ENGAGING A FOREST MANAGEMENT ADVISORY COMMITTEE: PERSPECTIVES ON THE EFFECTIVENESS OF WEB-BASED TOOLS

by

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A thesis submitted to the Faculty of Graduate Studies in
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"Engaging a Forest Management Advisory Committee:
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ABSTRACT

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Learning and dialogue are cornerstones of meaningful public involvement. This research evaluated the effectiveness of a web-based tool as a means of informing participants in a stakeholder advisory committee, from the perspectives of learning, dialogue and critical reflection.

A website (2 versions - www.borealbuzz.com, www.borealbuzz.com/borealII) was developed for use by the Sustainable Forest Management Advisory Committee for Tembec Inc.- Pine Falls, Manitoba.

A number of potential benefits of web-based tools were identified including an accessible source of photos, maps, and information on sustainable forest management external to the committee. Emergent influencing factors included the digital divide, divergent perceptions about the role of learning and informed participation at committee meetings, a stakeholder process that tended to emphasize equal participation over informed participation and, an unrealized potential for critical reflection. A number of recommendations have been made for the successful introduction of a web-based tool into a public involvement context.

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CHAPTER 1: INTRODUCTION

1.1 Background

Canada is home to 10% of the world's forests. Increasingly a diversity of values is being voiced regarding the sustainable management of Canadian forests. Public participation in the management of these forests has emerged along three lines of rationale, including a need for continuous scrutiny of environmental matters, as a human right, along the lines of the right to vote and the right to information, and as a prerequisite for legitimacy and public acceptance of laws, rules and decisions (Applestrand, 2002). Effective public involvement has the potential to benefit society in a number of ways, including communication, relationship building, conflict resolution and, environmental education (Leskinen, 2003).

Public involvement is increasingly valued in the Canadian forestry context. It is entrenched in government guidelines (i.e. Manitoba Conservation, 2002), Canada-wide forest sustainability indicators (i.e. Canadian Council of Forest Ministers, 2003), certification processes (Forest Stewardship Council, 2003; Canadian Standards Association, 2003), and forest company policies (i.e. Tembec, 2002).

Multi-stakeholder processes are one of the tools used by companies and organizations to receive ongoing input into planning and activities. Stakeholder advisory committees are increasingly used by forest companies to obtain input in forest planning and to facilitate sharing of concerns of local stakeholders regarding forestry practices. Advisory involvement level can range from two-way communication where the final decision is left to the decision-making body (Robinson, Robson et al., 2001) to extended involvement where the public can influence the final decision (Sinclair and Diduck, 1995). Stakeholder advisory committees allow for public consultation that can be less

costly and more practical in times of rapid decision making when compared to full public consultation (Roberts and Marshall, 1996; Vasseur, LaFrance et al., 1997). The role of stakeholder advisory committees can range from voicing concerns and raising political, social and environmental issues to input during planning and operations (Vasseur, LaFrance et al., 1997).

Fair and effective public involvement hinges on the learning that occurs during the public involvement process; learning is also an outcome of effective involvement (Fitzpatrick and Sinclair, 2003). Adult learning may in part be grounded in critical social theory, which refers to "how adults unlearn their adherence to unfreedom" (Welton, 1995) and become empowered actors in their own lives. Jürgen Habermas has contributed to critical theory by developing the theory of communicative action (Habermas, 1984). Learning, according to Habermas, may serve the system which is governed by capitalism and technology, or it may serve the social world, which is governed by meaning and ethics, and is the foundation of democracy (Welton, 1995). Developing communicative competence, based on speech that is true, truthful and sincere, is central to Habermas' concept of a democratic society (Littlejohn, 1992). Communicative action theory has been increasingly used to evaluate the effectiveness of public participation discourse (Palerm, 2000; Webler and Tuler, 2000; Santos and Chess, 2003).

Adult learning theory considers the connection between adult learning and empowerment leading to social change. Reminiscent of Habermas' emphasis on communicative action, dialogue as a medium for learning is central to adult learning theory. Emerging from different social contexts, Paulo Freire (Freire, 1972) and Jack

Mezirow (Mezirow, 1995) have each contributed to transformative learning theory, situated within the broader context of adult learning theory. In addition to dialogue, both Freire and Mezirow consider praxis to be central to transformative learning. Praxis is a process of reflection on one's assumptions and perspective before taking action. The two theories diverge in their desired outcomes. Freire's pedagogy is focused on learning that results in social change by creating an empowered learning experience for the student while Mezirow's theory is focused on the cognitive process of learning that results in frames of references that are "inclusive, discriminating, self-reflective, and integrative of experience" (Mezirow, 1997, p. 5). Transformative learning theory has been increasingly applied to public participation in the environmental assessment (EA) context (Sinclair and Diduck, 2001; Fitzpatrick and Sinclair, 2003) to assess how the EA process supports adult learning.

Communication, learning and reflection are important aspects of stakeholder advisory committee (SAC) deliberations. Participants learn about forest management issues as well as the concerns of other members through dialogue, presentations, site visits and written materials (McGurk, 2003). Learning in SACs may be hindered in a number of ways such as the use of complex jargon, limited scope of learning, issues around time, and large amounts of information. Field trips are among the most favored because of their visual nature (Webler, Kastenholz et al., 1995; McGurk, 2003). Often used in education, field trips increase learning by providing concrete sensory input, thus helping students derive meaning from information. They also add variety, relevancy and realism to topics, and appeal to a variety of learning modes. While field trips generally

have wide appeal, their use is typically limited by investments of time and money (Tuthill and Klemm, 2002).

While there is no substitute for face-to-face encounters in the field and the opportunity to observe nature first hand, there may be a place for web-based tools. In the public participation context, web-tools have the potential to reduce the abstraction of more complex topics and represent the world in an intuitive way that a lay person can understand (Ball, 2002). While inequities related to computer access and ability need to be acknowledged, the trend toward web-tools is increasing worldwide (Kingston et al., 2000).

Web-based field tours are multimedia presentations, usually on computers, that describe places through sights and sounds using photographs and video (Klemm and Tuthill, 2003). Web-based field tours are used extensively in the education system both to replace and prepare for field tours, however the latter is found to be most successful among university students (Spicer and Stratford, 2001). There are several benefits of web-based tours including allowances for multicultural, multidisciplinary and multiple ways of learning, interactivity, links to in-depth information and low cost (Stainfield et al., 2000; Tuthill and Klemm, 2002). Drawbacks of web-based field tours include computer accessibility, diminished sensory experience and loss of interactivity (Klemm and Tuthill, 2003). From an advisory committee perspective, web-based field tours could provide some of the visual and interactive benefits derived from real field trips, thus adding meaning to highly technical concepts normally presented in a written format. Further, people could access the information from home, allowing them to prepare more fully for advisory meetings. From a company perspective, web-based field tours, which

cost less and potentially involve less time, could be used as an alternative to real field trips (without replacing them completely).

1.2 Purpose/Objectives

The purpose of this research was to assess the effectiveness of web-based tools in promoting competent and meaningful discussion during stakeholder advisory committee meetings. The specific study objectives were to:

1. Adaptively construct a web-based tool to provide information relevant to SFMAC meetings to committee members.
2. Consider the effectiveness of web-based tools in communicating complex information in stakeholder advisory processes.
3. Explore the potential of web-based tools to promote meaningful public participation through learning and dialogue within the social context of advisory committees.
4. Add insight to the best practices of using web-based tools in a public participation context.
5. Make recommendations to the forest planning community regarding the integration of web-based tools into public participation programs.

1.3 Methods

This research used a naturalistic inquiry, case study approach with the Sustainable Forest Management Advisory Committee at Tembec Inc. - Pine Falls. The naturalistic inquiry approach allows for emergent data in a natural field setting. The research consisted of five stages:

1. development of a website;
2. reviews of the website by committee members;

3. distribution of website or CD and a survey to participants;
4. participant observation at a committee meetings; and,
5. participant interviews.

These five stages were repeated twice. Qualitative data obtained from the study was in part analyzed using NVivo software. Once information was compiled, the advisory committee verified the information.

1.4 Organization

This thesis is organized into six chapters. The first chapter provides the project rationale, purpose and objectives. The second chapter is a literature review, including reviews of 1) the stakeholder advisory committee as a tool for public participation; 2) non-formal and social learning in the public participation context and 3) web-based tools to promote learning. The third chapter outlines methods used and the fourth chapter presents results. A discussion of the results occurs in the fifth chapter. The last chapter provides conclusions and recommendations for future work of this nature.

CHAPTER 2: PUBLIC INVOLVEMENT, LEARNING AND WEB-BASED TOOLS

2.1 Overview

In this chapter, public involvement is discussed using literature and case studies, largely in Canada (2.2). Learning and communication are discussed from public involvement and theoretical perspectives, drawing largely on Habermas and transformative learning perspectives (2.3). An overview of the use of web-based tools in public involvement is provided, with a focus on its use in natural resource planning (2.4). Experiences cited in education literature provide insight into how web-based tools lead to learning.

2.2 Public Involvement in Sustainable Forest Management

One-tenth of the forests on earth are located in Canada, including one-third of the boreal forest ecosystem. Over half of Canada's forests are currently managed by the timber industry, an industry that contributes to one-fifth of the Canadian economy (NRCan, 2003). Aside from forest harvesting, forests provide other values to Canadians including non-timber forest products, subsistence, tourism, recreation, ecological, historical and spiritual values, to name a few (Beckley, 2000). Given the political and social importance of forests, in addition to increasing public pressure for sustainable forest management (i.e. World Resources Institute 2000; Greenpeace 2003), the focus in forest management is shifting beyond forest productivity and towards public involvement (Williams and Stewart, 1998). This is a movement away from traditional models of resource extraction centered on long term economic development, growth and stability and towards an ecosystem stewardship model that includes socioeconomic, cultural and environmental health (Kennedy, Thomas et al., 2001). The latter, which has been articulated during the

past decade, seeks to incorporate a multiplicity of forest values (Kennedy, Thomas et al., 2001).

National forest policy recognizes the need for broad public involvement because "all Canadian's have a stake in the future of our country's forests" (NRC, 2003). A number of rationales for public involvement in environmental decisions have been articulated in the literature. Public scrutiny of environmental issues and the sharing of lay knowledge can improve the quality of decisions (Webler, Kastenholz et al., 1995; Applestrand 2002). Also, public involvement may be an avenue for exercising broad human rights to information, to a vote and to a fair trial (Tanz and Howard, 1991; Applestrand, 2002). Finally, public participation can be viewed as necessary for the public acceptance of laws, rules, and decisions in a democratic society (Applestrand, 2002; FSC, 2003). Perhaps common to these rationales is the view that greater power in environmental decision-making needs to be extended to the public, beyond that of the democratic right to vote for a representative (Buchy and Hoverman, 2000). Effective public involvement can also be rationalized based on a number of benefits to society including improved communication, relationship building, conflict resolution, critical reflection, social learning, and non-formal adult education (Sinclair and Diduck, 1995; Carr and Halvorsen, 2001; McCool and Guthrie, 2001; Leskinen, 2003; Schusler, Decker et al., 2003).

From a Canadian perspective, public involvement in sustainable forest management has been included at the national level (i.e. Canadian Council of Forest Ministers (CCFM, 2003), the provincial level (Manitoba Conservation, 2002), and in industry (i.e. Tembec - Pine Falls). For example, in a criteria and indicators report

published by Tembec - Pine Falls, public involvement statistics for 2002 included 259 public meetings, field tours, open houses, and symposiums (Tembec, 2003). Tolko Industries Ltd. and Louisiana-Pacific Corporation, the two other forest companies with Forest Management Licenses to operate in Manitoba, report using similar public involvement techniques.

Additionally, forestry certification, which is increasingly sought after by forest companies as a way of increasing market share, includes public involvement as a requisite. The Forest Stewardship Council suggests the public be involved in areas such as forest management planning and review and evaluation of monitoring results (FSC, 2003). The Canadian Standards Association, another certification body, suggests that companies use a variety of techniques to achieve more effective public involvement (CSA, 2003). While public involvement techniques are being called for and used, one challenge is to ensure that it is meaningful.

