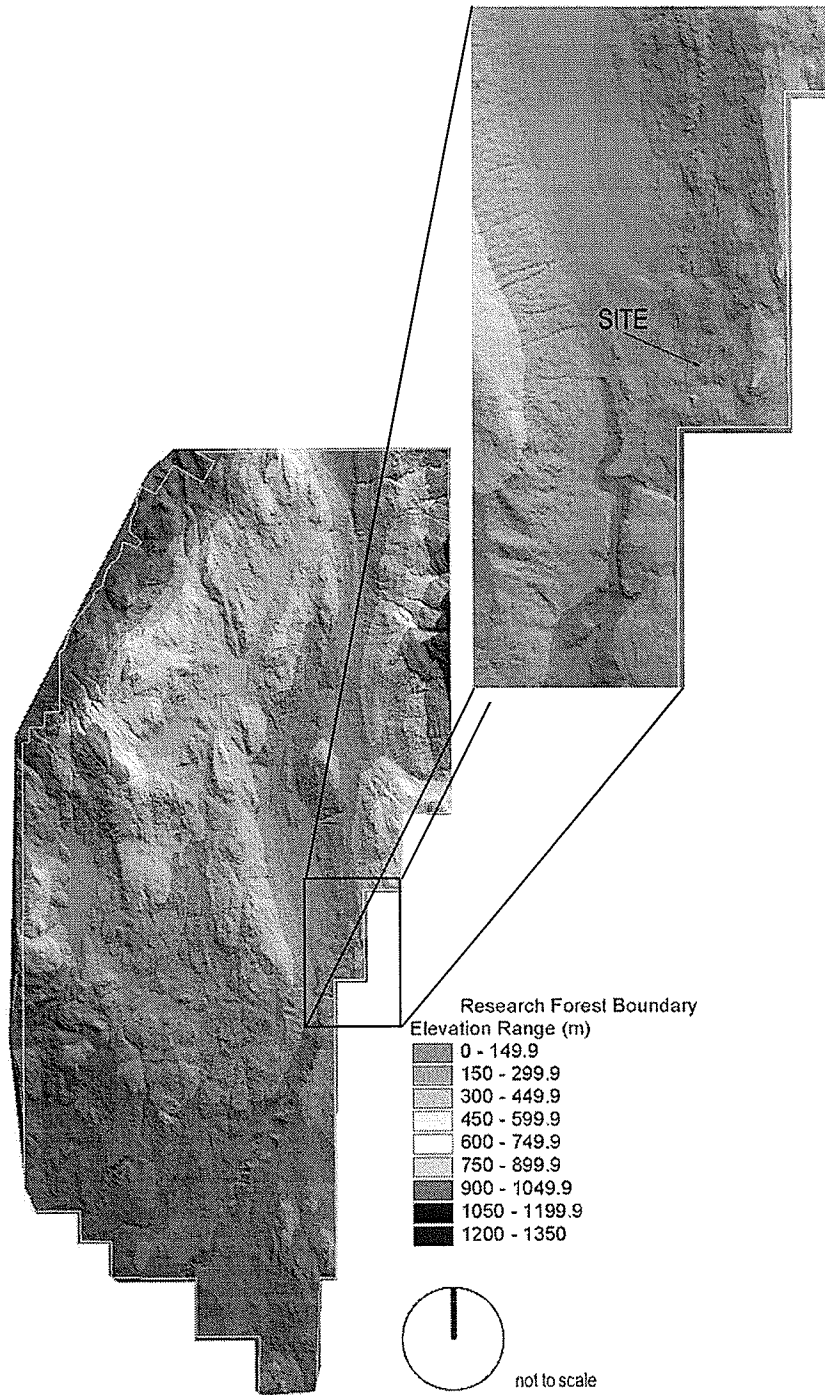
- Main Gate
- From Main Gate, northeast on K Road
- Connect to B Road
- Hiking to the Block is possible, however no footpath has been marked

C. Slope, Elevation, and Drainage

The on-site slope is in the westerly direction and water drains to the Alouette River, which is part of the Fraser River watershed. There are level areas in the central region of Block 1999-B000-01 with some water collection after heavy rains. There is no visible erosion, however disturbance from harvesting activity is prevalent.



Slope analysis for the Research Forest and site.



Elevation Range for the Research Forest and site.

D. Vegetation

The major tree species in the Malcolm Knapp Research Forest include: Douglas-fir, Western redcedar, Western hemlock, Amabilis fir, Yellow-cedar, Sitka Spruce, Western White Pine, Pacific Yew, Red Alder, Paper Birch, Bigleaf Maple, Vine Maple, and Black Cottonwood (the latter 10 species can be found in Appendix One). The trees remaining on Block 1999-B000-01 are Douglas-fir (www.forestry.ubc.ca).

“Douglas-fir (*Pseudotsuga menziesii*) is BC’s most important wood producer. It likes moist, well-drained mineral soils, and prefers a lot of light to grow well. The needles are uniformly 2-3 cm in length. On young trees, the bark is smooth and grey, while on older trees, it tends to be very thick, with deep furrows etched into its surface. This thick bark allows Douglas-fir to survive moderate intensity forest fires; many old growth Douglas-fir show the blackened scars of at least one forest fire on their bark. Note that Douglas-fir is not a true fir from the *Abies* genus; instead, its genus name *Pseudotsuga* actually means ‘false hemlock’.” (www.forestry.ubc.ca)

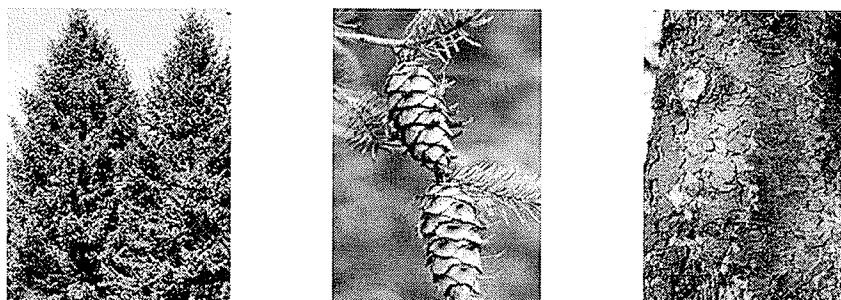


Figure 5: The Douglas fir: the tree, its fruit, and its bark. (www.forestry.ubc.ca)

“Western redcedar (*Thuja plicata*) is BC’s provincial tree, and is very important as a source of cedar shakes and shingles for use in outside building because its outer wood is extremely resistant to rot. Traditionally, the redcedar was used throughout the coast by the First Nations people of BC, for everything from basket weaving to canoe construction. Western redcedar prefers a moist to wet site, and grows particularly well along stream banks in the region. Its branches are distinctive-drooping down but turning upwards near their ends. Instead of true “needles” the redcedar has small blunt scales. Its cones are tiny-about 1 cm long-and

its bark is red-brown and stringy on trees of all ages." (www.forestry.ubc.ca)

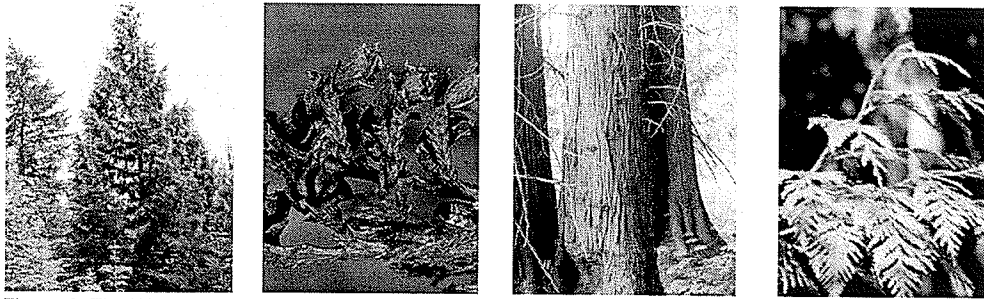


Figure 6: The Western redcedar: the tree, its fruit, its bark, and its needles. (www.forestry.ubc.ca)

"Western hemlock (*Tsuga heterophylla*) is an important source of wood pulp and lumber in the forest industry. Hemlock trees prefer a wetter site, and do not require much light to grow. In fact, they are among the most shade-tolerant of any trees on the Pacific coast, allowing them to claim vacant areas inside established stands. The uppermost shoot of a hemlock always droops. The needles vary in length, ranging from 0.5 - 2 cm on the same twig. The cones are 2-3 cm long. Young bark has fine grey scales; old bark forms into flat-topped scaly ridges." (www.forestry.ubc.ca)

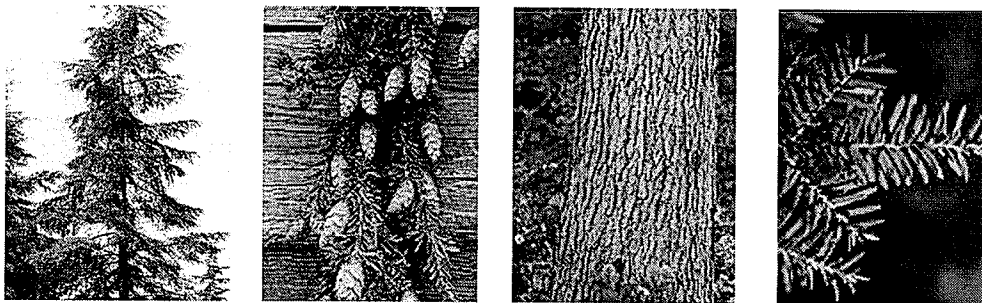
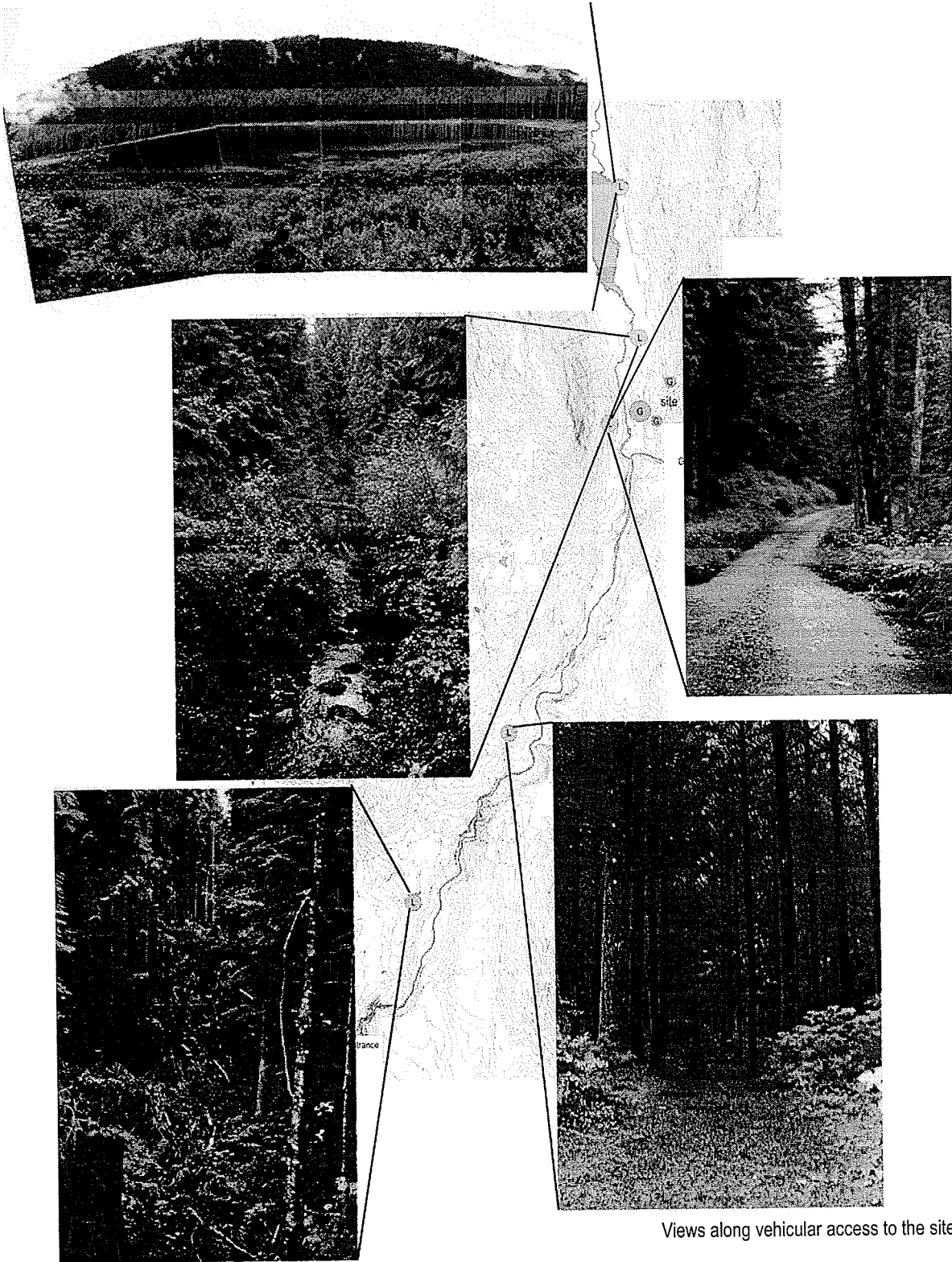
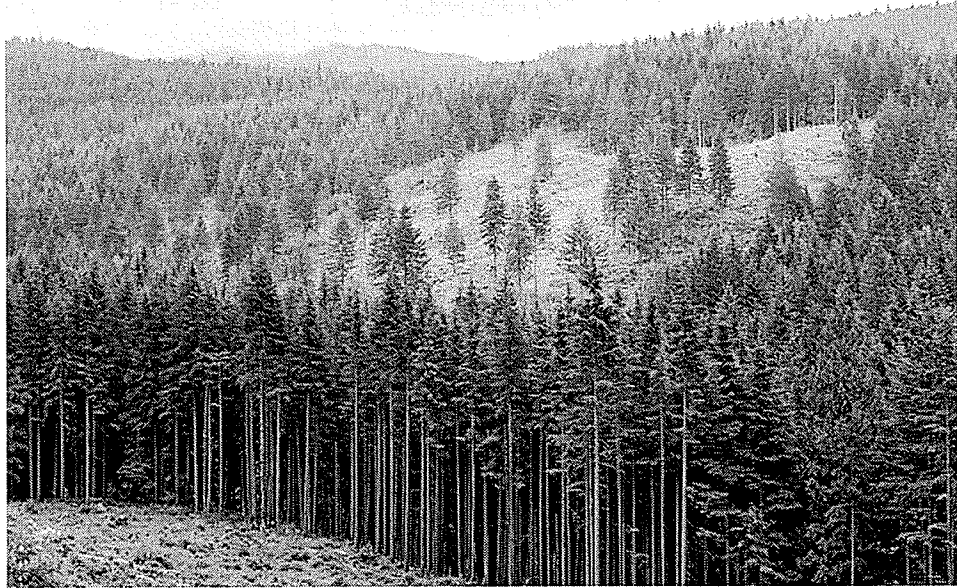


Figure 7: The Western hemlock: the tree, its fruit, its bark, and its needles. (www.forestry.ubc.ca)

E. Views



Views along vehicular access to the site.