Critics have questioned the ability of the public to improve the quality of environmental decisions, on the grounds that there may be limited use of scientific knowledge and technical analysis by lay people and that decisions are often made in an intense political pressure to provide rapid input (Beierle, 2002). To determine the validity of this criticism, a US study considered 239 case studies of government-driven stakeholder processes, ranging from open participation to formal stakeholder negotiations. The study concluded that stakeholders were a source of new information and ideas, used technical resources in their processes and were instrumental in better decisions. The study also found that more intensive stakeholder processes produced higher quality decisions than traditional public participation processes (Beierle, 2002).

The authors concluded this was because in more intensive processes members were often more knowledgeable, more time and resources were available to educate stakeholders and participants perceived intensive processes as indicative of having more influence over the final decision (Beierle, 2002).

As indicated by the above study, public involvement effectiveness may be associated with levels of public involvement. Robinson (2001) provides three broad categories of public involvement in forest management: directive, consultative and collaborative. Directive involvement has been the most widespread method of involvement in Canada (Robinson, Robson et al., 2001), and includes persuading, informing or educating the public (Arnstein, 1969) with no guarantee that public input will be used in the decision making process. This "decide-announce-defend" approach has resulted in a cynicism on the part of the Canadian public, resulting in a move towards more inclusive approaches in order to gain legitimacy. Consultative public involvement engages the public in an extensive exchange of information and ideas, while the final decision rests with the company. Lastly, in collaborative public participation processes, the final decision is the responsibility of citizens (Robinson, Robson et al., 2001). Arnstein, who developed the ladder of participation in the 1960's, considered collaborative public participation to be the highest level of citizen control (Arnstein, 1969). The following figure provides a comprehensive view of "ladders" subsequently developed to depict different levels of involvement in different contexts (Green and Hunton-Clarke, 2003).

Table 1 Types of Participation

Increasing Levels of Involvement

Community				Company
Arnstein (1969)	Dorcey et al. (1994)	Wilcox (1994)	Pretty & Shah (1994)	
Citizen Control	Ongoing involvement	Supporting	Self mobilization	Decisional
Delegated power	Seek consensus	Acting together	Interaction participation	
Partnership	Test ideas, seek advice		Functional participation	Consultative
Placation	Define issues	Deciding together	Participation by consultation	
Consultation	Consult on reactions	Consultation		
Informing	Gather info perspectives		Participation by information giving	Informative
Therapy	Educate	Information	Passive participation	
Manipulation	Inform			

adapted from Green and Hunton-Clarke, 2003

In addition to viewing public participation from the perspective of community, Green and Hunton-Clarke (2003) suggest it is useful to consider a simplified range for use by companies (far-right column of Table 1). It is thought that a simplified version may be more useful to a company when considering how the public might be involved in a broad range of company decisions. Consideration to relative benefits and risks are give to each level. An informative approach, such as advertising or basic two-way dialogue can be an easy way of informing the public; however this approach can also result in protests and public resentment if the public is not satisfied with the level of information provided. Consultation, in which participants are asked for views and perspectives on

issues, may be beneficial for highlighting potential problem areas and achieving more acceptable outcomes. However this approach could also raise stakeholder expectations of what an end result might be, potentially resulting in negative relations if the expectations are not met. Decisional participation is the early inclusion of stakeholders in decisions and may result in a high degree of social success. On the other hand, it can be time and energy intensive, and may result in a different decision than was initially sought (Green and Hunton-Clarke, 2003). Green and Hunton-Clarke (2003) conclude that it is important for a company to be clear on its reasons for public involvement and the level of commitment it is willing to sustain. If a company is unable to sustain a commitment, a damaged reputation could result (Green and Hunton-Clarke, 2003).

As mentioned earlier, forest companies have a broad range of public participation tools available to them. Companies increasingly use stakeholder advisory committees to gather forest management input from stakeholders, often on an ongoing basis. The level of member involvement can range from information sharing and dialogue where the final decision is made by the sponsor (Robinson, Robson et al., 2001) to direct influence over the final decision (Sinclair and Diduck, 1995). Stakeholders may be broadly defined as "all those who affect or are affected by the policies, decisions, and actions of the system; they can be individuals, communities, social groups or institutions of any size, aggregation or level in society" (Grimble, Chan et al., 1995) and may be narrowly defined in the forest context as members of society that have localized interest in or specialized knowledge about a forest area (Roberts and Marshall, 1996). Stakeholder advisory committees consist of members of the public, which voluntarily assemble to comment on forest management activities, with no decision making authority.

Stakeholder advisory committee (SAC) members can contribute to sustainable forest management in a variety of ways including providing input during planning and operations, problem solving and raising political, social and environmental issues (Beierle, 2002; Santos and Chess, 2003). Similar to those mentioned earlier, benefits of stakeholder advisory involvement can include capacity building, social learning, conflict resolution and networking (Beierle, 2002).

Recent interest in stakeholder advisory committees has led to interesting findings. McGurk (2004) reviewed three forest-based stakeholder advisory committees in Manitoba from the perspectives of process and outcomes. Table 2 the lists broad strengths and weaknesses found through a process of interviews and observation:

Table 2 Strengths and Weaknesses of Stakeholder Advisory Committee Processes

	Strengths	Weaknesses
Processes	Appropriate involvement techniques	Breadth of involvement
	Good facilitation	Lack of aboriginal involvement
	Openness	Low attendance levels
	Effective conflict management	Representational problems
		Membership turnover
		Complex language (terminology)
		Infrequent meetings
Outcomes	Learning	Inadequate involvement in forest management and planning decisions
	Committee members' optimism about advisory committee processes	Time issues
	Relationship building	
	Ability to influence site-specific forest management and planning decisions	

adapted from McGurk 2003

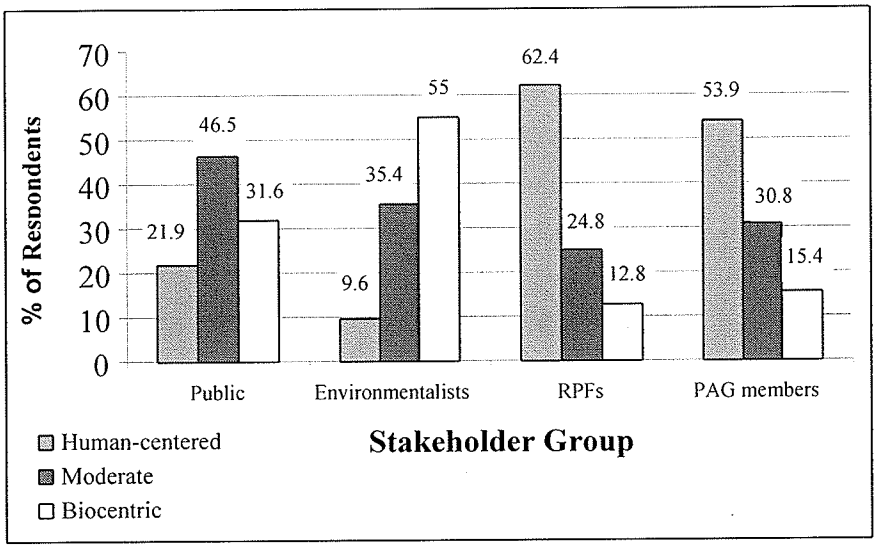
The following selected results from Table 1 will be considered, given their relevance to communication and learning: namely appropriate involvement techniques; learning, complexity of language; inadequate involvement in forest management and planning decisions; issues surrounding time; and membership changes.

Appropriate Involvement Techniques. McGurk (2004) indicates that a number of involvement techniques were used by forest companies to involve committee members, including computer-based presentations, minutes of meetings, discussion, site

visits, maps, handouts and annual operating plan reviews (McGurk, 2003). He also found that participants preferred visual techniques and site visits, due to their ability to impart shared meaning, provide visual meaning, and explain complex concepts. Site visits also enhanced relationship building, increased communication between the forest company and participants, and increased participation of aboriginal people.

While it appears that the companies have provided a number of avenues for involvement, research by Parkins (2002) and McFarlane (2000) is critical of information provision in forest management advisory committees. Based on a study of 14 public advisory groups in Alberta, Parkins indicates that advisory committee members mainly receive their information from registered forest practitioners (though also from other sources such as forest visits, scientists, government and NGOs), who generally organize public advisory committee meetings and that this may result in a general alignment with registered forest practitioner (RFP) views and less so with the general public. Data from which this stems (McFarlane, 2000) is presented in Figure 1. The figure indicates that both public advisory group (PAG) members and RPFs tended to have similar views about the environment, largely human centered, and this different from both the general public and environmental groups, which have higher biocentric (nature-centered) or moderate views.

Figure 1 Stakeholder Group Views about the Environment



adapted from McFarlane 2000

Research also indicated that members of public advisory groups tend to place more emphasis on the economic benefits of the forest (i.e. wealth and jobs) while the public and environmental groups placed more emphasis on recreation, relaxation and environmental benefits of the forest. Further, members of the public advisory groups were more optimistic, felt that timber supply was adequate and that multiple benefits were being considered. The greater risks to forests were perceived as external to the forest industry, such as oil and gas industry, urbanization, agriculture and negative publicity. The environmental groups and general public, on the other hand, viewed forest management as inadequate, that the public did not have enough input and that the greatest risks to the forest were forestry operations, such as the number of trees logged and the land allocated for forest harvesting (McFarlane, 2000). These results have representational implications for public advisory groups (also noted as a weakness by

McGurk, 2003). Parkins summarizes his critique by suggesting the public advisory groups may be "closely controlled groups of citizens who are educated selectively about the operations of the forest company in such a way as to render them effective in communicating company achievements" (Parkins, 2002). Therefore, while a variety of involvement techniques may be successfully used, the techniques may not be enhancing democratic public involvement.

Learning. McGurk (2003) also found that there are two main areas of learning for participants: forest management and planning activities of the company, and "the concerns, perspectives, values and local knowledge of committee members" (McGurk, 2003). Much of this learning happened through the committee itself, via dialogue and information exchange, as well as through visuals such as site visits and maps. In addition to participant learning, learning also occurred among forestry staff about public involvement techniques. The process of communicating has also been a learning experience for participants and, for some, increased their communicative ability.

Learning is often cited as a favorable outcome of public involvement processes (Sinclair and Diduck, 2001; Beierle, 2002). McFarlane (2000) also found that members of public advisory groups reported higher knowledge levels about forest management issues than the general public and environmental groups. On the flipside, education focused on certain aspects of forest management, as discussed above (Parkins, 2002), may result in a situation where committee members become brokers of company success stories. Therefore, access to information to ensure broad based learning from a variety of sources may be an important component of public advisory processes.

Complex language. Participants revealed challenges in understanding the material presented to them thus affecting their ability to provide informed input. Challenges were related to the scientific and technical nature of the information, as well as the technical jargon that was used to describe the information. At the same time, participants felt that the information presented was sufficient and that attempts were made to present it in an understandable way. There were also issues about skepticism, such as that the company was not fully disclosing information and widening the knowledge gap between the forest companies and SAC members (McGurk, 2003).

Infrequent meetings. Lengthy gaps between meetings added difficulty in learning and retaining knowledge from one meeting to the next. Participants felt that this reduced momentum (McGurk, 2003).

Time issues. There were four areas regarding time that were reported. First, the turnaround time to review annual operational plans was short, and this put pressure on the SACs to review and provide input on a large document in a very short time frame. Second, the length of meetings was thought to be too short, often lasting three to four hours, to review the large amount of material presented. This also meant that some concerns were under-represented. Third, the timing of information dispersal relative to decision-making was too short for meaningful input. Fourth, the timing of involvement was an issue. This relates to where along the process participants were involved (McGurk, 2003).