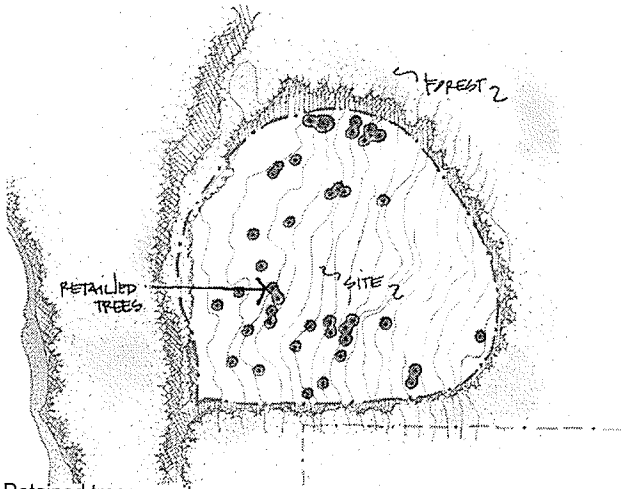


View from B Road.



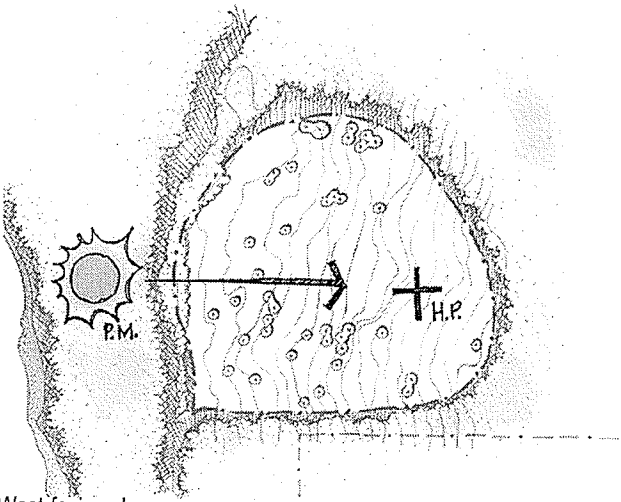
View from Main Entry to site.

Analysis



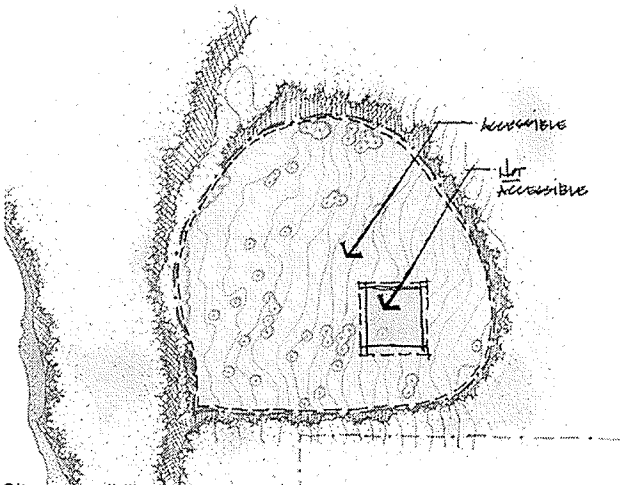
Retained trees on site.

Retained trees define where potential planting can occur.



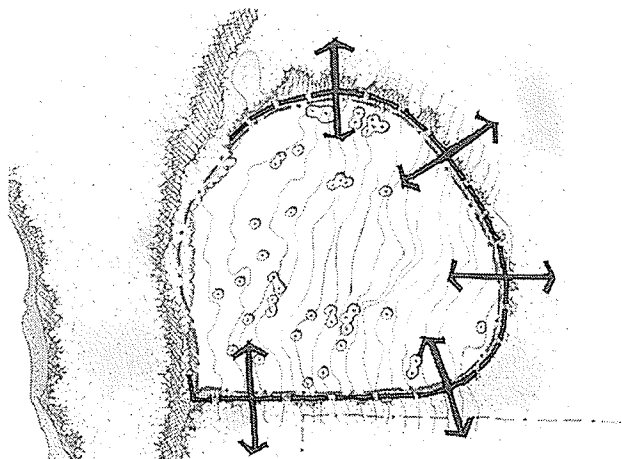
West-facing slope.

A west-facing slope provides optimal microclimate conditions in the afternoon.



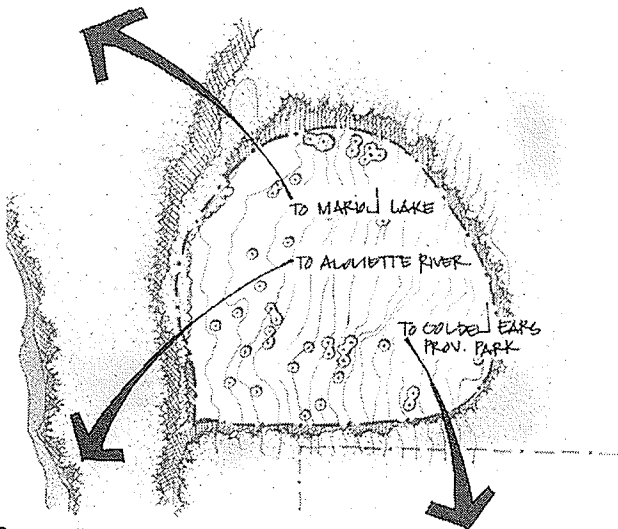
Site accessibility.

The non-accessible area on site provides a boundary for pedestrians. This area should be re-vegetated and excluded from designed pedestrian access.



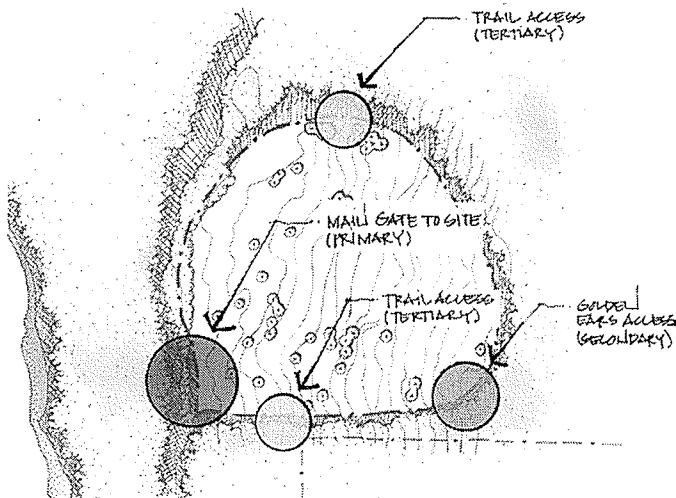
Site edge or transition.

Edge of site adjacent to forest provides strong contrast. Should maintain the site characteristic in final design.



Surrounding features.

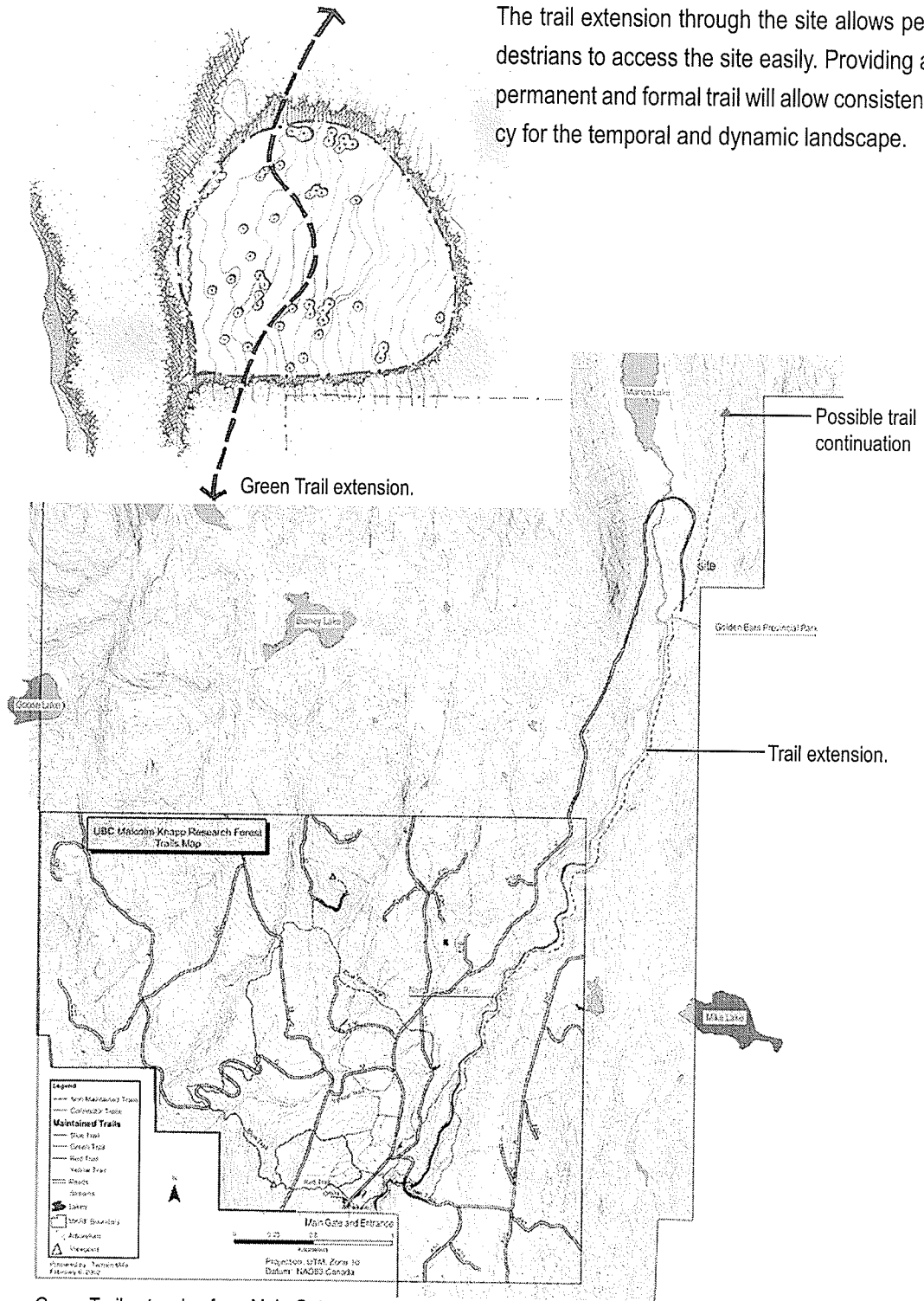
These surrounding features provide off-site attractions. Interpretive panels can make note of these features for visitors.



Site entrances/exits.

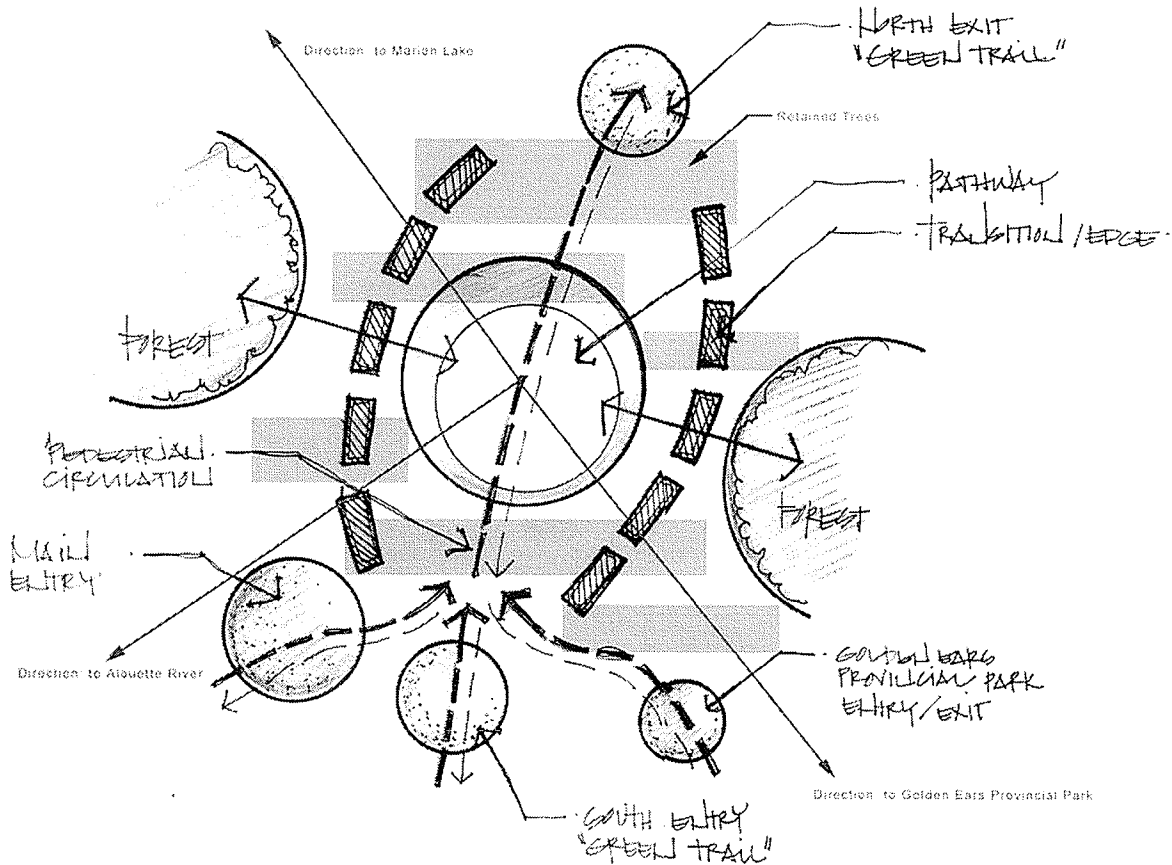
The site provides distinctive access points. The Main Entry is directly adjacent to the vehicular approach. The access to Golden Ears Provincial Park is directly adjacent to site. The trail entries/exits provide pedestrian movement on and off site.

The trail extension through the site allows pedestrians to access the site easily. Providing a permanent and formal trail will allow consistency for the temporal and dynamic landscape.



Green Trail extension from Main Gate.

v. synthesis



Synthesis diagramme.

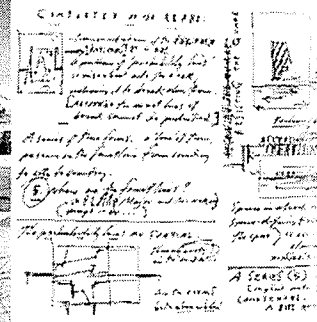
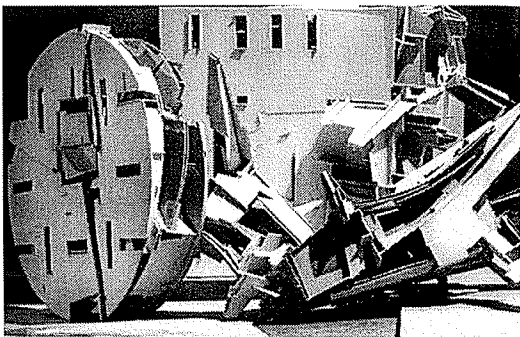
The main focus on site is the trail extension through Block 1999 - B000 - 01. This is the area that is permanent and from which information about the site and surrounding features can be obtained (ie: interpretive signage). The forest edges are important transition zones from conceptual regeneration to natural regeneration. From the edges, entrances onto site are created based on vehicular and pedestrian circulation. From the programme development, certain decisions are beginning to be made. Location of the path, the entrance, the edge, and the retained trees will be further refined in the final design stages.

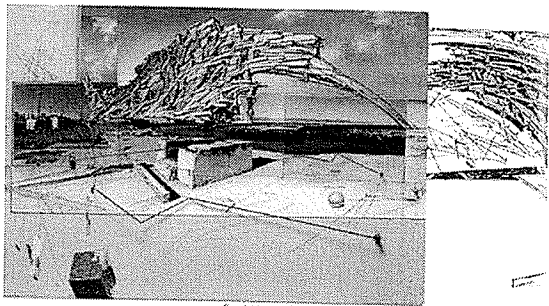
vi. design intentions

Canopies on site are the scabs under which healing occurs. Those walking through the site are the healing properties – with new found knowledge, their imagination, and love of nature, they can begin an environmental re-awakening. We become at one with nature again – what lies beneath our feet is the scar.

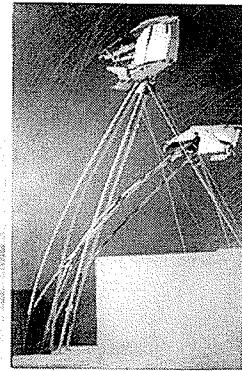
The pathway is unlike any other we've ever walked on before. It's new quality will remain on-site, forever a reminder of what was, of what we experienced. This will keep our intentions for our ecosystems pure, a reality. When the scab is gone, a healthy but altered vegetation dominates the site – the scar. With time, the scar will change. It will start to become like the matrix again. One part of the scar will not change – the path. Along with the skeleton of repair, the path will forever stay on Block 1999-B000-01, a reminder of what was, what we experienced.

This project is unique in the approach of scab and scar in the landscape. Lebbeus Woods provides an excellent reference to scabs and scars with his provocative architectural explorations:

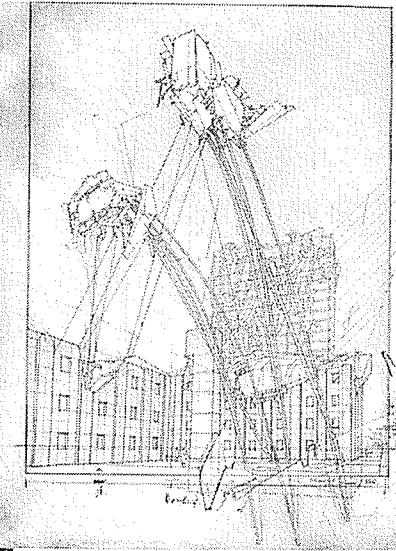




1947 - CITY
 "Massive Structural Framework of Building 1947"

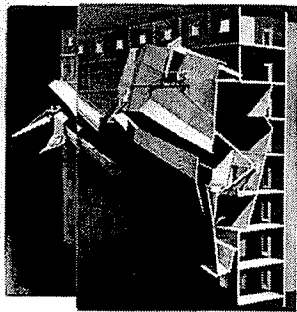
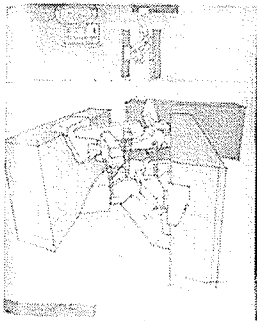


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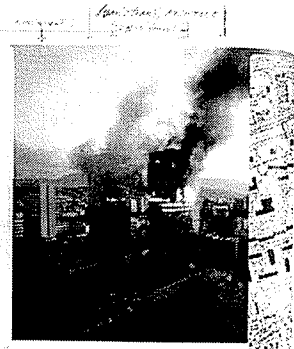
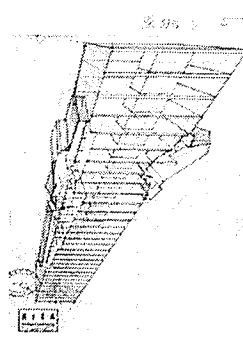


(19) 1947

HIGH HOUSES



1947 - CITY
 "Massive Structural Framework of Building 1947"



1947 - CITY
 "Massive Structural Framework of Building 1947"

Above images from Radical Reconstruction.

Landscape as an artifact is illustrated with works by Andy Goldworthy, Robert Smithson, and Christo:

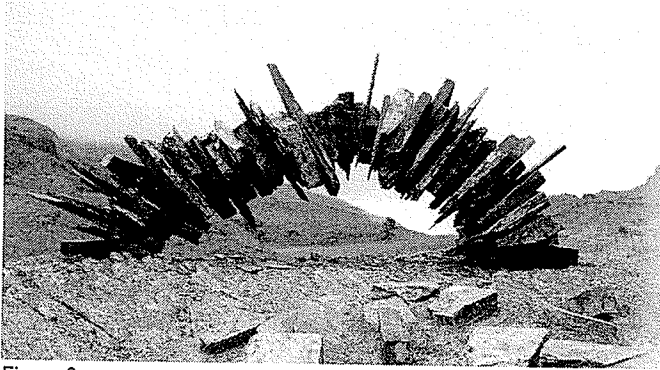


Figure 8.

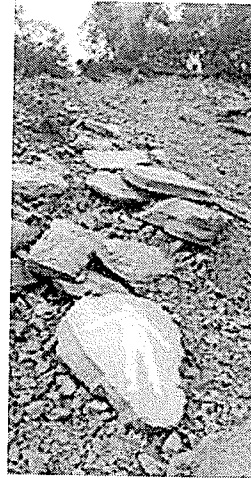


Figure 9.

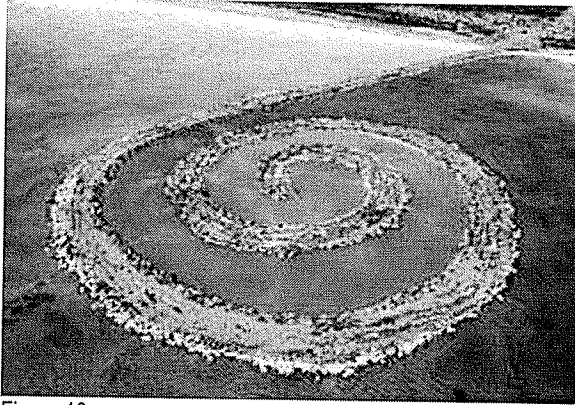


Figure 10.

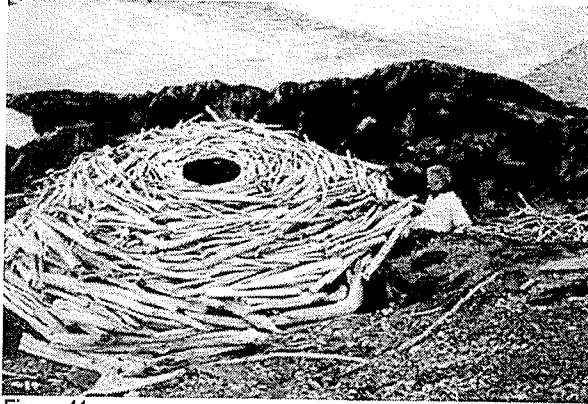


Figure 11.



Figure 12.

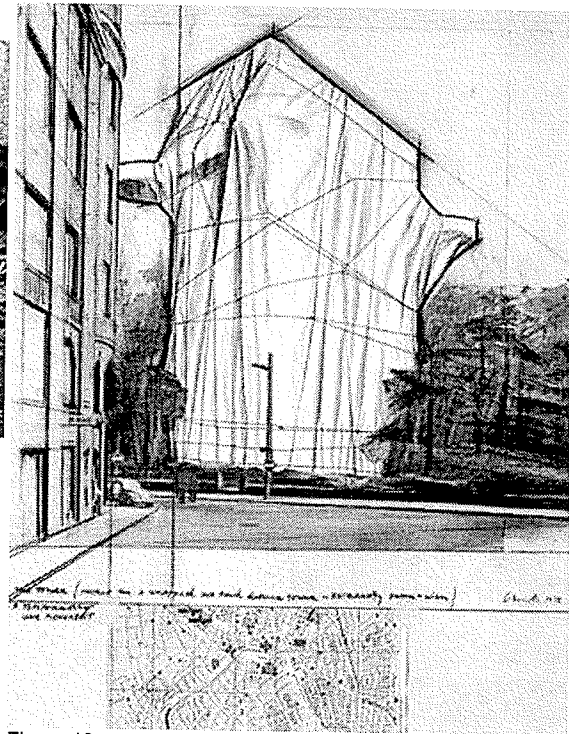


Figure 13.

Visual impact is an important feature in all designs. Composition and light quality affects the total site experience. Floria Sigismondi's work highlights this importance:

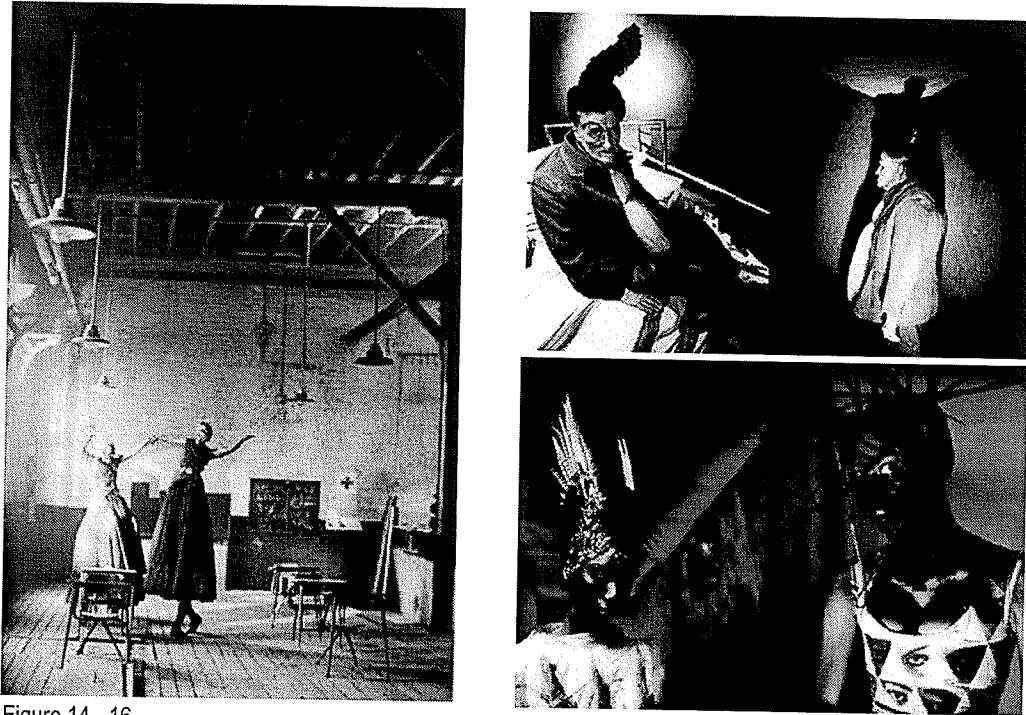


Figure 14 - 16.

The hypertrophic landscape of Block 1999 - B000 - 01 will change and the scar will evolve with time - this being the dynamic and temporal character of the landscape. Visitors to this site will have the opportunity to learn about this site's experimental qualities of healing and regeneration. They will experience the tension that exists between the size of trees and pathway, between the human and the forest, and between the natural regenerative process and the regenerative process involving modern medical wound healing principles. Every person who experiences the site has a story to tell, whether they choose to or not, about their own personal landscape. This site too has a story - and it will be told by those who choose to tell it.

The future of Block 1999 - B000 - 01 is uncertain and undetermined. It will be carved out by those who visit it and by those who experience something profound. The site provides the visitor with the opportunity to understand the regenerative processes of a particular landscape and how landscape design can influence its development. The design highlights the levels of tension that occur around and within a cultural artifact.

In fact, what will be left from this design in the future is the pathway, stainless steel masts, a permanent scar, and the regenerated vegetation.

The design of Block 1999 - B000 - 01 invites the visitor to be surrounded by nature and to be part of the landscape. The site can become an introspective experience for the visitor or simply a recreational facility - the site function is ultimately defined by each person. Over time the site will become an increasingly greater part of the forest matrix. However, the growth habit of vegetation under the canopied areas will be altered permanently, creating and enhancing the notion of the scar and highlighting Block 1999 - B000 - 01 as a landscape artifact. The following section, Design: Presentation Boards, will explore the development of the final design and site elements that encourage programme development.

vii. design: presentation boards

Malcolm Knapp Research Forest - British Columbia

Site Overview

general information

The Malcolm Knapp Research Forest is a 10,000-acre forest in British Columbia, Canada. It is a research forest for the University of British Columbia. The forest is a mix of old-growth forest and second-growth forest. The forest is a mix of old-growth forest and second-growth forest. The forest is a mix of old-growth forest and second-growth forest.

photographs

These photographs show the research forest in British Columbia. The photographs show the research forest in British Columbia. The photographs show the research forest in British Columbia. The photographs show the research forest in British Columbia.

Hyper-trophic landscape

Hyper-trophic landscape

The hyper-trophic landscape is a complex system of trophic levels. It is a complex system of trophic levels. It is a complex system of trophic levels. It is a complex system of trophic levels.

Hyper-trophic landscape

The hyper-trophic landscape is a complex system of trophic levels. It is a complex system of trophic levels. It is a complex system of trophic levels. It is a complex system of trophic levels.