Membership turnover. Frequent changes in membership meant steep learning curves for newly joined participants. This can lead to overwhelm among new members, particularly with learning new vocabulary (McGurk, 2003).

Inadequate involvement in forest management and planning decisions.

Participants felt that they were not involved in actual decision-making, and that during meetings, votes are rarely held. There was also a lack of knowledge about how the information presented during meetings is used in the decision making process. A perception of a lack of structure regarding how decisions are made was reported (McGurk, 2003).

In summary, while stakeholder advisory committees have emerged from a need to move beyond informative approaches and towards consultative ones, there are many factors that influence the level and quality of consultation that occurs. Important issues such as information management and control (or over-control), level and type of involvement in planning, and the process of learning, among others, are surfacing as greater experience is generated with this relatively new form of public involvement.

2.3 Communication, Learning and Public Involvement

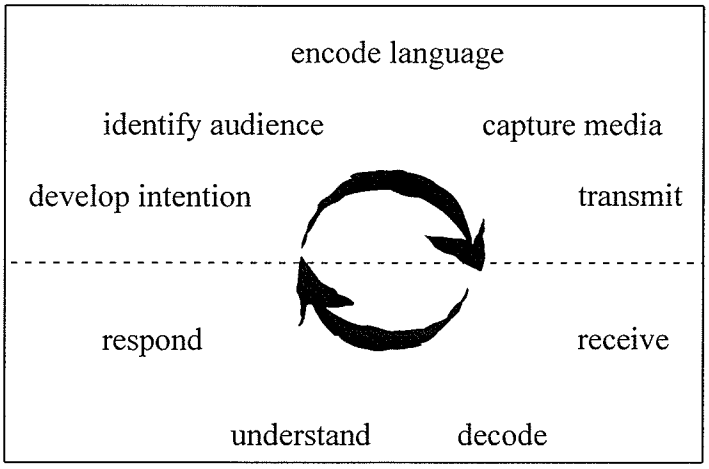
Communication and learning seem to go hand in hand in public involvement; appropriate communication techniques may enhance learning, which may in turn lead to more democratic and informed dialogues (Glicken, 1999). Non-formal adult learning in the public involvement process in environmental assessment has received increasing scholarly attention in the past decade. Fair and effective public involvement hinges on the learning that occurs during the public involvement process; learning is also an outcome of effective involvement (Fitzpatrick and Sinclair, 2003). Non-formal adult learning encompasses a number of theories namely Habermas' theory of communicative action, transformative learning from Mezirow (Mezirow, 1991; Mezirow, 1997; Mezirow, 2000) and Freirian perspectives (Freire, 1972), social learning (Webler, Kastenholz et al., 1995; Schusler, Decker et al., 2003), and adult environmental education (Clover, 1995; Clover,

2003). Adult learning theory has been applied to public involvement contexts such as the environmental assessment process (Sinclair and Diduck, 1995; Webler, Kastenholz et al., 1995; Diduck and Sinclair, 1997; Diduck, 1999; Sinclair and Diduck, 2001; Fitzpatrick and Sinclair, 2003), the shaping of environmental policy (Jenkins-Smith and Sabatier, 1993) and environmentally responsible action (McDonald, Cervero et al., 1999; Kovan and Dirkx, 2003). This research considers communication models in public involvement, communicative action and transformative learning theories in greater depth.

2.3.1 Communication in Public Involvement

From a public involvement perspective, communication can be modeled as shown in Figure 2, which is also similar to typical communication models (Glicken, 1999).

Figure 2 Cycle of Communication



adapted from Glicken 1999

The top half of the diagram shows steps that, in an ideal situation, would occur before the information being communicated is received by the recipient. Each step has important implications for a successful process. For example, the intention of the process could be very different if a decision had or had not already been made about an issue or site. Also, the stakeholders involved might be different depending on the type of information being

sought during the process (i.e. expert knowledge, experiential knowledge or value-based knowledge). The language used in the process also embodies the intention of the process, and the approach being used. A consensus-building approach would use different language and request certain kinds of information (such as input, critique, information, or comment) than a decide-announce-defend approach. The media corresponds to the type of forum being held or vehicle for communication and transmission refers to the way that information is being transmitted during a public forum. Facilitators often have an important role "translating" information between groups when different kinds of knowledge are being transmitted. A successful process would consider each of these factors (Glicken, 1999).

Another aspect of communication that is relevant to public involvement is the difference between one-way and two-way communication. This also relates back to Arnstein's ladder of public participation (Arnstein, 1969). At places of low involvement, communication is a one-way, information-out approach. One of the underlying beliefs of this approach is that if the public only understood the information, they would agree (Glicken, 1999). A communication theory that has received critical attention as being a one-way, top-down approach is the diffusion of innovations theory. Developed by Everett Rogers (1962) the theory explains how an idea spreads from a single point to a large area, or from one person to many people, through a process of knowledge, leading to changes in attitudes, and then to changes in practices (Morris, 2003). While technology is used initially to diffuse the information, networks among people are crucial to the system because they affect how an idea is understood and the degree of idea acceptance or

modification (Littlejohn, 1992). Diffusion theory was used extensively in development work, rural agriculture and organizational theory.

In reaction to diffusion theory, participatory approaches, drawing on the work of Paolo Freire, have evolved into bottom-up, empowering approaches that emphasize horizontal communication (Morris, 2003). This is also mirrored in public involvement practices at the higher end of the ladder, which involve citizen decision-making processes and a dialogic approach. Participatory approaches will be discussed in greater detail, further in this section, from the perspective of learning.

While initially there was a strong dichotomy between diffusion and participatory approaches, over time they have evolved to become more compatible (Morris, 2003).

2.3.2 Communicative Action

Habermas is regarded as one of the most prominent contemporary thinkers in critical social theory, which emerged from a tradition of critical theory born in the Frankfurt School in Germany in the late 1920's (Morrow and Torres, 2002). Critical social theory can be described as "a theory of history and society driven by the passionate commitment to understand how ideological systems and societal structures hinder and impede the fullest development of humankind's collective potential to be self-reflective and self-determining historical actors" (Welton, 1995). The polarization hinted at in the above statement is elucidated further in Habermas' Theory of Communicative Action (TCA) (Habermas, 1984). Habermas refers to two forms of polarized action in society: strategic action and communicative action. The purpose of strategic action is control and success in the technological world (the system), while the purpose of communicative action is consensus and mutual understanding in the society. Strategic action upholds the system of society and tries to dominate communicative action, which upholds social life and

democratization (Morrow and Torres, 2002). Communicative action theory includes the ideal speech situation, which involves ensuring that all discourse participants have an equal opportunity to act and to have freedom of speech. Given the importance of communication in preserving democracy, the proper use of speech is essential, and forms the basis of communicative competence. According to Habermas, there are three competences: "constantives" which relate to the "truth" of speech; "regulatives" which relate to the ability to influence the other party; and "avowals" which relate to the speakers internal condition. Associated with each competency is a validity claim. The validity claim for constantives is that it must be a true statement; the validity claim for regulatives is that the statement is appropriate, and the validity claim for avowals is that the statement is truthful or sincere (Littlejohn, 1992).

Habermas' theory of communicative action has been applied in public participation research. Public participation in environmental assessment (Palerm, 2000) and in public policy making (Webler and Tuler, 2000) has been evaluated based on adaptations of the ideal speech condition (reframed as fairness) and communicative competence (Renn, Webler et al., 1995). A reframing of the validity claims into the context of citizen participation processes, instead of the original focus on individual competence was the approach taken (Webler and Tuler, 2000). Table 3 illustrates sample statements.

Table 3 Validity Claims in a Public Participation Context

Validity Claim	Example Statement	Issue
Communicative	Any comprehensible and meaningful statement	Does statement make sense?
Cognitive	Company X harvested hectares last year.	Is the statement factually true?
Regulative	The harvesting method used was appropriate.	Is the statement morally right?
Expressive	When I see a harvested area, I feel deeply saddened.	Is the speaker being sincere?

adapted from Webler and Tuler, 2000

Habermas' communicative action theory has provided partial basis for Mezirow's transformative learning theory, including the concepts of communicative and instrumental competence and critical reflection (Mezirow, 1981). Further, while Habermas has not directly informed Freire's work on a critical pedagogy, there are a number of compatibilities, such as the importance of interaction for higher leaning, moral reasoning and human autonomy (Morrow and Torres, 2002). All three theorists present an impetus for social change and view critical reflection as key to creating social change.

2.3.3 Transformative Learning

Transformative learning is part of a critical pedagogy that embodies goals of citizen empowerment and social change (Baumgartner, 2001). Jack Mezirow and Paulo Freire are two prominent contributors to a transformative and critical pedagogy adult education.

Jack Mezirow is an American adult education theorist who developed transformation theory in the early 1980's, based on research of adults returning to university (Mezirow, 1981). Using instrumental and communicative learning as a foundation, Mezirow theorized about the cognitive process of learning. For him, effective

learning enables better cultural critics and social activists, thus supporting a democratic society. According to Mezirow, "transformation theory is an expression of democratic culture; it demands we become aware of how we come to our knowledge and about the values that lead us to our meaning perspectives" (Mezirow, 1995, p. 69). Cornerstones to transformation theory are critical reflection and rational discourse. Mezirow credits Habermas with these concepts (Mezirow, 1995), the former defined by Mezirow as the "critical assessment of our assumptions, how we acquired them, and their consequences to our actions and feelings" (p. 46). Through critical reflection, communication becomes more sensitive, respective, non-dominating and non-distorting (Mezirow, 1995). Praxis, also known as reflective action, is the action that results from this type of critical assessment, and is the vehicle for social action in a democratic society. A form of social action, democratic discourse is both an outcome of praxis and a precursor to it. Following the ideal speech conditions developed by Habermas, following are Mezirow's ideal conditions for democratic discourse:

1. accurate and complete information
2. freedom from coercion and distorting self deception
3. ability to weigh evidence and assess arguments objectively
4. openness to alternative points of view
5. critical reflection on assumptions and presuppositions and their consequences
6. equal opportunity to participate in various roles of discourse
7. willingness to accept an informed, objective, rational consensus as a legitimate test of validity until new perspectives, evidence or arguments are encountered.

Rational discourse both enables one to learn about the perspectives of others, reflect on one's own views, and develop and accept new perspectives. This cognitive process may be important in public participation processes, which often involve learning about perspectives other than one's own. Research on whether transformational learning is supported in public participation processes via the environmental assessment process in Canada has already begun, using the ideal conditions for discourse (Sinclair and Diduck, 2001).

Paulo Freire was an adult educator in Brazil who pioneered a type of adult literacy based on dismantling hierarchical barriers in the student-teacher relationship, thus enabling adults to better understand the power relationships in their social context (Morrow and Torres, 2002). One of Freire's main contributions was a methodology "based on a distinction between banking education, through which knowledge is mechanically accumulated, and critical education in which the learner becomes an active participant in the appropriation of knowledge in relation to lived experience" (Morrow and Torres, 2002). Through the process of conscientization, learners gain a new perspective on the world around them and are empowered to create social change (Baumgartner, 2001). Shor has developed 10 values according to Freire's pedagogy (Shor, 1993). These are presented in Table 4, along with a description. These values have been used as a basis for evaluating public participation in environmental assessment from a transformative learning perspective (Fitzpatrick and Sinclair, 2003).

Table 4 Values from Freire's Pedagogy

Value	Description
Participatory	Participants interact and discuss material rather than listen to the teacher speak.
Situated	Material of study is from the perspective of the participant and relates to their life conditions and understandings.
Critical	Promotes self-reflection and social reflection, e.g. how issues are communicated, the learning process itself, the participants' knowledge and understanding, the subject matter, the quality of learning, and how the information relates to society.
Democratic	Participants have equal right to speak in dialogue, and are able to negotiate and evaluate the curriculum.
Dialogic	Engages participants in dialogue, initiated by questions, and encourages them to take ownership over their learning experience by using their language during the learning process.
Desocialization	Challenges passivity, anti-intellectualism, and authority-dependence, and encourages problem-posing and leadership in dialogue.
Multicultural	Takes into account race, age, ethnicity, regional, and sex-based cultures in society. It critically looks at discrimination and inequality.
Research-oriented	Inquires into problems relevant to daily life, society and learning material. The teacher also researches the community and conditions of the students.
Activist	Inquires into how action can result from knowledge, and relationship between action and power.
Affective	Embraces the development of human feeling, of social inquiry and of habits of mind.

adapted from Shor (1993)

Common to each of the three contributors to democratic social action is the value of social change, and critical reflection. For Habermas, social change is needed to breathe life into the world of meaning and democracy, which has been compromised by technological growth. Change is brought about through democratic communication,

based on validity. For Mezirow, democratic communication is brought about by becoming critically aware of one's beliefs and assumptions and allowing them to be transformed, through a process of learning, into more functional ones, from a personal and social perspective. For Freire, the process of learning must address power imbalances so that students learn to transform the social world around them into one that is more democratic and participatory. Since public involvement is a cornerstone of social change, each of these theories speaks well to what might be needed to ensure that public involvement is effective and meaningful.

2.3.4 SACs and Learning

The learning that occurs on stakeholder advisory committees may be both instrumental and communicative (Habermas, 1984). McGurk (2003) reported that the following learning occurred among the advisory committees he researched:

1. increased knowledge of the scientific and technical aspects of forest management and planning
2. greater appreciation of the complexity of forestry operations and extent of regulatory control
3. expansion of perspective, bringing to light areas of common ground, resulting in a "greater willingness by committee members to compromise and integrate the interests of others when decisions were made" (McGurk, 2003).

There were a few limitations to effective learning as well, including the breadth of issues covered, the use of complex jargon and limited use of stakeholder knowledge. First, committee members felt that learning did not include broad issues such as sustainable forestry management, instead focusing on more practical forest management

issues. Members also felt that complex jargon prevented learning, and that there was a lack of opportunity to use their traditional ecological knowledge (McGurk, 2003).

2.4 Web-based Tools

On-site visits can be important educational tools in public participation (Webler, Kastenholz et al., 1995). They can be a means for people of different backgrounds to "see the same picture" (McGurk, 2003). Site visits also enable the visualization of verbal information (McGurk, 2003), thus making it easier to overcome language barriers to learning.

2.4.1 Visual Tools in Public Involvement

The development of effective of visual techniques has received extensive research in the environmental and civic planning community. This is in part because it may promote citizen evaluation of expert opinion in a way that is undistorted by language barriers and comprehensible to citizens (Orland, Budthimedhee et al., 2001). There is also an increasing need to make citizen participation in planning accessible to a broad range of users. Finally, images are valuable for learning in that they communicate "complex, subtle and ambiguous relationships" (Orland, Budthimedhee et al., 2001).

Visual information may have an important role in shaping landscape perception. Participants in one study responded significantly differently to small clearcuts once they saw an image. Their preconception of small clearcuts was initially negative, and became positive once they saw an image. The authors felt that preconceptions about forest silvicultural techniques had been changed once visual tools were used (Tahvanainen, Tyrainen et al., 2001). This infers that communication through images could be part of a transformative experience for participants by facilitating a shift in their perspective on an issue.

Further, studies in landscape perception have shown that photographs can be a suitable way of representing the world. High correlations between perceptions based on photographs and parallel perceptions based on site visits have been demonstrated in independent studies (Daniel and Meitner, 2001). Thus "photographs can be valid representatives for a very large set of important practical and research oriented landscape quality assessments" (Daniel and Meitner, 2001, p. 63).When compared with site visits, photographs provide other benefits such as creating laboratory conditions, thus limiting external effects of weather and pests (Karjalainen and Tyrainen, 2002). Cost and time savings constitute other benefits of using photos over site visits.

Use of photographs instead of site visits can present a number of limitations as well. Still photographs are unable to provide a full sensory experience, including sounds, smells and dynamic aspects (Daniel and Meitner, 2001). This could be also described as a loss of complexity and multidimensionality in photographs when compared with site visits (Karjalainen and Tyrainen, 2002). There are also other issues such as noticeable differences between the scene and the photograph such as light, color and shade which can create inaccurate visual perceptions (Karjalainen and Tyrainen, 2002). Some of these factors may be overcome with the use of video technology.

There has been a growing movement in landscape planning to shift beyond site visits and photographs to convey landscape information, particularly in the context of scenario planning. "Image-capture technology" and web-based modeling are two examples. Image capture technology involves the manipulation of real images to show different scenarios, often in stages of impact (Johnson, Brunson et al., 1994). These tools can be educational, enhance collaborative involvement by selecting scenarios and can be

included as a protective measure in legal documents (Johnson, Brunson et al., 1994). Issues of realism and variations of skill in manipulating images can significantly impact image quality, however (Johnson, Brunson et al., 1994). Web-based images generated from modeling data also add a predictive flavor to public participation debates, and may also increase interactivity and ownership over decisions, as well as broadening the number of proposals considered (Orland, Budthimedhee et al., 2001). A number of software packages have been developed for creating web-based models in the forest industry, such as the following landscape simulators: MONSU, Smart Forest and FOREST (Karjalainen and Tyrainen, 2002). Drawbacks of web-based images are similar to those of image capture technology, such as quality and likeness to reality.

2.4.2 The Internet and Public Participation

Alongside the increased use of visualization technology in public participation is increased use of the Internet to convey web-based information and engage the public in environmental decisions. In addition to providing visualizations, whether real or virtual, the Internet also provides a medium for two-way communication (Kangas and Store, 2002) and the opportunity for individuals to explore and learn in a way that is suitable for them in terms of time, space and multiple senses (Kangas and Store, 2002).

2.4.3 Web-based Field Tours

Given the value of using images in public participation exercises where complex and value-laden concepts are being communicated and the rise of the Internet as a tool to engage the public, web-based field tours may provide a viable enhancement of public participation processes.

Web-based field tours can be defined as programs that "bring the sights and sounds of a distant place to a user through the computer" (Klemm and Tuthill, 2003, p.

178). They are also known as web-based field tours, however given potential confusion with web-based, the terms web tours or web-based forest tours are used instead. Generally, real photographs taken with a digital camera are displayed using the metaphor of a site tour. Photographs range from two-dimensional images to images taken with 360-degree cameras. Video, audio and graphics may also be provided as well as descriptive text and hyperlinks for further information.

Web-based field tours offer a number of advantages over site visits (Table 5). The most salient of these is that the learner has greater control over the pace of learning material, can access further learning in areas of interest and is able to access the program in their own time and place. Disadvantages include the need for computer, software and high speed access, a loss of authentic interaction with others, and, as with photographs, the whole experience of place is not conveyed to the user (Stainfield, Fisher et al., 2000; Spicer and Stratford 2001; Tuthill and Klemm 2002).

Table 5 Advantages and Disadvantages of Web-based Field Tours

Advantages over site visits	**Disadvantages over site visits**
Learners control pace of tour	Computer hardware and software accessibility required
Variety of stimuli appeal to multiple learning styles	Limited interaction between learners
Geographic independence	Sensory/full experience not conveyed
Temporal independence	High degree of literacy needed
Ease of use	Computer and Internet accessibility
Safety and practicality	Access to high speed Internet connections for large images or video
Additional information can be hyperlinked to provide more in-depth information.	Understanding of place will be cognitive, not lived.

In an educational context, web-based field tours are used in preparation for real field trips, as a replacement or as a review (Klemm and Tuthill, 2003). The literature generally is in agreement that web-based field tours should not replace real field tours, given the value of full experience during real site visits, as well as their interactive potential. Studies have shown that adult students are more appreciative of web-based field tours as tools for preparation and review of real site visits (Spicer and Stratford, 2001; Klemm and Tuthill, 2003).

Web-based field tours have been developed for a number of purposes, including education, tourism, environmental awareness, and advertising, among others. Most forest related web-based tours include one or more of the following themes: forest ecology, sustainable forestry practices, and forest industry manufacturing (Table 6). The Canadian Institute of Forestry Practices has a website dedicated to forestry practices, and although the site is not called a web-based tour, it is set up like one. Topics for the partially completed site include forest values, current practices, stakeholders, forest policy and criteria and indicators for sustainable forest management. The Forest Products Association of Canada has two web-based forest tours, one for sustainable forest management and another for generalized mill operations. A regional forest tour in BC, developed by the Interlakes Resource Services, provides information on forestry practices and forest health. A couple of Canadian sawmill companies, Lignum and Irving Forest Discovery Network, provide tours of their facilities. American web-based tours of public forests are also listed in Table 6.

Table 6 Web-based Forest Tours

Organization	Content	Website
Forest Industry and Professional Organizations (CDN)		
Canadian Institute of Forestry	Canadian forestry practices	http://www.cif-ifc.org/practices/index.htm
Forest Products Association of Canada	Canadian wood mills	http://www.cppa.org/english/wood/millt.htm
Forest Products Association of Canada	Sustainable forest management practices	http://www.cppa.org/english/wood/tour.htm
Interlakes Resource Services, BC	Regional forestry practices and forest health (biodiversity, landscape, wildlife)	http://www.virtualforestryt our.com/?
Lignum Sawmill Co.	Mill operations in Williams Lake and Vancouver	http://www.lignum.com/about-virtual_tours.htm
Irving Forest Discovery Network	Saint John, NB paper mill	http://www.ifdn.com/paper/paper.htm
Public Forests (US)		
Penn State School of Forest Resources	Pennsylvania state forests.	http://www.virtualforest.psu.edu/walkingtour/penns_woods.htm
Forest Learn	Oregon's forest industry and forest products	http://www.forestlearn.org/
Virginia Department of Forestry	Virginian forests and forestry practices	http://www.vdof.org/vr/index.shtml
Georgia Forestry Commission	Georgian forest management	http://virtualforest.gfc.state.ga.us
Watershed Agricultural Council, NY	Lennox Memorial Model Forest	http://www.nycwatershed.org/sitemap.html

2.5 Summary

Public input in sustainable forest management has gained momentum given the diversity of forest values and forest uses present in society. Public involvement is part of a shift towards an ecosystem management approach and is thought to give legitimacy to environmental decision-making.

Adult learning provides perspective on the effectiveness of pubic involvement. Involvement processes that encourage democratic discourse, that provide opportunities for critical reflection and transformation of beliefs, and that recognize the political and social perspective of the participant and associated power relationships, may be more positioned to result in social change.

Public involvement through the advisory process has potential for various forms of learning. Learning in nature positively impacted participants while high demands placed on their literacy through expectations to read complex text negatively impacted participants. Web-based forest tours have the potential to offer information, normally read through text, in a form that incorporates some of the benefit of being in nature.

CHAPTER 3: METHODOLOGY

3.1 Overview

This chapter outlines the methods used in this research project. The overall research approach is described (3.2) as well as the research protocol (3.3), data collection procedures, (3.4) data analysis (3.5) and trustworthiness of data (3.6).

3.2 Research Approach

As is discussed below, this research uses a qualitative, naturalistic inquiry design within a participatory action framework. A case study approach is used, and a variety of data collection instruments are employed.

Naturalistic inquiry is a post positivist paradigm approach to research that is also referred to as qualitative, subjective, case study, ethnographic, or phenomenological. It emerged in critique of positivist approaches, based on an argument that objective reality is relative, not absolute. Naturalistic inquiry contrasts with positivist research in a number of important ways. These are outlined in Table 7.