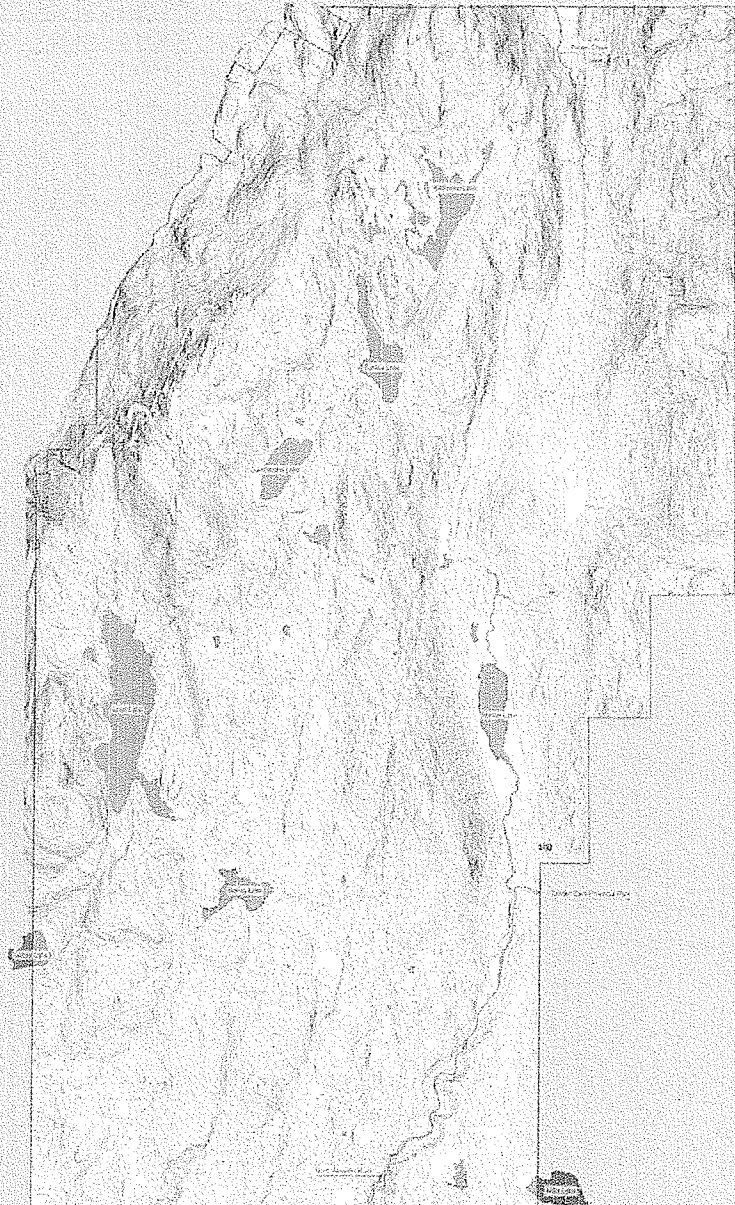
Hyper-trophic landscape

The hyper-trophic landscape is a complex system of trophic levels. It is a complex system of trophic levels. It is a complex system of trophic levels. It is a complex system of trophic levels.

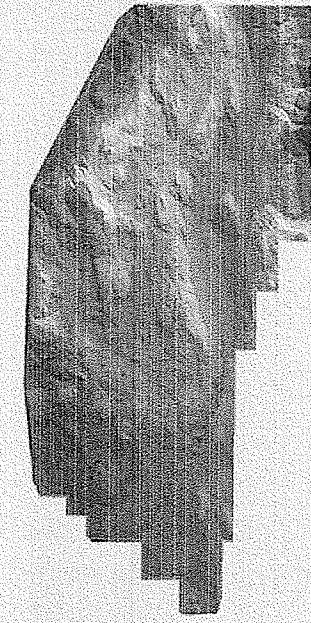
Hyper-trophic landscape

The hyper-trophic landscape is a complex system of trophic levels. It is a complex system of trophic levels. It is a complex system of trophic levels. It is a complex system of trophic levels.

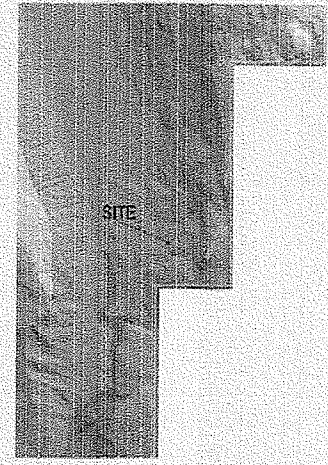
Malcolm Knapp Research Forest - British Columbia



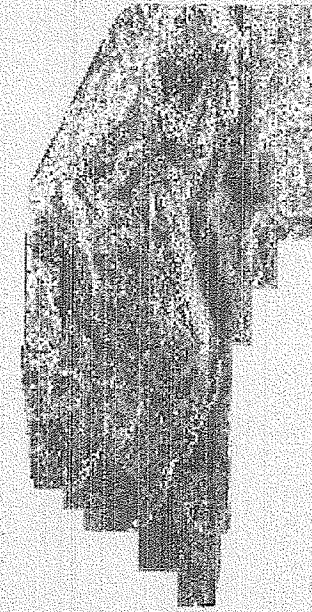
Elevation Range - UBC Research Forest



Site Elevation Range



Slope Analysis - UBC Research Forest



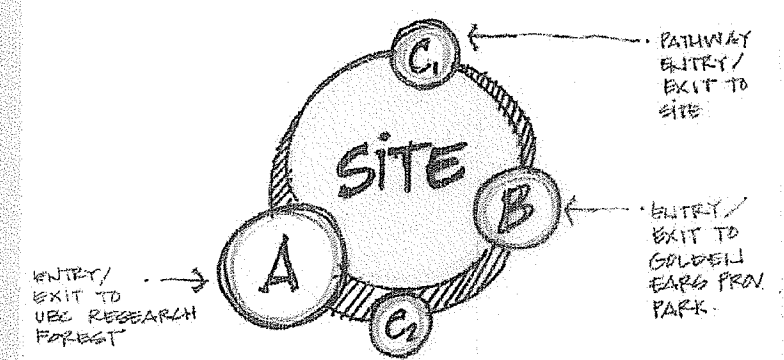
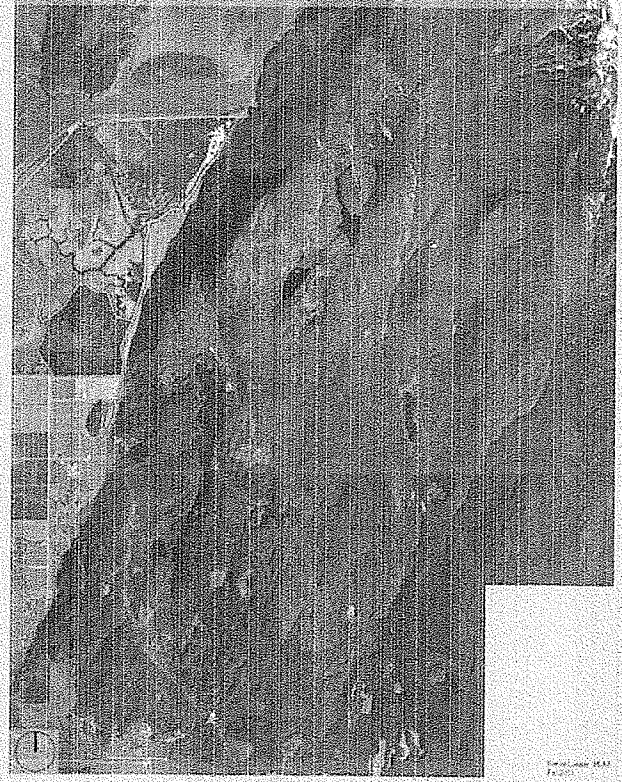
general information

The Malcolm Knapp Research Forest is located 60 kilometers east of Vancouver, British Columbia. The Forest stretches up northeast to the Golden Ears Mountains, west to sea level at Pitt Lake, and south to the community of Maple Ridge. It is approximately 5,157 hectares in size. Rain is the main form of precipitation, however the Forest does receive occasional snow at the south end and regular snow cover in the higher elevations to the north. Common trees in the Forest are the Douglas Fir, Western Red Cedar, and the Western Hemlock. Age classes of this forest range from 40-year-old stands to 400+ year-old stands. (www.forestry.ubc.ca)

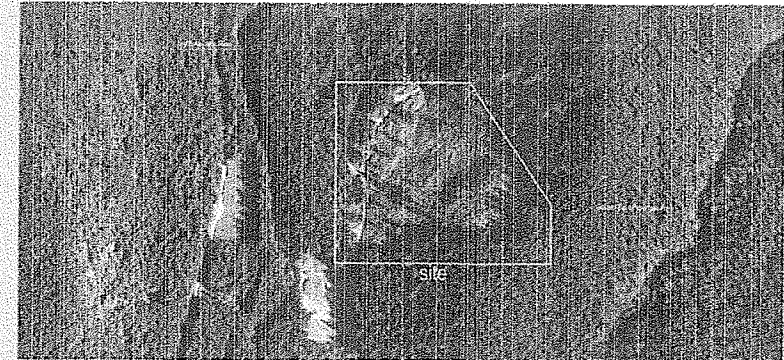
Legend

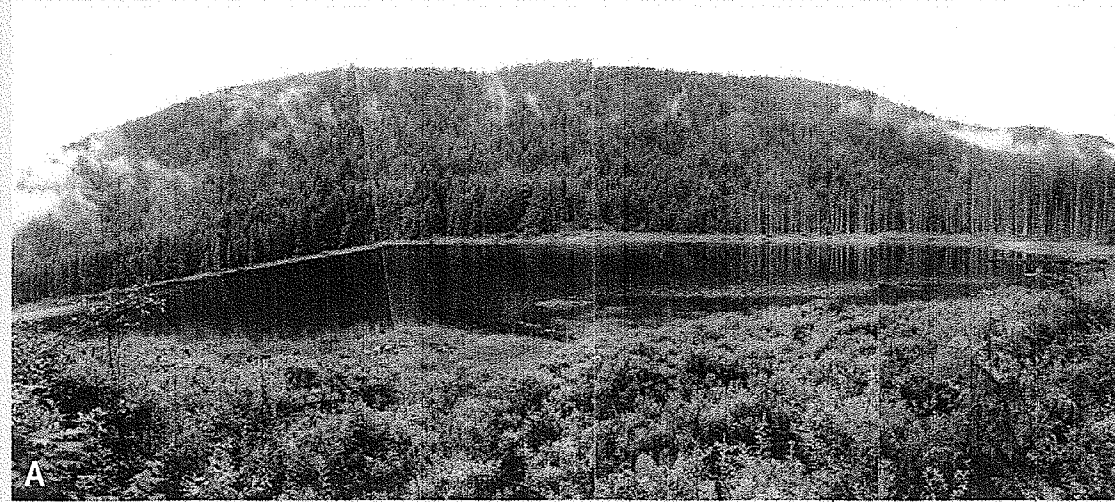
- Research Forest Boundary
- Golden Ears Mountains
- Maple Ridge
- Pitt Lake
- Sea Level
- UBC Research Forest
- UBC Research Forest
- UBC Research Forest
- UBC Research Forest
- UBC Research Forest

Malcolm Knapp Research Forest and Immediate Context



CONCEPTUAL PLACEMENT OF GATEWAYS





A

photographs

Typical Images of the Malcolm Knapp Research Forest landscape:

A. Marion Lake - north west of Block 1999 - B000 - 01, this lake offers incredible views, wildlife viewing and spectacular photography.

B. B Road - typical roadway condition in the Research Forest.

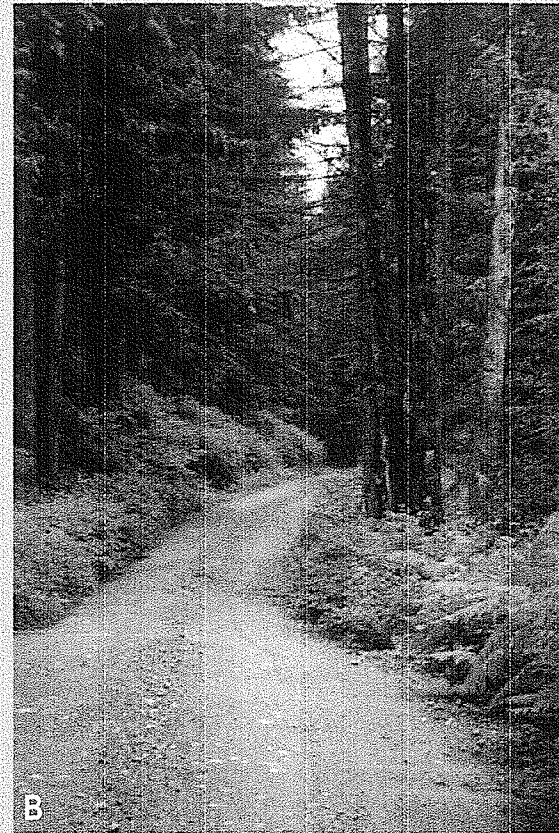
C. B Road Bridge - crossing the Alouette River south west of Block 1999 - B000 - 01.

D. Alouette River - south west of Block 1999 - B000 - 01.

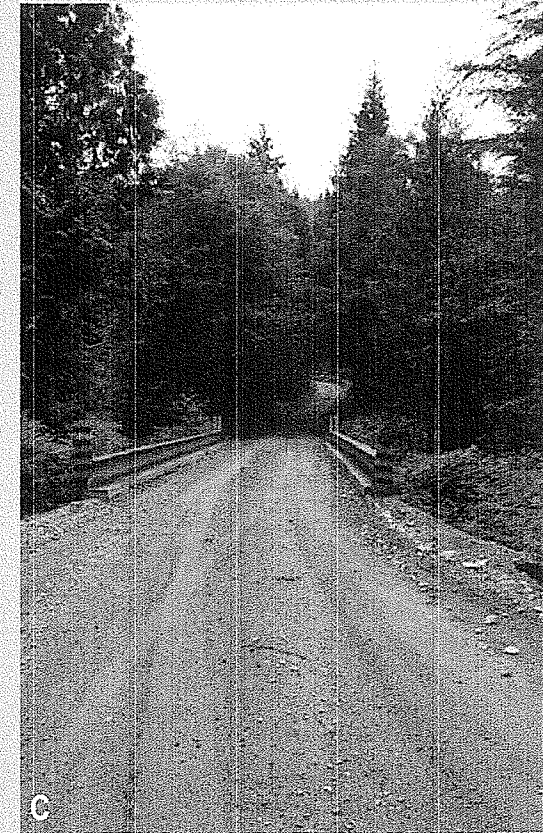
E. Trails - walking trails take the visitor through areas of research and experimentation such as this experimental burn area off K Road.

F. Logging - the Malcolm Knapp Research Forest is an active forest. Logging is a daily activity in various locations around the forest.

G. Logging remnants - debris from logging can be dangerous as what equipment (ie: cables) is left underneath is invisible.