Table 7 Naturalist Inquiry

Axoims re	Positivist Paradigm	Naturalist Paradigm
Nature of reality	Reality is single, tangible and fragmentable.	Realities are multiple, constructed, and holistic.
Relationship of knower to the known	Knower and known are independent, a dualism.	Knower and known are interactive, inseparable.
Possibility of generalization	Time- and context-free generalizations are possible.	Only time- and context-bound working hypotheses are possible.
Possibility of causal linkages	There are real causes, temporally precedent to or simultaneous with their effects.	All entities are in a state of mutual simultaneous shaping, so that it is impossible to distinguish causes from effects.
Roles of values	Inquiry is value-free	Inquiry is value-bound.

adapted from Lincoln and Guba (1985), p. 37

The naturalist paradigm is made operational based on the following 14 characteristics, as described by Lincoln and Guba (1985). These are summarized below.

1. *Natural setting*: Research is carried out within the context of the subjects being studied, as it is understood that realities can not be understood apart from their contexts.
2. *Human instrument*: The naturalist is the primary data gathering instrument, in order to have a greater understanding of the meaning of interactions within the context of the research.
3. *Utilization of tacit knowledge*: Intuitive and felt knowledge, as well as knowledge expressed through language are used to understand nuances and thus gain a more accurate understanding of the situation.
4. *Qualitative methods*: Qualitative methods are more adaptive to multiple realities and value patterns that shape research outcomes.
5. *Purposive sampling*: Sampling is more likely to be purposeful rather than random to allow for a greater understanding of the full range of data.
6. *Inductive data analysis*: Inductive, rather than deductive data analysis can allow for explicit consideration of multiple realities, their interaction, and influencing values.
7. *Grounded theory*: It is necessary that theory emerge from the data given the focus on context, which cannot be pre-determined.
8. *Emergent design*: The design emerges over time given the unpredictable nature of the research and the interaction of various value systems in the research.

9. *Negotiated outcomes*: Meanings and interpretations of data are negotiated with the subjects because they are in a better position to understanding complex interrelationships.
10. *Case study reporting mode*: Case study research is useful for answering "how" and "why" questions via in-depth description, exploration, and/or explanation of a program, event, process, activity, or one or more individuals (Rowley, 2002). Compared with other qualitative tools, case study research allows for more in-depth investigation, often using a variety of information sources such as documents, interviews and observation (Rowley, 2002).
11. *Idiographic interpretation*: Interpretations of the data are likely to be in terms of the case study rather than broad generalizations because the validity of interpretations are tied closely to the context of the case.
12. *Tentative application*: Broad applications of the case study are made tentatively because they may not be duplicated elsewhere given the shaping influences of the findings and the role of values.
13. *Focus-determined boundaries*: The boundaries of the inquiry are based on the emergent focus of the research rather than being set ahead of time.
14. *Special criteria for trustworthiness*: As conventional approaches for validity are inconsistent with the naturalistic inquiry approach, different criteria (credibility, transferability, dependability, and conformability) are used.

While the naturalistic inquiry approach is suitable for qualitative research where depth of understanding is sought, it becomes limited when broad generalizations beyond the specific context of the data are required.

Naturalistic inquiry is a suitable paradigm for describing this thesis research. The central questions asked were strongly linked to the context of the stakeholder advisory committee, in terms of the nature of learning and dialogue that occurred. Since the research focus changed over the course of this research, to include an expanded contextual understanding, it could be considered emergent. A case study approach was used as it allowed for a complete exploration of outcomes relating to the introduction of a new information source and technology within a public involvement context. Further, the instruments used in this study, for the most part, yielded subjective information such as participant views and perspectives.

It needs to be emphasized, however, that the research which serves as the basis for this thesis cannot be considered purely naturalistic. For example, the design was clearly defined at the outset, as were the research instruments. Also, while the data that emerged from the research is highly contextual, it has been possible to draw parallels with theory and with other research, suggesting that the outcomes have not been so contextualized that no application can be made with other similar case studies. Thus the outcomes may not be as tentative as Lincoln and Guba (1985) suggest they might be when using a naturalistic inquiry approach.

In addition to a naturalistic inquiry approach, a framework of participatory action was embedded in this research. Participatory action comes from a perspective that research can act as a change agent in order to liberate or empower constrained individuals or groups (Creswell, 2003). The perspectives of Freire and Habermas, among others, have shaped this approach to inquiry, which is by nature dialectic and collaborative. Practical solutions that facilitate empowerment in areas of media, language, work

procedure, relationships of power and educational settings are sought using the framework of participatory action (Creswell, 2003). Most of the authors referenced in Chapter 2, regarding public involvement, used a participatory action approach (Glicken, 1999; Diduck and Sinclair, 2002; Fitzpatrick and Sinclair, 2003). Hence, it was useful to be aware of this lens when proceeding with this research, which ultimately has the goal of supporting more meaningful dialogue in a public involvement process.

The qualitative research instruments used in this study included participant observation, field notes, surveys and interviews. A description of these instruments and reasons for selection are provided here.

Participant observation involves full emersion into a situation, permitting first-hand experiences. Observation of unique or unusual events that are otherwise difficult to discuss or that may simply not have come out during discussion can result. Because the role of the researcher is known, information can be recorded as it is revealed. Participant observation enabled data to be collected on participant impressions of the website in a way that was informal and immediate. It also allowed for advisory processes to be observed experientially and first-hand (Bernard, 2002; Creswell, 2003).

Field notes are a data collection technique that involves recording observed and procedural information during the research process. Bernard (2002) elaborates on field notes and differentiates between methodological and descriptive recordings. Methodological field notes address the technique of data collection as well as ways the researcher, as the instrument of data collection, grows over time. Descriptive notes describe what is heard and seen during the research process. Bernard describes descriptive notes as the "meat and potatoes of fieldwork" (Bernard, 2002, p.375). Field

notes were a necessary tool for collecting data from participant observation events, where it was important to accurately record information that was gained through informal conversation or meeting events that were not otherwise recorded.

Surveys are used to collect information in a way that is less intrusive and more efficient than interviews. They can be beneficial when asking complex questions, such as ranking or selecting from a long list (Creswell, 2003). They also ensure that all respondents receive the same questions in the same way. In this research, surveys were useful for gathering initial impressions of the website from participants, particularly from those participants who were not observed interfacing with the technology.

Semi-structured interviews allow for greater control over the line of questioning while ensuring that questions are interpreted correctly (Creswell, 2003). In-depth discussions can result because of built-in flexibility with this approach, which involves use of guiding questions. Interviews were a useful tool for asking in-depth questions about advisory processes and potential linkages between group discussion and the website. Interviews allowed for in depth discussion and the potential for interesting tangents.

3.3 Research Protocol

3.3.1 Establishment of Case Study Participants

The Sustainable Forest Management Advisory Committee for Tembec (SFMAC) was selected as the case study, given previous research that had been conducted with the committee (McGurk) and given ease of access to committee members due to their proximity to Winnipeg, Manitoba. Once agreement was reached with the SFMAC sponsor, Tembec, SFMAC members were presented with a research proposal during a regular meeting. The SFMAC subsequently agreed that the research could proceed.

3.3.2 Scoping and Development of Web-based Tools

Website development occurred twice, for two different topics (www.borealbuzz.com, www.borealbuzz.com/borealII). Given the central interest of this research to create potential linkages between information access and meaningful dialogue, there was a need to ensure that web-based topics were relevant to upcoming meeting topics. Thus, the first web-tool was developed as a preparatory information source for an upcoming meeting on High Conservation Value Forests, and was based on a research document prepared by Tembec. Once the web-tool was developed and after the relevant meeting took place, it was decided that a second web-tool could result in an improved learning instrument. The topics of the second website were once again linked with the topics of an upcoming meeting: road access and non-timber forest products.

Structurally, the website was initially developed using a web-tour approach, which emphasizes the use of photos and maps, with minimal text. It was intentional that this be a loose structure that would allow the product to be more finely tuned based on feedback from participants. Best practices suggested by Klemm and Tuthill (2003) helped to inform the design process.

3.3.3 Guiding Principles for Website Development

Given the participatory nature of this research, involvement of SFMAC members in the website design process was a logical extension. As a way of guiding this involvement process, principles of transformative learning and communicative action, as outlined in Chapter 2, were considered and applied where possible. The principles and how they were applied in this research are shown in Table 8.

Table 8 Guiding Principles for Website Development

Communicative Action Validity Criteria	*Questions*	*Actions Taken*
Communicative	Were complex terms explained?	• Definitions of terms included
Cognitive	Is uncertainty included in factual information presented? Is factual information consistent with expert information and local knowledge? Are the sources of information provided in the web tour?	• Sources of and context for information provided. • Website updated to include aspects of local knowledge.
Regulative	Did the web tour improve the ability of participants to form rational opinions about forestry issues?	• Determined through qualitative methods.
Expressive	Were participants more able to express their views after using the web tour?	• Determined through qualitative methods.

Table 8 Guiding Principles for Website Development Continued

Transformative Learning	*Operational Definition*	*Actions Taken*
Participatory	Participants have a role in developing website content.	• Initial brainstorm for content. • Input from participant observation utilized.
Desocialzation	All members of committee encouraged to participate.	• CD-Rom and website sent to all committee members (including non-participants). • Program brought to participants with limited computer access and experience.
Multicultural	Website includes elements of cultural and learning diversity.	• Range of types of information (photos, audio, text, web-links).
Research Oriented	Website reflects learning needs of participants.	• Included range, from basic to more complex information
	Website promotes further research.	• Included extensive website links for more information
Activist	Research promotes interaction.	• Participant reviews of website led to interaction with researcher • limited web-based interaction techniques introduced (i.e. online survey, discussion forum)
Situated	Material presented in language of learners.	• Made corrections to language based on in-person reviews • included quotes from other members and Tembec
Democratic	Participants involved in learning agenda of website.	• Topics for second website based on points of interest from a previous meeting

3.3.4 Verification of Website Effectiveness

Five peers from the Natural Resource Institute reviewed the first website and provided comments using an informal survey provided to them to guide the process. The website was also distributed to the thesis review committee who provided feedback on website design. Two peers also provided feedback on the second website.

Participant review of website. A subgroup of SFMAC members was asked for feedback on website structure and content during the design process. In order to gain input from a broad range of computer users, effort was made to select participants who either had significant knowledge and experience with computers/Internet or had limited or no experience with computers/Internet. Availability, accessibility and interest of participants were also selection factors. Input from participants often led to changes to the website, resulting in a product that was then distributed to the committee as a whole.

3.3.5 Website Distribution

Given a broad range of computer usage experience on the committee, care was taken to distribute the website according to individual member capacity. For those with Internet access, a website link was provided. For those with access to a computer and no Internet, a CD-Rom (identical in content and nearly identical in structure) was mailed to participants two weeks prior to the relevant meeting. For those with no computer or Internet access, attempts were made for a visit where the website was shown on a laptop. In some cases, the latter was hindered due to long travel distances and availability of participants.

3.3.6 Measurement of Website as a Tool for Learning

Measurement of learning from the website was informal in this research, thus instruments of inquiry focused on observation and inquiring with participants were used. This was

because the main focus was on exploring the potential of the website as a novel tool for informing members of the SFMAC. Thus the main inquiry was whether the participants were of the opinion that it was an effective tool, rather than direct measurement of effectiveness, using standardized measurement techniques. Measurement involved observing participants as they viewed the website, administering a survey with questions about learning, and asking interview questions related to learning.

3.3.7 Impact of Website on Dialogue

There were two avenues of inquiry to understand the potential impact, 1) measurement of direct linkages between website content and 2) meeting discussion and measurement of indirect linkages, in the form of critical reflection resulting from meetings. Measurement of the direct impact involved listening to participants while they reviewed the website, listening to them speak during meetings, and then asking participants in an interview after the meeting if the website had helped them with meeting discussion. Not all participants were observed viewing the website, so only the latter two steps were used in some cases. Indirect measurement involved the same steps as direct measurement, with questions geared towards critical reflection.

3.4 Data Collection Procedures

Data collection involved two main stages, which revolved around the two web-tool versions developed. Both stages involved the same components – participant observation, surveys, interviews and field notes. Data collection occurred over the course of one year, from February 2004 to February 2005, though additional observations occurred after data collection had ended. The following is a description of the purpose, elements of inquiry and protocols used.

Participant Observation. Participants were observed during interaction with the websites. Elements of observation included:

- overall response to website concept
- ease of website navigation
- questions raised about content
- indication of learning from website
- reflections and insights of participants
- tangential issues raised in discussion
- level of participant-researcher interaction
- researcher bias and lens of interpretation

The protocol used in conducting observations included:

- travel to agreed upon location (home, office, library)
- viewing of website or CD-Rom on research laptop or personal computer
- participants encouraged to navigate through website
- assistance with navigation when asked to do so or if participant was unsure of how to proceed
- participants encouraged to communicate thoughts about website, about content or about research in general
- informal discussion to elicit further perspectives

Field Notes. Field notes were recorded after a participant observation had occurred to ensure completeness of information. The following protocol was used:

- field notes recorded during observation
- voice recordings of impressions made during travel

- upon return or next day, detailed notes completed
- notes coded using NVivo software

Surveys. Surveys were used to obtain initial impressions of the website. The following is a general list of survey elements.

- website structure and content
- website usefulness as an information source/preparation tool
- what was learned from the website?
- did the website promote reflection?

Consent forms for surveys and interviews are located in Appendix 1. Surveys for BorealBuzz I and BorealBuzz II are located in Appendix 2. The protocol use for administering surveys included:

- ethics approval received for survey
- first two participants viewing survey were asked for feedback on the questions once the survey had been completed and the survey was refined based on their suggestions
- distribution of surveys with CD-Rom (and a self-addressed stamped envelope) or survey was embedded in the website as an electronic survey
- consent forms with a confidentiality statement were included with survey both electronically and in CD-Rom package
- surveys received in the mail, online and in-person at committee meetings

Participant Observation at Committee Meetings. SFMAC meetings were observed to gain an understanding of group processes and to look for potential impacts on the discussion from the website. Elements of observation included:

- meeting structure and facilitation
- active and non-active participants
- information sharing at meetings (type and nature of information shared)
- types of preparation documents included at meetings
- comments with specific reference to the website or research project
- comments with indirect reference to the website

The following protocol was used:

- SFMAC meetings were attended and observed
- notes were taken during the meeting
- notes completed more fully after meeting
- informal debrief with SFMAC facilitator occurred after each meeting and comments recorded

Participant Interviews. Participants who attended meetings were interviewed to further explore their views about SFMAC processes and to assess potential linkages between the website and SFMAC discussions. Overall elements of interviews included:

- exploration into communication, learning and dialogue in the SFMAC context
- reflections on usefulness/effectiveness of website at the meeting in relation to discussions
- exploration into information access, including other forms or ideas
- understanding of perceptions about SFMAC in broader context

Interview schedules 1 and 2 are found in Appendix 3. The protocol for interviews was as follows:

- interview schedule received ethics approval

- within 2 weeks of SFMAC meeting, participants contacted for a telephone or in-person interview and sent a consent form
- most interviews were over the phone; in some cases an in-person interview was more appropriate or convenient
- interviews lasted between 30 minutes to 1.5 hours
- where possible, interviews were recorded (with participant permission); otherwise notes were typed concurrently
- in some cases, participants were contacted with follow-up questions.

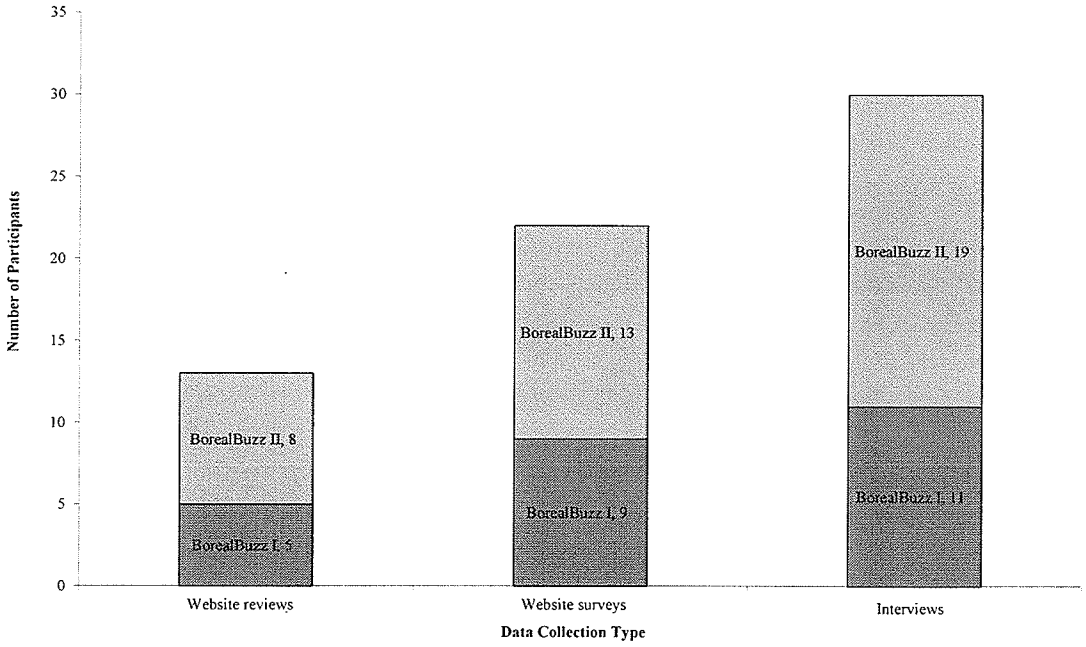
Overall response rates is presented in Table 9 and displayed visually in Figure 3. A more detailed table indicating who was contacted (by organization), at what stage in the research and for what purpose is located in Appendix 4, along with a table outlining the dates and purposes of meetings attended.

Table 9 Research Response Rates

Research Response Statistics	BorealBuzz I	BorealBuzz II	Total
Participant observation – website	5	8	13
Website surveys	9	13	22
Participant observation – meetings (1)	1	2	6
SFMAC meeting attendance	13	14	N/A
Interviews (2)	11	19	30

(1) Meetings were attended both before and after the meetings relevant to the website.
(2) % of total not provided for interviews as more than one interview was conducted with a single participant, so a percentage from the total would be misleading

Figure 3 Participants in Data Collection at Each Stage



3.5 Data Analysis

Data analysis included the use of a program evaluation approach commonly used for evaluating human resource development programs, called the Kirkpatrick Approach (Phillips, 1983).. The Kirkpatrick approach uses four levels of evaluation: reaction, learning, behavior and results. These are summarized in Table 10 along with application statements relating to this research. An evaluation of the website design process is also useful given that a number of principles were applied in the process. Thus an additional question is added to the following table regarding website design. The Kirkpatrick approach was a good fit for this thesis because its four levels aligned well with the nature

of the data that was collected, and enabled a structured analysis in terms of learning and dialogue.

Table 10 Application of the Kirkpatrick Approach

Level	Evaluation Questions	Translation to Research
1. Design		What was the effectiveness of the website design process?
2. Reaction	Were the participants pleased with the program?	How did participants respond to the research and to the website?
3. Learning	What did the participants learn in the program?	What did participants learn during the research project and from the website?
4. Behavior	Did the participants change their behavior based on what was learned?	What impact did the website have on participant communication and dialogue?
5. Results	Did the change in behavior positively affect the organization?	What impact did the project have on overall meeting effectiveness?

Data analysis was a process of weaving together contextual and background information about the committee and the effectiveness of the approaches taken to address the research questions.

In order to facilitate the analysis of data, the qualitative software program NVivo, developed by Qualitative Software Research (QSR International, 2005) was used. NVivo facilitates data coding and linking and is increasingly use in data analysis. NVivo is considered to be an improvement over previous qualitative software such as NUDIST, also product by QSR, because it allows for the use of visual models, increased flexibility for a range of analytical approaches, the ability to retain text formatting when importing documents, and enhanced linking abilities with different file types. Drawbacks include the absence of spell-check and overall complexity of the software (Calman, 2002). Data

from surveys, interviews, and field notes was entered into NVivo, coded and collected thematically into nodes. This greatly facilitated results analysis and the incorporation of data from diverse sources. Excel spreadsheets were also used for simple statistical analysis, such as percentages, and for some data analysis.

3.5.1 Referencing the Data

Quotes from all data sources are used to support statements made in the analysis. Often quotes have been selected because they represent a majority view, or a majority view for a sub-group within the committee. At times, quotes representing marginal views are used, and in these cases, this is made evident. Quotes are referenced as: (#, data type, phase). The number associated with each participant is represented by the #. Data type is either "interview," "survey," "review" or "field notes". Phase refers to whether the data was obtained during the first phase (BorealBuzz I) or the second phase (BorealBuzz II).

3.6 Trustworthiness of Data

The naturalistic inquiry approach described at the beginning of this chapter includes an approach to ensuring data validity and reliability that is tailored to the paradigm of multiple realities and perspectives. The establishment of trustworthiness, as outlined by Lincoln and Guba (1985) includes four categories – credibility, transferability, dependability, and conformability, which are considered to be equivalents to internal and external validity, reliability and objectivity. The techniques for each criterion are outlined in Table 11 (adapted from Lincoln and Guba, 1983, p. 328). The application of these techniques in this research is then described.

Table 11 Establishment of Trustworthiness

Criterion Area		*Technique*
Credibility	1	activities in the field that increase the probability of high credibility a) prolonged engagement b) persistent observation c) triangulation (sources, methods, and investigators)
	2	peer debriefing
	3	negative case analysis**
	4	referential adequacy**
	5	member checks (in process and terminal)
Transferability	6	thick description
Dependability	7a	the dependability audit, including the audit trail**
Confirmability	7b	the confirmability audit, including the audit trail**
All of the above	8	the reflexive journal

** These techniques were not used in this research as they were not built into the methods at the outset.

Credibility. The following techniques helped ensure that data and analysis is credible and truthful. *Prolonged engagement* ensures that the researcher is sufficiently involved so as to detect distortions in research findings, either introduced by the investigator or the participants, as well as to establish trust. This research occurred over the course of one year and six SFMAC meetings were attended, even though only three of the meetings had direct relevance to the website. Further, interaction with participants between meetings occurred two to three times per participant. *Persistent observation* involves focusing on the elements of the situation that are most relevant to the research. In this research, more detailed focus was given to views about learning, preparation and dialogue as stated at the outset of this research. *Triangulation* improves credibility by confirming information using multiple sources or by multiple methods. In this research, interview, survey, observational and documented data (such as SFMAC documentation)

was used to triangulate data where possible. *Peer debriefing* involves analytically reviewing research data with a disinterested peer. This occurred multiple times with mainly with two peers, Laura Sims and Jennifer Stewart. With Laura Sims, peer review occurred mainly in terms of the process of sorting and analyzing the data in an appropriate way over a few longer sessions. With Jennifer Stewart, peer reviewed occurred mostly in the area of content as her research paralleled this research in a number of ways. Differences and similarities in findings were discussed over several lengthy conversations. Faculty review also occurred. *Member checks* involve testing data with participants in the research. They can be either formal or informal and occur continuously throughout the research process. In this research, informal member checks occurred largely halfway through the research as data was beginning to take shape. Informal discussions with members about emerging data, including the facilitator, occurred and led to further insights and even suggestions for ways of improving meeting dialogue. Then, in a second round of interviews, formal questions intended to confirm earlier findings (especially about views on learning, preparation and dialogue) were administered. This allowed for a more generalized understanding of issues that previously only a few members had brought forth (see Appendix 3, BorealBuzz II Interview, Questions 1-8). Member checks were also formally built into the website development process.

Transferability. Data that is thick with description can be more easily assessed for transferability to other research. Descriptions of Tembec meetings as well as participant interactions with the website received the most detailed description in this research. Effort was made to include observation and interactions with participants. These also formed the reflexive journal technique outlined by Lincoln and Guba.

In summary, effort was made to ensure the credibility, dependability and transferability of the data using naturalistic inquiry approaches.