B



C



D



E

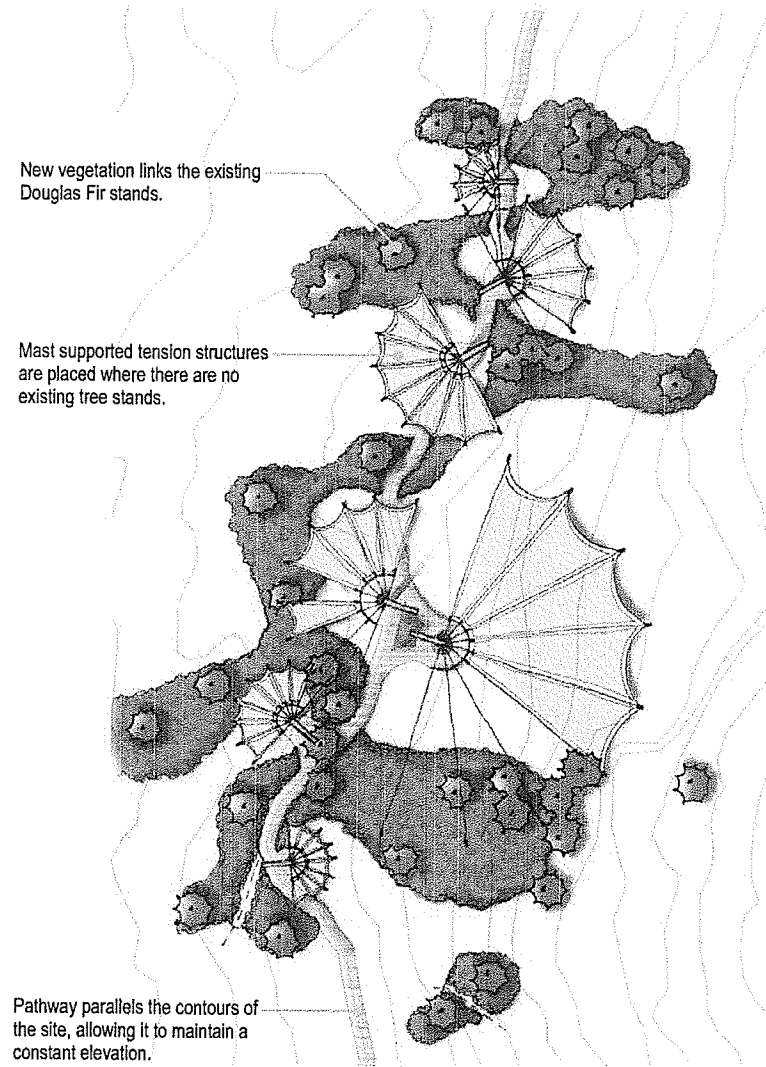


F



G

Layout - +one year
 Hypothetical Site Plan
 Not to scale



Landscape wounds must heal naturally or be healed by human intervention. Paralleling environmental systems to human systems, consider the earth as "body" and the landscape as "skin". The healing process of skin begins at the result of an injury – the wound. A wound is described as a: "an injury to the body (as from violence, accident, or surgery) that involves laceration or breaking of a membrane (as the skin) and usually damage to underlying tissues" and b: "a cut or breach in a plant due to external violence" (Merriam-Webster Online Dictionary, m-w.com/cgi-bin/dictionary). Rehabilitation of the landscape can be achieved by interpreting the medical model for wound healing.

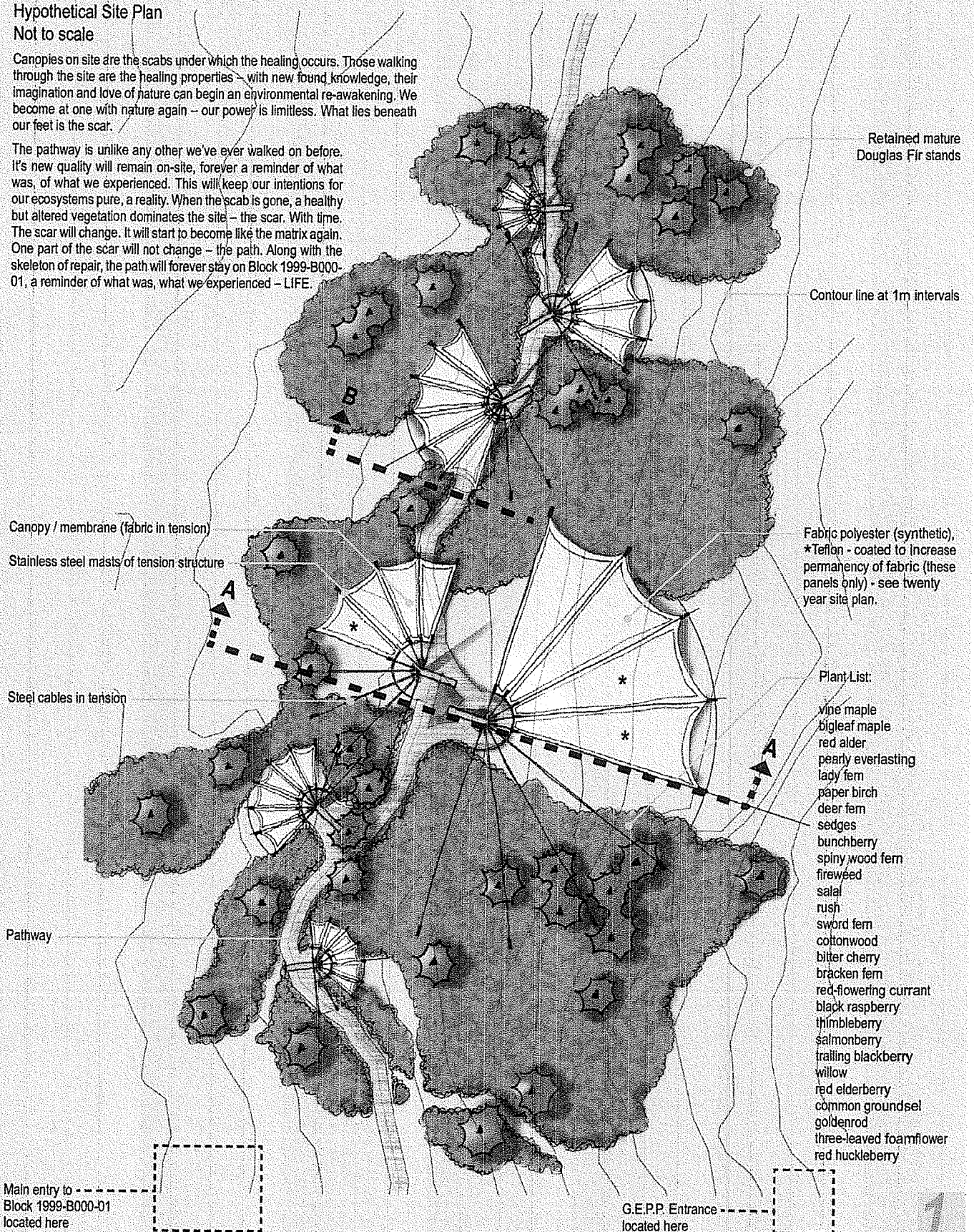
A scar is defined as collagen deposition (Smith, 1991) and reorganization of the dermal matrix (Garg, 2000). Collagen 1 fibers become organized into thick bundles oriented perpendicular to the edges of the wound. This reorganization is accomplished by the "breakdown of collagen fibers by collagenases produced by (the) fibroblasts, with the subsequent cross-linking of the fibres into bundles by the enzyme lysyl oxidase" (Stocum, 1995). Human intervention in wound healing is more specifically referred to as plastic surgery.

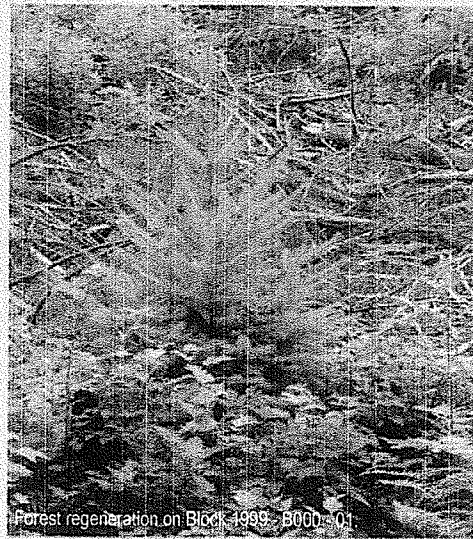
HYPER I trophic landscape

Layout - +five years
 Hypothetical Site Plan
 Not to scale

Canopies on site are the scars under which the healing occurs. Those walking through the site are the healing properties – with new found knowledge, their imagination and love of nature can begin an environmental re-awakening. We become at one with nature again – our power is limitless. What lies beneath our feet is the scar.

The pathway is unlike any other we've ever walked on before. It's new quality will remain on-site, forever a reminder of what was, of what we experienced. This will keep our intentions for our ecosystems pure, a reality. When the scab is gone, a healthy but altered vegetation dominates the site – the scar. With time. The scar will change. It will start to become like the matrix again. One part of the scar will not change – the path. Along with the skeleton of repair, the path will forever stay on Block 1999-B000-01, a reminder of what was, what we experienced – LIFE.





Forest regeneration on Block 1999-B000-01



View towards the east forest edge

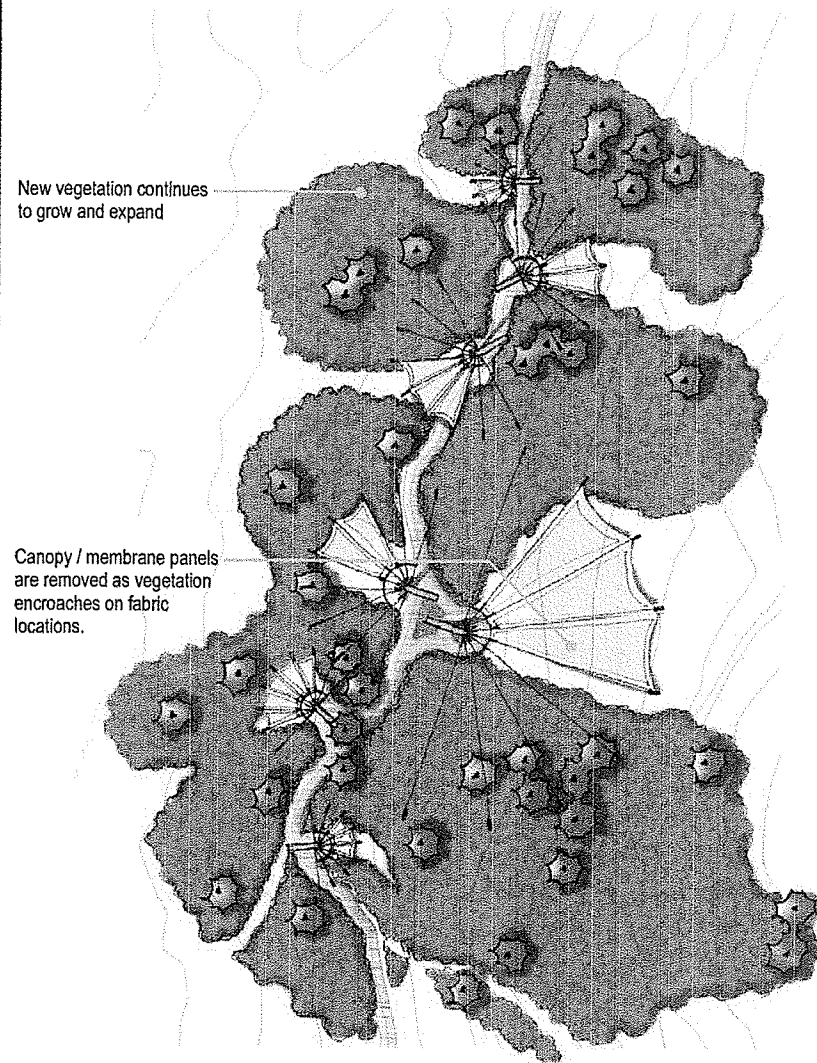


Remaining tree silhouette on Block 1999-B000-01



View of Block 1999-B000-01 from B Road

Layout - +ten years
Hypothetical Site Plan
Not to scale

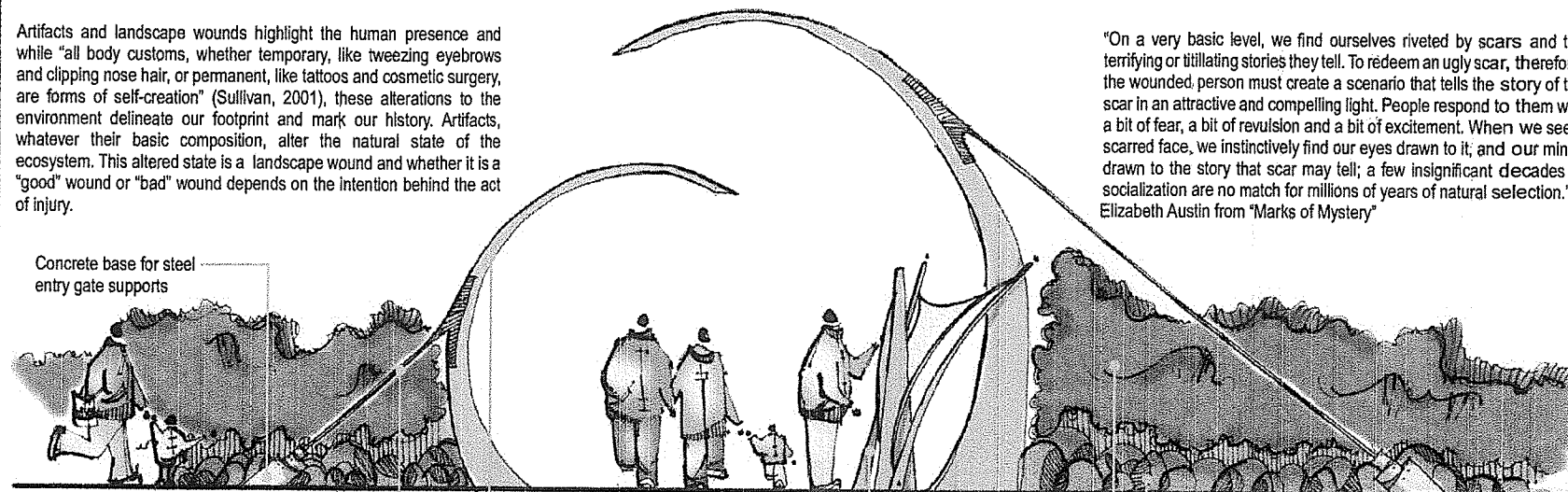


New vegetation continues to grow and expand

Canopy / membrane panels are removed as vegetation encroaches on fabric locations.

Artifacts and landscape wounds highlight the human presence and while "all body customs, whether temporary, like tweezing eyebrows and clipping nose hair, or permanent, like tattoos and cosmetic surgery, are forms of self-creation" (Sullivan, 2001), these alterations to the environment delineate our footprint and mark our history. Artifacts, whatever their basic composition, alter the natural state of the ecosystem. This altered state is a landscape wound and whether it is a "good" wound or "bad" wound depends on the intention behind the act of injury.