3.7 Summary

This research used naturalistic, case study and participatory approaches to meet research objectives. Website development occurred twice and was informed by transformation learning principles. Data collection involved interviews, surveys, participant observation and field notes. The software program NVivo was used to categorize data and the Kirkpatrick evaluative framework was used as an analytical approach. Several steps were taken to ensure trustworthiness of data including, triangulation, prolonged observation, peer debriefing, member checks, and reflexive journaling.

CHAPTER 4: IMPACT OF WEB-BASED TOOLS ON LEARNING AND DIALOGUE

4.1 Overview

The results of this research are presented and analyzed in this section. An overview of Tembec - Pine Falls and its Sustainable Forest Management Advisory Committee (SFMAC) provides valuable contextual information about the committee (4.2). An overview of the website development is provided (4.3), followed by response to the website (4.4), participant learning (4.5), informed dialogue (4.6) and critical reflection (4.7).

4.2 Introduction to Tembec - Pine Falls

Tembec is a forest product company established mainly in North America and France. The company's sales are approximately $4 billion per year, and it employs 11,000 workers. It operates 50 market pulp, paper and wood product manufacturing units, and produces chemicals from by-products of the pulping process. The company also operates 40 million acres of forest land. Tembec has committed to obtaining Forest Stewardship Council Certification (FSC) for all forests in its care by the end of 2005 (Tembec, 2003). FSC certification is highly regarded among stakeholders because of its emphasis on public involvement (Kotak, 2004). The Forest Stewardship Council certification process was already underway at the time of this project.

Tembec's location in Pine Falls, Manitoba, consists of a newsprint mill, which produces 180,000 metric tones of newsprint, and a forest harvest license of 901,200 hectares of Crown land, 598,057 h of which is productive. Tembec - Pine Falls employs 425 people.

4.2.1 The Sustainable Forest Management Advisory Committee (SFMAC)

Established in 1997, the Sustainable Forest Management Advisory Committee was intended to be a vehicle for stakeholders to provide regular and organized input to Tembec's forest management plans and operations (see Terms of Reference, Appendix 5). The committee was a licensing requirement under the Manitoba Environment Act, based on a recommendation made by the Manitoba Clean Environment Commission during a review of Tembec's, formerly Abitibi-Price Inc.'s Forest Management License (FML) 01 Forest Resource Management Plan 1991-1998.

Initially, SFMAC meetings were chaired by a representative from Manitoba Conservation and later by a Tembec divisional forester. Then, in 1999, due to an atmosphere of conflict and a perception that the company wielded too much control over the committee's agenda and activities, an independent facilitator was hired (SFMAC Minutes, November 29, 1999).

According to the draft terms of reference, which were revised in February 1999, the SFMAC has the following five objectives:

1. To share interests, values and concerns of all committee members as pertaining to forestry in the FML01.
2. To provide a forum to provide input to forestry activities, environmental practices, and public involvement initiatives.
3. To advise the company in development of forestry plans.
4. To identify individuals who may be impacted by proposed forestry activities.
5. To communicate committee activities to interested groups, organizations or communities.

The full Terms of Reference are located in Appendix 5.

Currently, the committee meets three to four times a year, and at least one meeting takes place in the field on a tour. Stakeholders on the committee currently represent approximately 23 interests and there are 32 members, based on the contact list for January 2005. Stakeholder participation at meetings ranged between 10 and 15 participants during 2002-2004. Approximately six aboriginal and Metis communities are represented on the committee with typically two to three members present at meetings (SFMAC meeting minutes, 2002-2004). As noted in the methods section, six Tembec meetings were attended for the purpose of this research.

Demographics are an important consideration when understanding this committee as a case study. Table 12 provides an overview of urban, rural or First Nation reserve status, gender and employment. The Government of Canada's definition of rural was used.[1]

[1] Definition of Rural from Government of Canada: a population less than 1000 and a density of up to 400 residents per square mile (www.rural.gc.ca/cris/aq/pop_e.html).

Table 12 Demographics of Committee Members

	Urban/Rural/ Reserve (%)	**Gender (%)**	**Employment (%)**
Regular committee members who participated in research (N=19)	68% Rural 27% Urban 5% First Nation	95% Male 5% Female	63% employed 36% retired
Non-regular (N=6) committee members who did not participate in research	16% Rural 33% Urban 50% First Nation	100% Male	N/A[2]
Alternate[3] (N=7) committee members who did not participate in research	42% Rural 50% Urban 14% First Nation	72% Male 28% Female	N/A
Total Committee members (N=32)	50% Rural 33% Urban 17% First Nation	97% Male 3% Female	N/A

This table shows that of the committee members participating in the research, the majority is from a rural area, is male and is employed or is a rural municipal councillors. A minority of members are First Nation and female. When committee members who did not participate in this research are included, First Nation and urban dwellers make up more of the committee.

It is useful to consider a historical review of the SFMAC. The SFMAC was formed in an atmosphere of conflict, at a time when environmental, resource based and aboriginal perspectives challenged each other in heated debates and, at times, members stormed out of meetings.

[2] Employment information was not obtained for non-participants.
[3] Alternate refers to members who attend in place of a regular member

> *...over the last couple of years, not as much tension; a few years ago more prepared for adversarial; [now] everyone wants the same thing, more and more people in the group are realizing that everyone wants what is better for the whole thing, more cooperation* (01Int02).

A number of participants talked about the benefit of having a facilitator who was introduced to provide a neutral tone to the meeting. It is therefore possible that committee members continue to focus on the relative peace present in the group, *compared to how it used to be*.

4.3 Website Development Process

This section provides an analysis of the effectiveness of the website development process, using principles for transformative learning and communicative action during website development. The steps taken have already been outlined in Chapter 3, Table 8. These results will focus on highlights from the process.

Participatory. As much as possible, participants were given the opportunity to provide feedback during website development, either in-person or through the survey. Table A8.1 in Appendix 8 provides a full list of changes that were suggested and a description of how they were incorporated into the website.

The adaptive process used required that a communication strategy be developed with the website designer. Eventually, a program[4] that allowed for text and image changes to be made without the web-designer, was used. Also, an online calendar was used as a tracking system for changes requested and made to the website.

The nature of the changes requested was also a consideration. Due to the inexperience of the researcher, it was difficult to gauge the level of difficulty of a request. Over time, the web designer was more forthcoming about whether changes would be easy

[4] Macromedia Contribute was developed for those using Dreamweaver as a web-design tool.

or difficult. In the end, the design process was probably less efficient than most web design packages that are on the market. While a normal "package" consists of 40 hours of website design, over 70 hours were spent on the second website.[5] The website designer further explains:

> *I think one of the biggest things was coming up with the design and the flow, because if you were to trace back through all the designs, you look at it now, at the time we went through a lot of designs. It was more time than I thought it would be, particularly the second one. For the first website, I did not know how much time it would take. What took time on the second one was coming up with the flow. At one point I called you in a panic, because we had a long way to go. I knew the design was holding us back. The design is 70% of the work, coding is 30% of the work* (paraphrased, 32Int01).

From the perspective of the committee, using an adaptive approach led to valuable improvements on the second website, mostly in terms of flow, new sections and type of information. The following quotes from participants express the value of using an adaptive approach, and ultimately developing the second website:

> *The first website took a while to figure out, and the second one was more straightforward* (paraphrased, 22Int03).

> *The second website was quite a bit better than the first version. The way it was laid out, the pictures and maps were better; it included more relevant details and was better presented. If you draw a linear line in improvements in the website, it will probably get considerably better - more relevant and useful* (paraphrased, 19Int02).

> *...the first version was quite impressive in terms of the amount of information you assembled and so on, and it was an interesting site, but there the question was more how was that going to go to SFMAC and I think the revised version is much closer to what we are dealing with. I think this has worked out quite well and I am really pleased you have done it* (08Int2).

Desocialization. Nearly all participants who attended meetings had viewed the website, as shown in Table A8.2 in Appendix 8.

[5] This was also due to a number of special features, including user tracking, online surveys, and multiple layers of pages.

Incorporation of learning needs. Attempts were made to incorporate learning needs of participants through the adaptive process earlier described. Unfortunately, not all requests could be incorporated, such as detailed information about Tembec's operations or extensive literature reviews. Partly, this was due to necessarily limiting the scope of the websites to ensure relevance for the upcoming meeting and partly due to information accessibility.

Where information could be incorporated, there were often different knowledge levels among committee members. To address this, multiple layers of information were presented through linking web pages. One of the drawbacks of this approach is increased complexity of the site, which required navigational abilities on the part of the user.

It was challenging to assess the learning needs and interests of some participants because the technology barriers were so overwhelming. The use of photos and maps were helpful in this regard because they often drew out interests of participants regardless of technology barriers.

Activist. In this context, the activist approach refers to participant interaction. Aside from participating in this research, participants were given opportunities to interact on the website itself through an online discussion board, an online survey and e-mail. The online survey was most used, by a quarter of participants. The other features did not promote interaction with other participants.[6] This is not surprising given the average technical ability of the committee and that online communication constitutes a novel approach to communicating among committee members. Interviews did indicate interest in a direct e-mail line to Tembec to register concerns and is a valuable consideration for the future (04Review02).

[6] One participant made a comment on the discussion board.

Situated. This criterion refers to situating the material in the language of the learners. Often complex language was defined or explained in the text. One of the challenges was to accommodate different knowledge levels as well as different meanings of language. For example, there are a number of definitions of "sustainability." Where there was question, a consistent resource, the Dictionary of Natural Resource Management (Dunster and Dunster, 1996), was used to define terms.

A minority of participants indicated during interviews that the definitions had been helpful (i.e. 11Int01) and suggested a glossary of terms. An alternative approach could have been exploration of the various definitions of "hot" words such as "sustainability."

Most participants were comfortable with the level of language used (72% for BorealBuzz I and 40% of BorealBuzz II). A higher number of participants asked for more complex language after viewing the second website than the first (9% and 37% respectively). This is interesting, given there was more technical information on the second website. A few participants asked for easier language for both websites (18% and 17% respectively).

Democratic. This refers to the involvement of participants in the learning agenda of the websites. For the first website, participants were not involved in the topic as its basis was a Tembec report, about which committee members would be consulted. There was more involvement for the second website because the topics were outcomes of a committee brainstorm relating to High Conservation Value Forests. Ultimately, the two main topics of the website were selected by the facilitator and Tembec representative from the brainstorm list, based on what would be of value to both Tembec and meeting

participants. For the website content to have been truly democratic, participants would have had to have been more directly involved in meeting agenda setting.

4.4 Response to Website

This section includes the following two subsections: response to the website and response to introduction of computers among those unfamiliar with computers.

4.4.1 Website Usage

In order to understand the reaction of committee members to the website, it is helpful to consider computer related demographics for the committee. From the beginning of this project, it was known that a number of members of the committee had limited computer access, Internet access or experience using computers. At first glance, of 33 members on the committee, 23 have an e-mail address. As previously mentioned, 20 members of the committee participated in this research by viewing the website and/or attending a meeting. The following table shows a further breakdown of computer and Internet access among members who participated in this research. Access includes access at home and at work.

Table 13 Internet Access Among Participants

Computer/Internet Access Among Participants in Research	#	%
Internet access- high speed	8	40
Internet access- dial-up	8	40
Subtotal	**16**	**80**
No computer at home or work	4	20
Total participants	**20**	**100**
Total SFMAC members	33	

Based on membership polling, the CD-Rom version was distributed to 20 members of the committee for each website. Remaining members were asked to view the website online.

Through tracking methods on the website, it was possible to determine the number of times members viewed each website online. For the first version, due to some technical errors, it is only possible to report on the number of people that viewed the site, not the number of times it was visited. Seven committee members visited the BorealBuzz I website prior to the May 25 meeting and three completed the online survey.

For the second version, viewed by participants in preparation for a meeting on October 4, 2004, usage monitoring improved and the following statistics were available.