Concrete base for steel entry gate supports



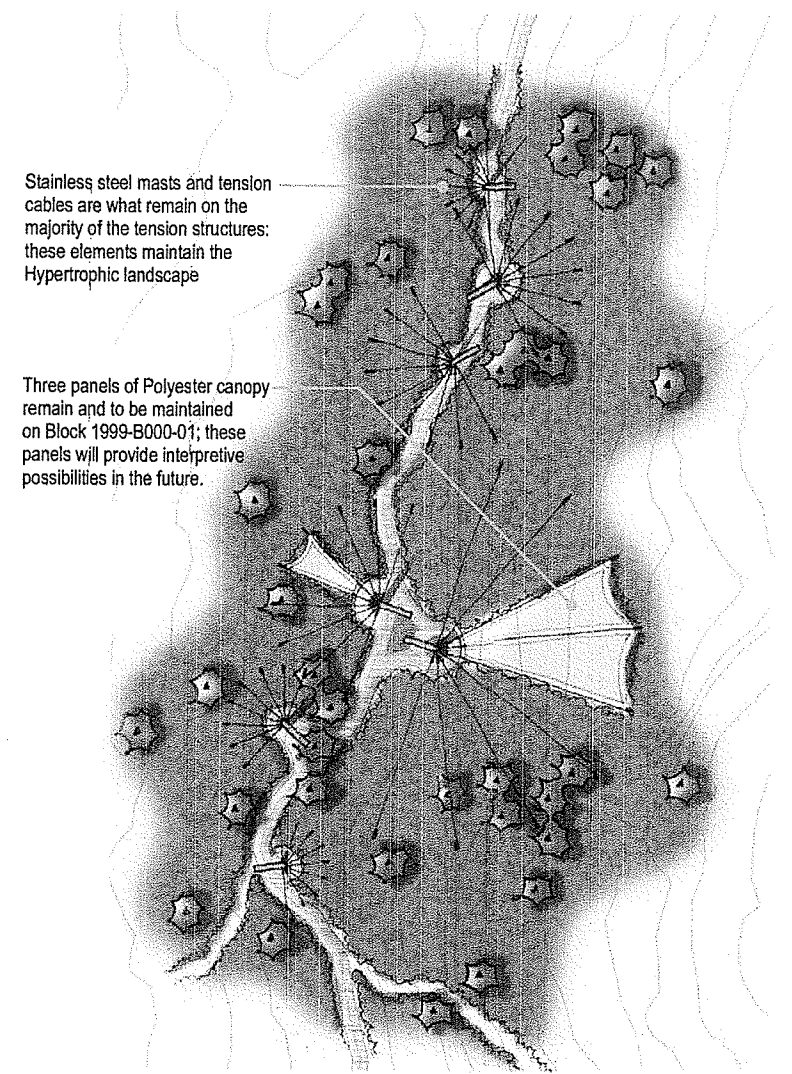
Main Entry to Block 1999-B000-01 - Detail
Scale 1:40

Stainless steel arching entry gates
Steel, black, entry gate support

Interpretive sign
(see detail on board 3)

Field stone (gathered from Research Forest)
Existing Research Forest vegetation

Layout - +twenty years
Hypothetical Site Plan
Not to scale

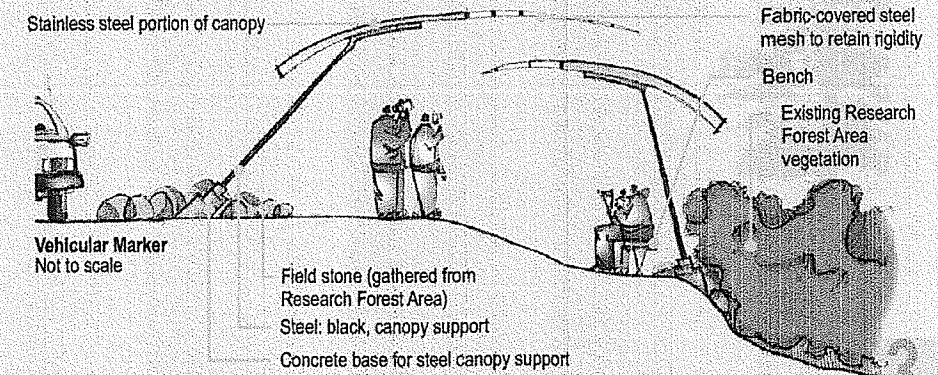
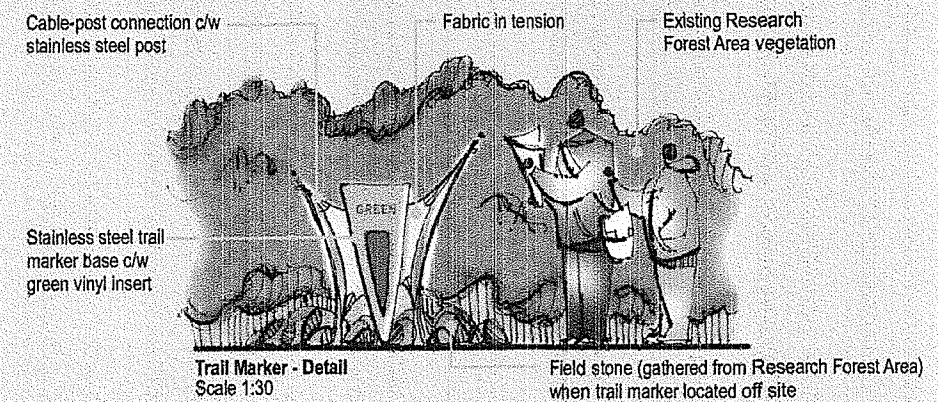
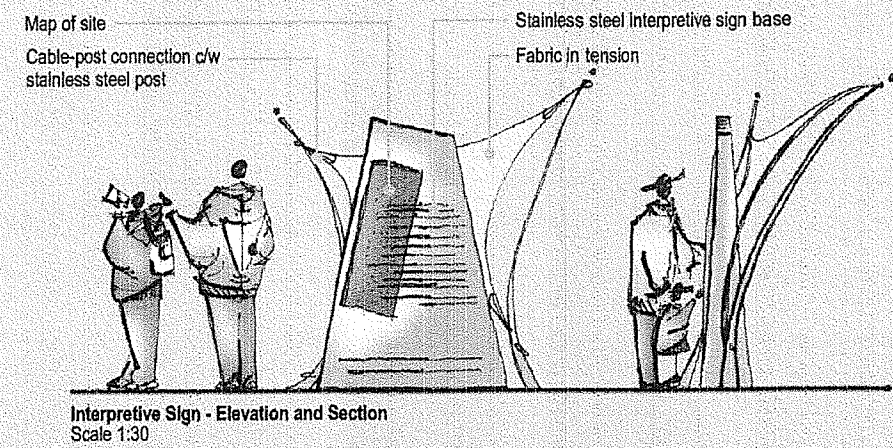
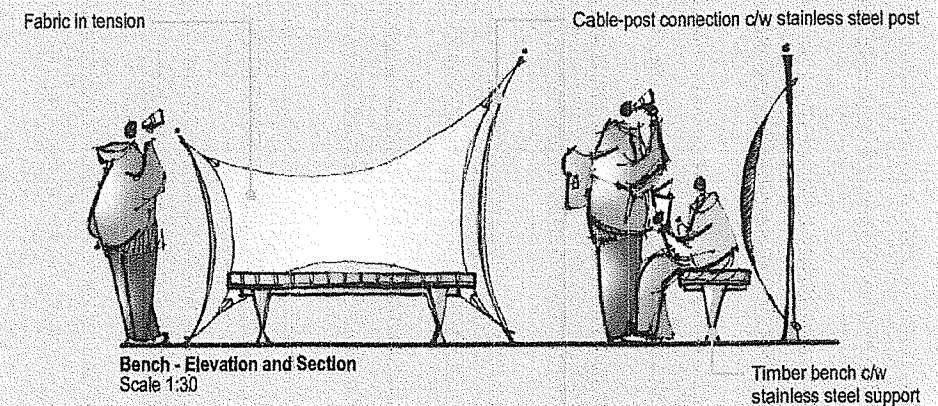
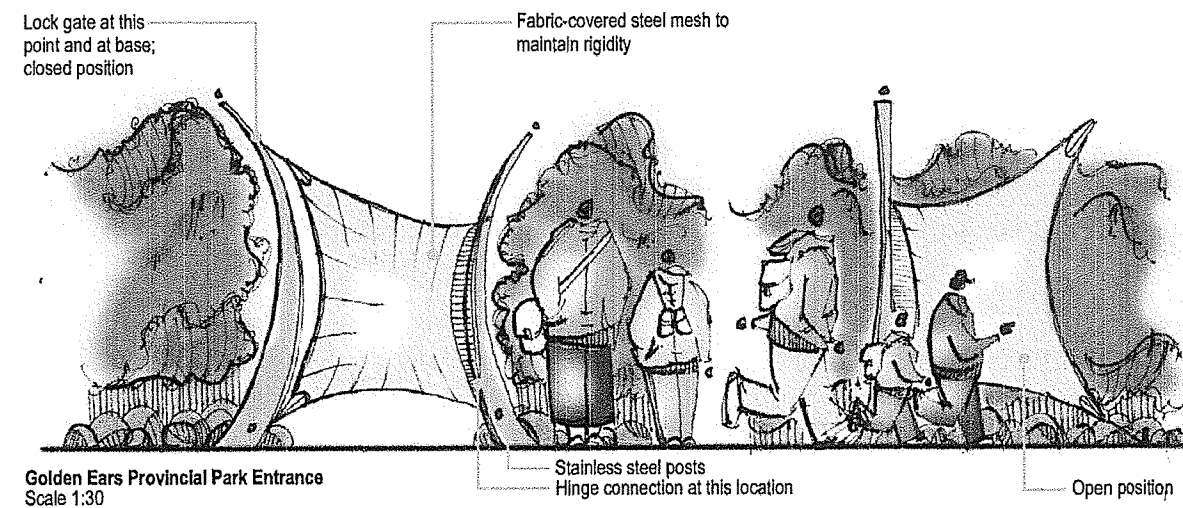
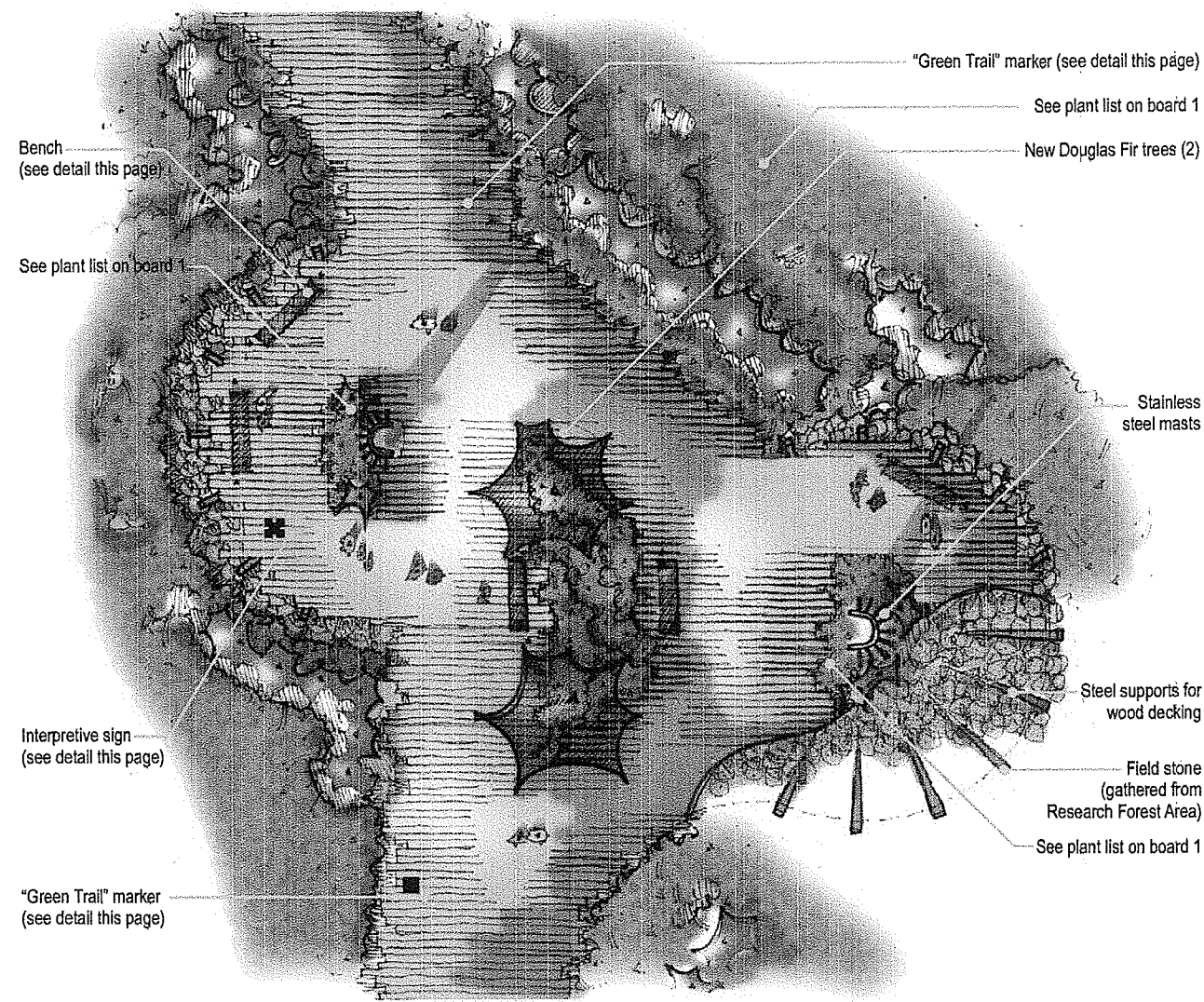


Stainless steel masts and tension cables are what remain on the majority of the tension structures: these elements maintain the Hypertrophic landscape

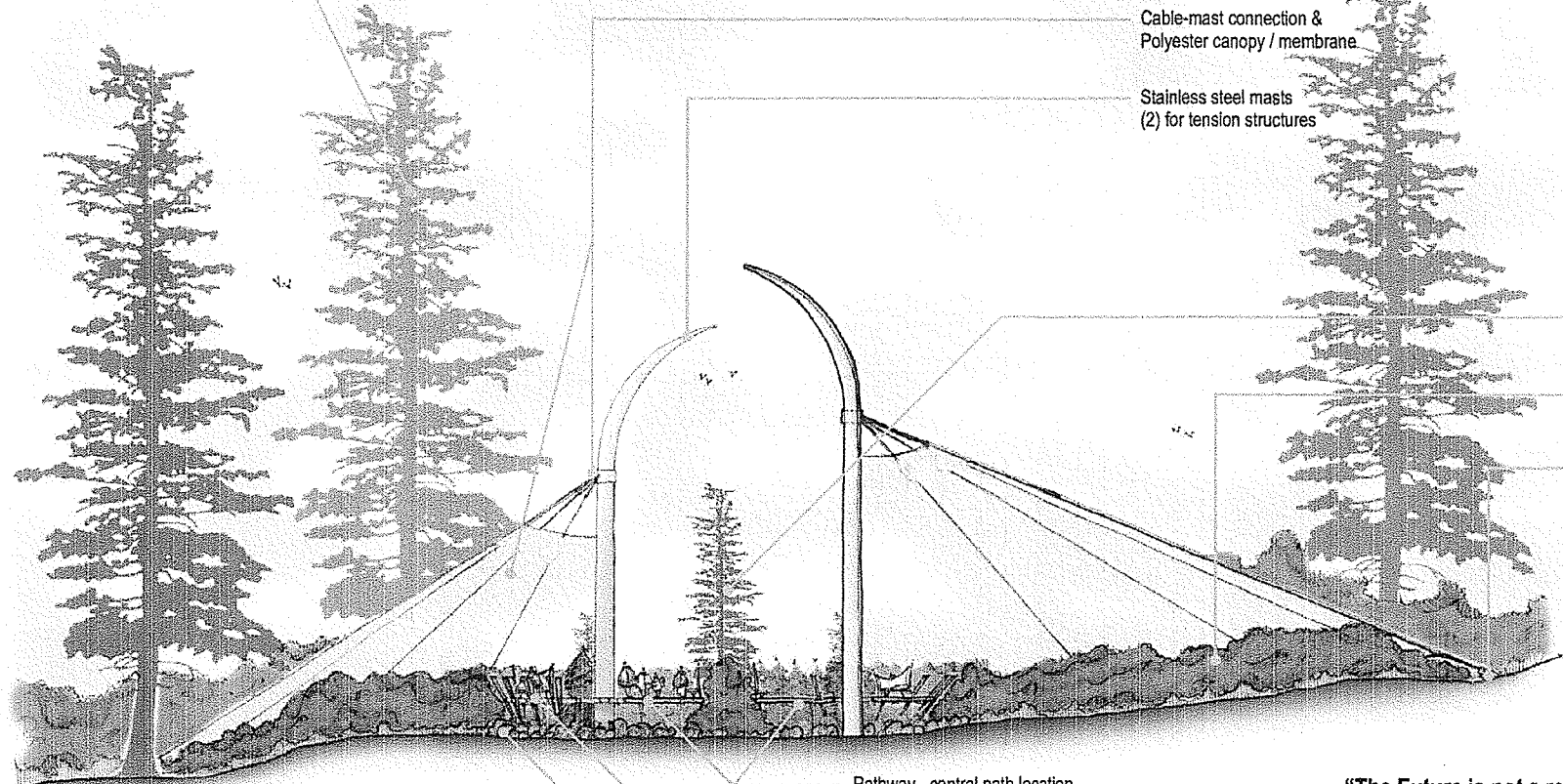
Three panels of Polyester canopy remain and to be maintained on Block 1999-B000-01; these panels will provide interpretive possibilities in the future.

"On a very basic level, we find ourselves riveted by scars and the terrifying or titillating stories they tell. To redeem an ugly scar, therefore, the wounded person must create a scenario that tells the story of the scar in an attractive and compelling light. People respond to them with a bit of fear, a bit of revulsion and a bit of excitement. When we see a scarred face, we instinctively find our eyes drawn to it; and our minds drawn to the story that scar may tell; a few insignificant decades of socialization are no match for millions of years of natural selection."
Elizabeth Austin from "Marks of Mystery"

Central Path - Plan View
Scale 1:100



Existing Douglas Fir stand

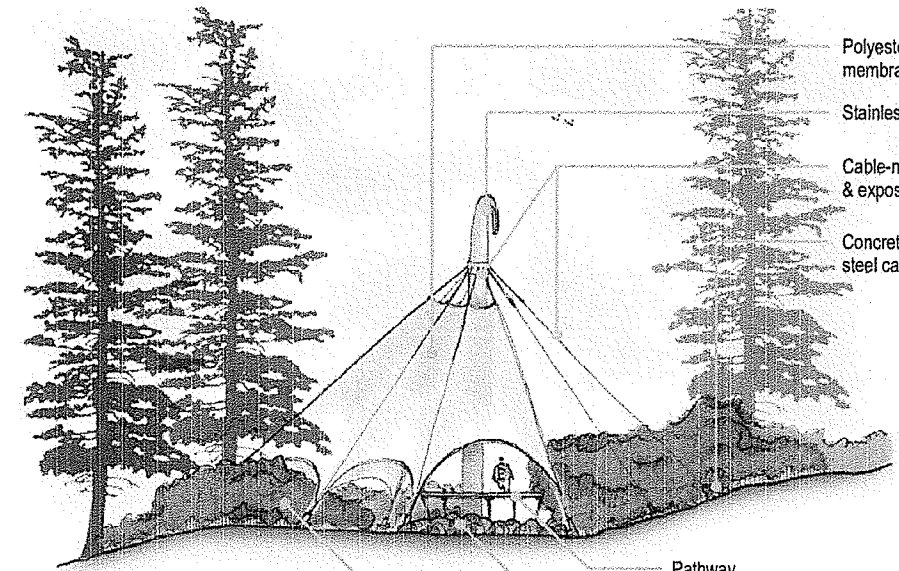


Central Path - Section A-A
Not to scale

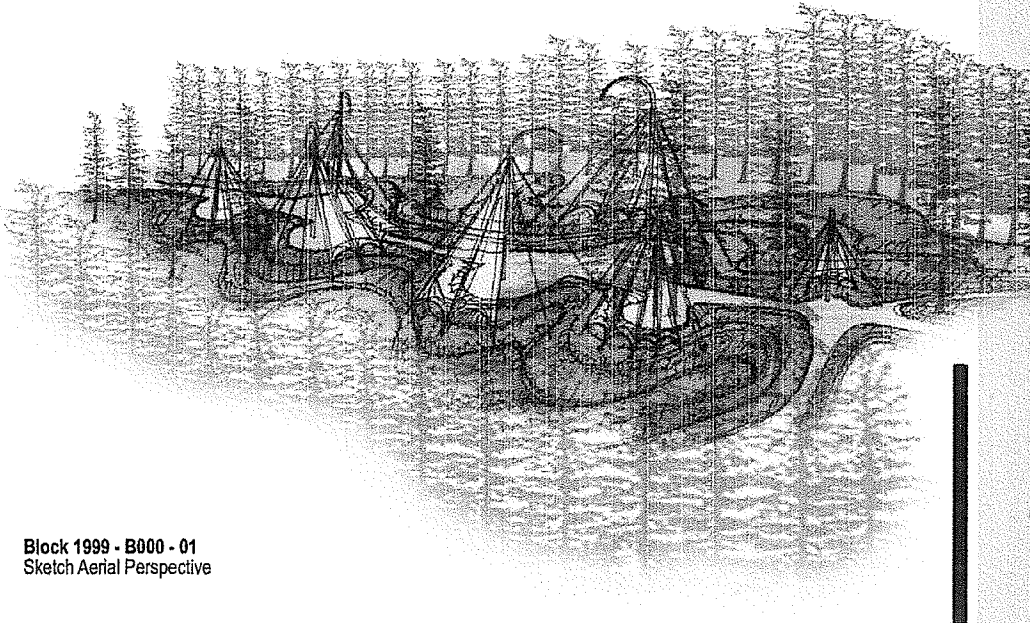
The landscape scar is a rehabilitated landscape wound. By identifying similarities between skin and landscape through the medical model of wound healing and body adornment, the reconnection to the environment may begin to occur; the landscape scar reintegrates into the greater matrix – healthy, functional, and beautiful. By relating the ecosphere to our bodies, ourselves, we begin to bring our own values and needs to the care of the environment – feeling nature through our bodies and treating nature as an extension of ourselves.

“The Future is not a result of choices among alternative paths offered by the present, but a place that is created – created first in the mind and will, created next in activity. The future is not some place we are going to but one we are creating. The paths are not to be found, but made, and the activity of making them, changes both the maker and the destination.”

John Schaar, *Futurist*



Path - Section/Elevation B
Not to scale



Block 1999 - B000 - 01
Sketch Aerial Perspective



viii. discussion

The future of this site will be created – it has been created in the mind and will and now needs to be created in activity. Visiting the site and engaging with it will allow it to continually exist. Design has facilitated the development of Block 1999 – B000 – 01, however it is the viewer and visitor that will give it meaning. The site aims to help develop environmental knowledge and awareness, it aims to reconnect humans to the ecosystem, and it promotes the evolution of the self.

The ecosphere surrounds us completely – it is a “magical ecological system that daily and seasonally renews its organic presence and cyclically replenishes its energy, air, water, and soil” (Rowe, 1990). Nature, essentially, is the whole of which we are the parts (Rowe, 1990). For nature to be at its healthiest, all parts must work together to serve the whole, thus preserving its dynamic character and diversity. To bring awareness to the health of our ecosystems, our landscapes, is to bring awareness to ourselves.

“We have all heard our history of relatedness from simple beginnings: of our cell parts indistinguishable from bacteria that appeared on Earth billions of years ago, of our DNA genetic material similar to that in other organisms, of our hemoglobin resembling chlorophyll in plants, of our blood salinity like sea water, our bones made from the stuff of corals and phosphorus-rich sediments. Obviously we belong to this surrounding system. Further, looking in from outer space, we have seen the blue cloud-swathed planet and realized with sudden shock our status as deep-air animals, living at the bottom of the atmosphere, enveloped in its transparent skin. How obvious now that we are Earthlings, evolved out of stardust, air and water, warmed by sunlight. No need to search for reasons nor labour arguments as to why we ought to place high valuation on the environment and protect it, because there it is – the Ecosphere or Homesphere – ourselves in it, and apparent intention of it, and

it an extension of ourselves.”

J. Stan Rowe from “Environmental Ethics – Ethical Ecosphere”

The ecosphere also provides a physical setting for our communities as well as being the “support system that sustains people physically, culturally, and spiritually” (Ewert and Kessler, 1996). It is important then, to find a way to bring ecosystem health to the forefront of people’s thoughts.

Design, as exemplified in this practicum, can attempt to bring back the relationship humans once had with the environment. Joan Iverson Nassauer and Marcia Muelder Eaton suggest that one way to redevelop such a relationship is through aesthetics. Ethical views can be shaped by aesthetic appreciation. Once the visual attraction to a landscape has been established, knowledge can emerge from interaction with the site and it is knowledge that “contributes to sustainability, for it not only sustains attention to the present, it also makes one more aware of what may or must be the case if attention is to be possible at all in the future. What is ecologically bad begins to be seen as aesthetically bad” (Eaton, 1997). Therefore, people should be exposed to a variety of landscapes to in fact understand landscape processes. The design of Block 1999 – B000 – 01 provides a unique place that encourages the development of knowledge by exemplifying the aesthetic of a healing landscape. The revealing of ecological functions through design, or ecological revelation, can “advance the evolution of new aesthetic conventions for the landscape” (Nassauer, 1997).

Providing places that reveal ecological function through design, encourages all those who interact with these places to examine their role in the landscape. To reveal the regenerative process of a forest block with medical wound healing analogies attempts to strike a parallel with the visitor to their own personal landscapes, their bodies, and more specifically, their skin. The association of landscape to self can perhaps change how the human population interacts with the environment. To change the present interaction with the environment would be to reduce “biological impoverishment – human society can no longer behave as if there are no ecological risks or assume that we can repair and replace the lost and broken parts of ecological systems after we recognize their importance to society” (Karr, 1997).

The landscape is a dynamic and diverse system that deserves our respect and care. We must acknowledge that we are part of everything around us: the air, the earth, and the sea: the past and the future (Csikszentmihalyi, 1993).

“The self, is a creative construction. No one is ever complete and finished. It is what you do in the future that determines who you are...There is no end to be found, no ultimate wisdom – just a slowly growing awareness that with time, becomes ever more rich and complex.”

Mihaly Csikszentmihalyi from The Evolving Self A Psychology for the Third Millennium

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figure index

Figure one - from *Grabb and Smith's Plastic Surgery Fourth Edition* (see bibliography)

Figure two - from *Grabb and Smith's Plastic Surgery Fourth Edition* (see bibliography)

Figure three - from *Grabb and Smith's Plastic Surgery Fourth Edition* (see bibliography)

Figure four - from <http://www.seismo.unr.edu> (see bibliography)

Figure five - from <http://www.forestry.ubc.ca> (see bibliography)

Figure six - from <http://www.forestry.ubc.ca> (see bibliography)

Figure seven - from <http://www.forestry.ubc.ca> (see bibliography)

Figure eight - from <http://ea.pamona.edu/goldsworthyart.html> (see bibliography)

Figure nine - from <http://ea.pamona.edu/goldsworthyart.html> (see bibliography)

Figure ten - from <http://witcombe.sbc.edu/modernism/endofart.html> (see bibliography)

Figure eleven - from <http://www.filmforum.com/rivershow.html> (see bibliography)

Figure twelve - from <http://faculty.evansville.edu/r129/art105/img/Christo/spo4/art105-9.html> (see bibliography)

Figure thirteen - from http://www.lentos.at/img/christo_466_1.jpg (see bibliography)

Figure fourteen - from <http://www.floriasigismondi.com> (see bibliography)

Figure fifteen - from <http://www.floriasigismondi.com> (see bibliography)

Figure sixteen - from <http://www.floriasigismondi.com> (see bibliography)

appendix one

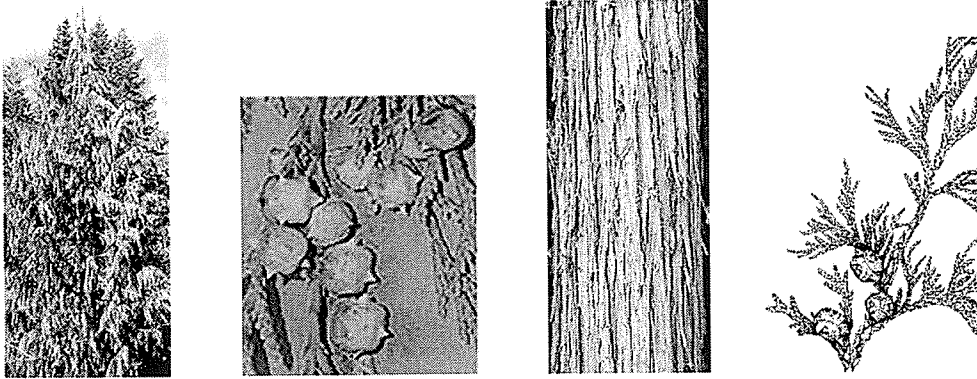
The following trees are present in the Malcolm Knapp Research Forest. The major species are the Douglas fir, Western redcedar, and the Western hemlock – please see “Inventory and Analysis” for their descriptions.

“**Amabilis fir** (*Abies amabilis*) is a common species in the higher elevation forest of BC which is primarily used for wood pulp and lumber. Like western hemlock, Amabilis fir is extremely shade tolerant and can grow over a range of different sites. The needles of the Amabilis fir are 2-3 cm in length, growing horizontally from the lower surface and sides of the twigs, and pointed forward on the upper surface of the twigs. Bark is smooth, light gray, and blotched with white patches, becoming scaly and grooved at the base of mature trees.” (www.forestry.ubc.ca)



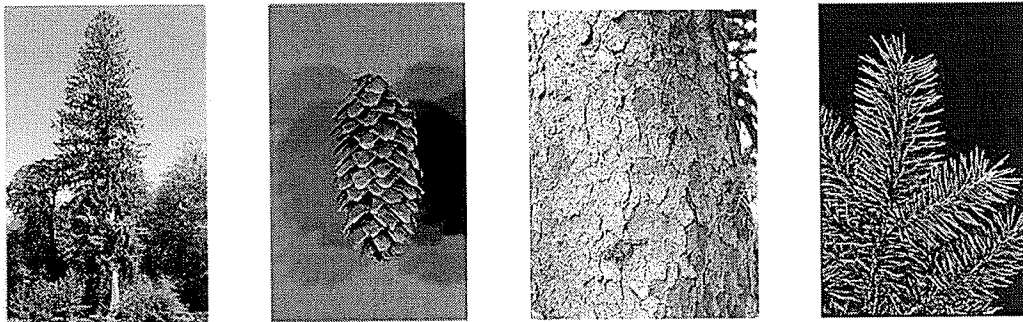
The Amabilis fir: the tree, its fruit, its bark, and its needles. (www.forestry.ubc.ca)

“**Yellow-cedar** (*Chamaecyparis nootkatensis*) is a common tree species which only grows in higher elevation forests in BC. Its wood is highly prized for boatbuilding and carving. Yellow-cedar requires a lot of moisture and is fairly shade-tolerant, growing either in pure stands or mixed with other conifers. Because of its habitat, yellow-cedar tends to grow very slowly, and can live for over 1500 years. In form, it is similar and easily confused with western redcedar, and is most readily distinguished by its finer leaf pattern, shaggier bark, and slightly unpleasant, resinous odour.” (www.forestry.ubc.ca)



The Yellow-cedar: the tree, its fruit, its bark, and its needles. (www.forestry.ubc.ca)

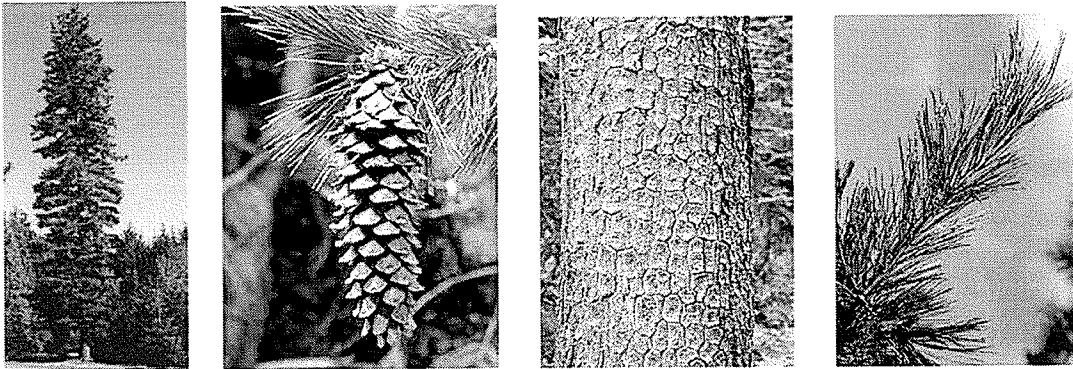
“**Sitka Spruce** (*Picea sitchensis*) is the tallest conifer in Canada, growing close to 100 m in height and commonly more than 2 m in diameter. Sitka spruce likes a wet, well-drained site, and grows particularly well along stream banks, where its thick roots protect banks from erosion. Like all spruce, its needles are sharp and stiff, approximately 3 cm in length. Its cones are large, from 5 to 12 cm in length, and its bark is reddish-brown, with large, loose scales. Sitka spruce are unfortunately attacked by an introduced pest called the spruce weevil or the white pine weevil (*Pissodes strobi*) which kills the leader of the trees, seriously affecting both growth and form of the trees. Much research into finding Sitka Spruce which are genetically resistant to this weevil is being carried out in BC.” (www.forestry.ubc.ca)



The Sitka Spruce: the tree, its fruit, its bark, and its needles. (www.forestry.ubc.ca)

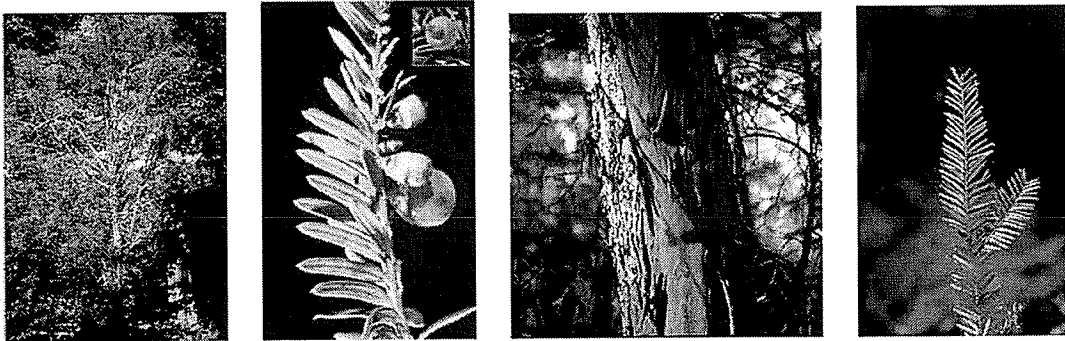
“**Western White Pine** (*Pinus monticola*) thrives on a wide variety of sites from bogs to sandy soils, but it tends to favour moist valleys and slopes with a northern exposure. Its long needles are distinctive; they grow in clusters of five, up to 12 cm long, and are flexible and soft to the touch. Young white pine bark is smooth and greyish-green, while older bark tends to have scaly, thick plates. Growth of white pine has been significantly affected over the last few decades by an

introduced disease called the white pine blister rust (*Cronartium ribicola*), which often kills young trees." (www.forestry.ubc.ca)



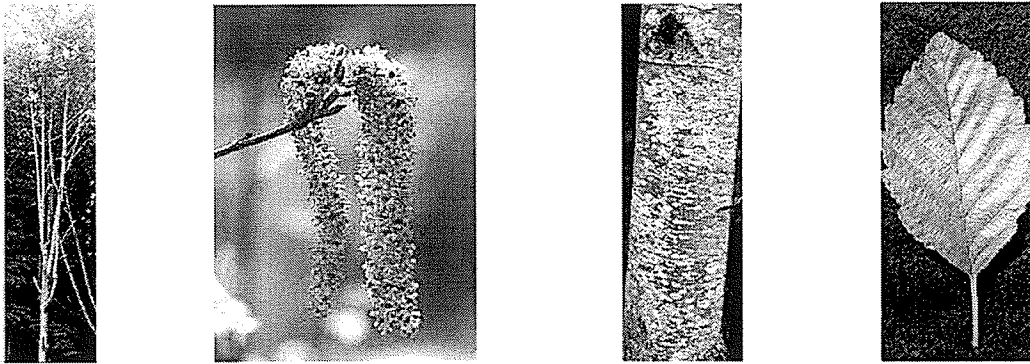
The Western White Pine: the tree, its fruit, its bark, and its needles. (www.forestry.ubc.ca)

“Pacific Yew (*Taxus brevifolia*) is a small western tree, sometimes a shrub, with spreading, irregular branches.” (www.forestry.ubc.ca)



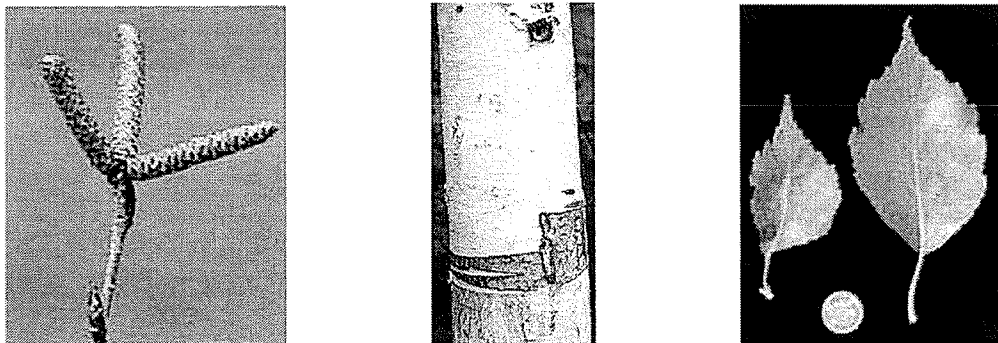
The Pacific Yew: the tree, its fruit, its bark, and its needles. (www.forestry.ubc.ca)

“Red Alder (*Alnus rubra*) is a "pioneer" deciduous tree, one of the first species to reclaim cut or burnt areas. However, it rarely lives over 80 years and is usually replaced by conifers through natural successive processes. Red alder plays an important role in the ecosystem because it can "fix" nitrogen into the soil with the help of a nitrogen-fixing bacteria associated with its root system. Because nitrogen is often the limiting nutrient to tree growth in our soils, growing red alder on a site can improve the productivity of the soil. The bark of red alder trees is smooth and light gray, while its leaves are ovoid or rhombic in shape.” (www.forestry.ubc.ca)



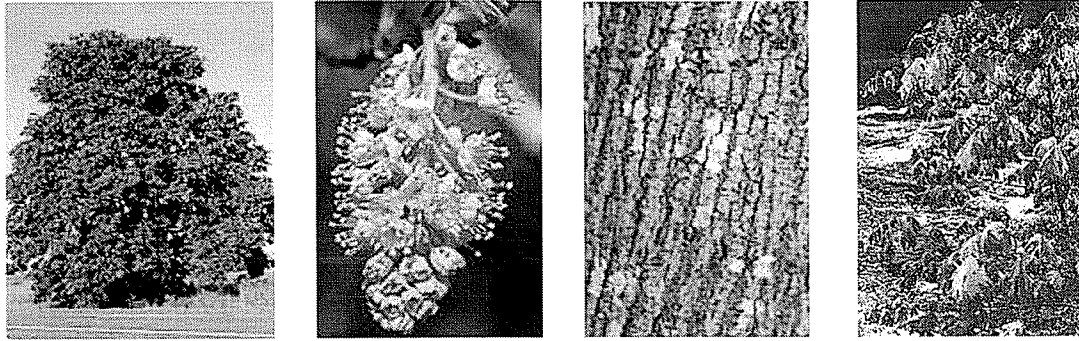
The Red Alder: the tree, its fruit, its bark, and its leaf. (www.forestry.ubc.ca)

“**Paper Birch** (*Betula papyrifera*) is a deciduous tree species which occurs in all forested regions across Canada, commonly on forest edges, lakeshores and roadsides. The leaves of the paper birch are ovate or triangular, 5-10 cm in length, with pointed tips and teeth along their outer edges. Bark tends to be thin, smooth, and dark red on young stems, becoming reddish-brown and then creamy white when older. The mature bark often sheds in large sheets, which are widely used for canoe-building and various crafts.” (www.forestry.ubc.ca)



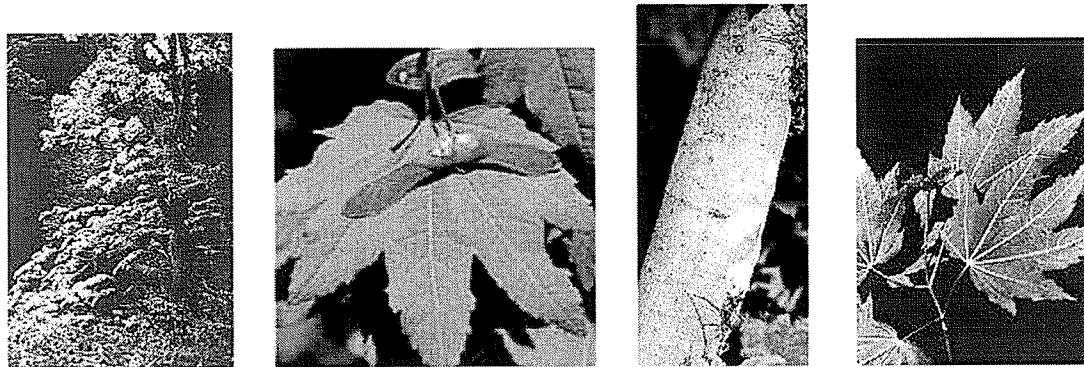
The Paper Birch: its fruit, its bark, and its leaf. (www.forestry.ubc.ca)

“**Bigleaf Maple** (*Acer macrophyllum*) is a deciduous tree often used to make furniture, panelling, and musical instruments. Bigleaf maple prefers coarse, gravelly, moist soils, and is moderately shade-tolerant. Because its bark retains moisture, the trunk and larger branches are often covered with mosses, liverworts, and ferns. Bigleaf maple is the only tree-sized maple native to the Pacific coast, and is easily recognized by its large (15-60 cm wide) 5-lobed maple leaves.” (www.forestry.ubc.ca)



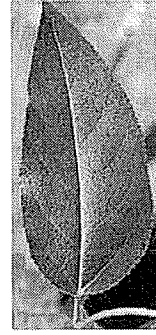
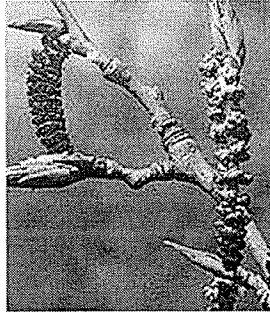
The Bigleaf Maple: the tree, its fruit, its bark, and its leaves. (www.forestry.ubc.ca)

“**Vine Maple** (*Acer circinatum*) is a shrub-sized deciduous tree growing in multiple stems which tend to form beautiful arched patterns throughout the coniferous forests of the Pacific northwest. Vine maple is an important wildlife tree, with many species of birds and mammals depending on its seeds and leaves for food. The leaves of the vine maple are lobed like all maples, but are almost circular in outline.” (www.forestry.ubc.ca)



The Vine Maple: the tree, its fruit, its bark, and its leaves. (www.forestry.ubc.ca)

“**Black Cottonwood** (*Populus trichocarpa*) is the largest deciduous tree native to BC, tending to grow in bottomlands where it reaches its greatest size of up to 35 m in height. The leaves of the black cottonwood are broadly ovate with a rounded base and fine teeth around their edges. Buds have a characteristic fragrant smell which made them popular for use in salves and ointments. Bark on young trees is smooth, greyish-green or yellowish-green when young, becoming dark grayish-brown and furrowed when older.” (www.forestry.ubc.ca)



The Black Cottonwood: the tree, its fruit, its bark, and its leaf. (www.forestry.ubc.ca)