Table 14 BorealBuzz II Statistics

Usage Statistics for BorealBuzz II	# Times Website was Accessed
Users (members of SFMAC only)	11
Visits to website- total (as of November 24, 2004)	27
Visits to website before Oct. 4	21
Visits to website after Oct. 4	6
Users who visited website more than once	5
Highest number of visits by one user	7
Surveys completed electronically	5

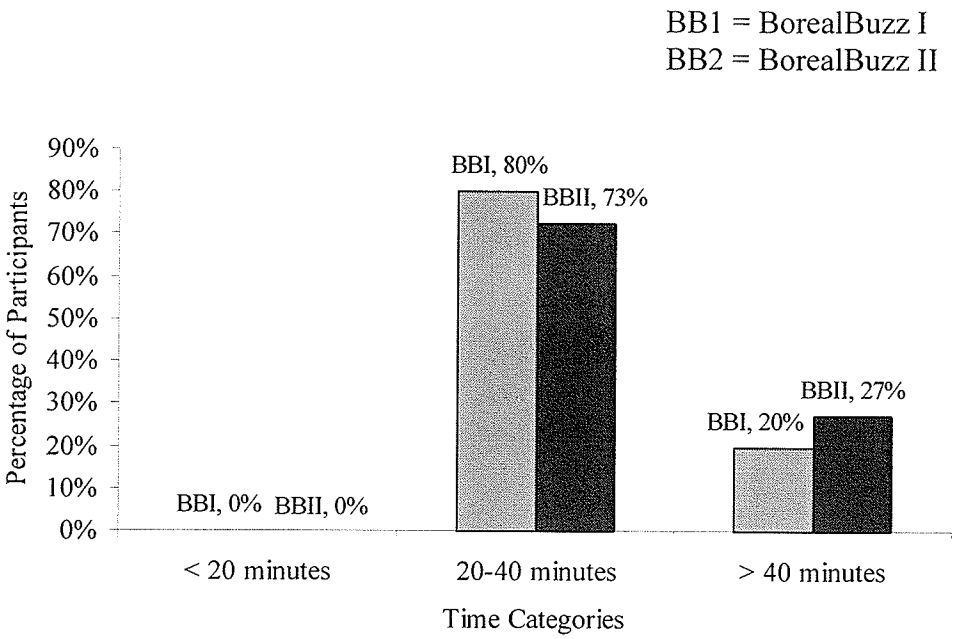
These numbers indicate that there was nearly 70% participation among those with Internet access at home or at work, making up just over half of the participating members of the committee[7]. They also indicate that about half of those who viewed the website looked at it more than once. Also, about half chose to complete the online survey. The individuals who accessed the website more than once also had access to high speed internet and had a medium to high skill level. One way of interpreting these results is to say that the website was most valuable for about a quarter of participating committee members (given that it was visited more than once). As further research showed, those who visited the website more than once also had Internet access and were accustomed to using the Internet

Participants also indicated that they spent, on average, between 20 to 40 minutes viewing the website, as show on Figure 4. It should be noted that participants were observed underreporting the amount of time they spent viewing the website in some cases, particularly when there was a steep learning curve. The website review sessions

[7] An important differentiation is participating committee members and committee members. All statistics in this paper relate to those who participated in this research, and are thus "participating" committee members.

lasted, in some cases, between 1.5 to 2 hours. Thus this data is likely under represents the total amount of time participants spent viewing the website.

Figure 4 Reported Time Spent Viewing Website



4.4.2 Computer Usage

While 80% of participants in this research had some kind of access to a computer and the Internet, about half had medium or high computer skills. This section provides further demographic information about computer skills among participants as well as data indicating how participants with low computer skills responded to computer use.

Computer skills were rated as high, medium and low, based on the following criteria (developed from observation): *low skill level* – does not know how to operate mouse or open links; *medium* – knows how to operate mouse, limited confidence with navigating website; *high* – high ability to use computer and Internet. Observation, surveys and interviews indicated that just under half of participants had low or no

computers skills, while the remaining had some or high skills, as shown on Figure 5. Another approach is to consider whether participants experienced a change in their computer skills over the course of this project. As Figure 6 shows, about a third of participants improved their skills over the course of the research and a quarter noticed no change. Not all participants who participated in this project viewed the website/CD-Rom or returned surveys, which is why there is no data for some.

Figure 5 Initial Computer Skill Level – Research Observation

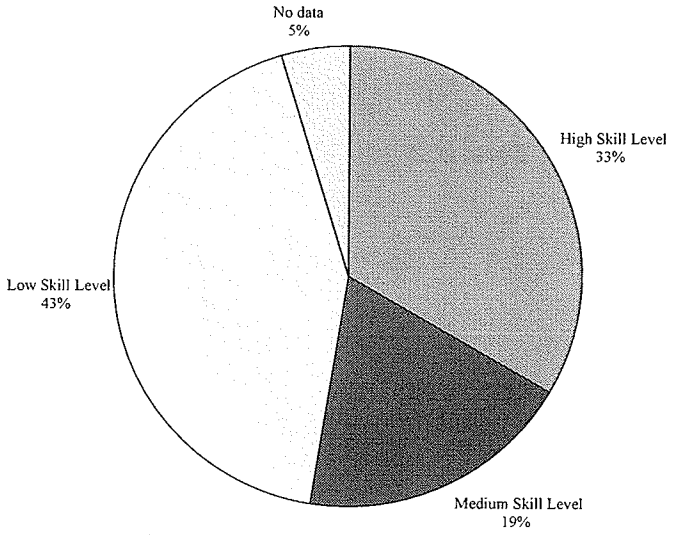
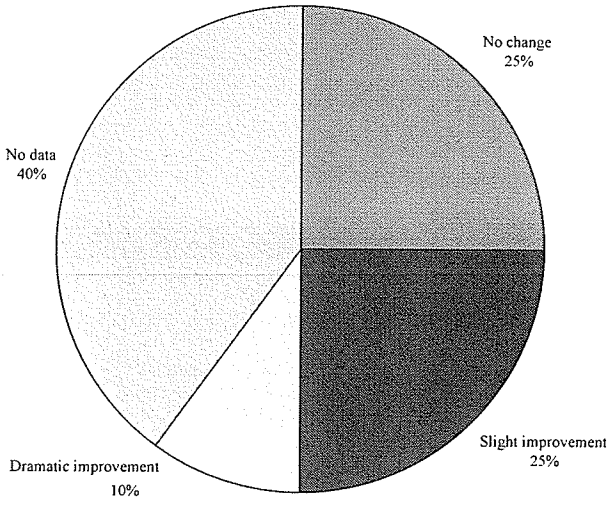


Figure 6 Change in Computer Skill Level – Participant Reported



The following provides an account of participant perceptions about computer use. Data is derived from interviews and field notes. This section does not apply to those proficient in using computers as they had a higher acceptance level of the technology itself, leading to a stronger focus on content, which is discussed later in this section.

Among users with low computer proficiency, making up nearly 45% of the sample, there was a general resistance to the use of computers. One of the main reasons seemed to be a sense that computers are of the next generation, and for those members of the committee who were retired, some did not see the benefits of learning the new technology from "scratch." The following conversation illustrates this view.

> *I think the biggest reason I don't like it is that I don't know how to use it. If I knew how to use it I think it would be great.*
>
> *Interviewer: So would you like some lessons on how to use it?*
>
> *No, no, I don't want to waste my time doing that. You would have to draw pictures and make arrows....It is good for your generation because you guys learn from the start, right from kids...you could do anything. For me, by the time I learn something, and I try something else and I forget what I [did the first time]. I think if I did...something on the computer there it would take a week to figure it out probably. No it's...maybe if I was 20 or 30 years younger I might think different but I want to go easy, I don't want to look for any more work* (15Int01).

Many participants also felt isolated by not being able to use computers. As one participant (14Int01) stated during an interview when talking about viewing the first CD-Rom, "I think I am the only one there that had a problem with it. I am going to go through the disk again." Later in a field note entry regarding an in-person CD walk-through for BorealBuzz II with the same individual,

> *As we began, he commented that he did not know how to use computers and was thinking of maybe taking a course. He seemed a little shy about it and wondered how many people were in the same boat as him. I named a handful of people in the group who I thought were in the same boat as him. That seemed to reassure him a little* (14Review01).

Amidst feelings of isolation and resistance, some committee members indicated interest in learning about computers because they perceived a number of benefits. This is reflected in the following comments by a participant.

> *It is just a matter of me to put my mind to it; it wouldn't take me very long.....It is not that I am afraid of it, it is just that I never really got at it, that's why. I did not have to, let's put it that way. I kind of got it in the back of my head, there are other things that I would like to get information from. And I probably will. Now with retirement coming, I will have a little more time now, especially if I slow down in the winter. I can kind of see myself tying into that. It is just a matter of doing it, it is not going to take a long time to learn it, it is just downloading information; it is not a big deal. There is not a whole bunch of stuff you have to learn, you can just write it down, you follow your list; it's not complicated, it is a ritual thing that you do over and over a few times, then all of a sudden you are doing it without thinking about it* (02Int01).

Another emerging view was that while these members did not have proficiency, it was still good to go ahead with a project of this type because it would be beneficial to a larger number of people. As the previous participant stated later in the interview,

> *You cannot stop it because there are a limited number of people who aren't using the Internet; you need to consider the good of the many* (02Int01).

The type of computer training that occurred during in-person reviews was ad-hoc. Training would occur based on participants' needs, which could be assessed quickly during the start-up of the CD. The following field note entry indicates how some of these training sessions would begin.

> *We spent the next little while on the nuances of using a mouse. Click where the hand appears. Click on the left button. Move the physical "mouse" to move the arrow on the screen. Press lightly. With a click we were at the introduction page* (15Review01).

Learning to use the computer was indeed an awesome task for some members, so much so that there was little actual reading or looking at information during the website review. The following is a field note entry from one of the in-person review sessions:

> *He explained that using a computer was very new to him. The entire session, I would say, was more about using a computer than it was looking at the information. While he did read over the information, his focus was more on scrolling up and down, and clicking open and close. His confidence grew over time and he was able to make decisions on his own about where to place the mouse and how far down to scroll. His comfort level increased enough that at the non-timber forest products section, he started opening and reading documents. Before then, I am not sure he was reading much because he did not make very many comments on the content. This is probably because the learning about computers overshadowed learning new information* (13Review02).

Because there was a double agenda, which was for participants to learn both about using computers and about the information that was presented on the CD, there was often a conflicting desire to navigate them through the CD more quickly so they could read the information or look at the pictures without being distracted by learning the technology. The following field note entry is a case in point.

> *At this point, I was also helping him with the mouse – inadvertently I began overriding his mouse with the mouse pad...he seemed ok with it – using the mouse was a big deal for him, it was cumbersome. He began to read more intensely, especially about this research, which seemed to be of most interest to him* (15Review01).

As a way of making it easier for participants to navigate the site, BorealBuzz II included a two-minute audio recording that provided an overview of the site and step-by-step instructions. This approach met with limited success. Those observed using the recording found it difficult to stay with it, sometimes due to unease at following the instructions. Computer speed was also an issue because some computers took longer to change website pages than what the instructions allowed. Ultimately, the instructions were not followed by participants. The following quotes provide examples of this experience:

> *When the audio started playing, [he] froze. I took the mouse and began following the instructions. The computer loaded a little slower than the audio would allow time for, so sometimes a person had to jump ahead a bit* (14Review2Fieldnote).

> *We play the audio clip. He listens and when instructions come on he freezes. I take the mouse and follow the instructions while he watches. After a minute, he starts to talk over the recording. After that, he just kept talking over it. I still followed what the instructions were saying with the mouse* (15Review2Fieldnote).

Notwithstanding the above, about a third of participants experienced some kind of change in their proficiency of working with computers, which was slight for some and dramatic for others. Interestingly, one participant who already knew how to work a computer gained comfort level with using the Internet through this project. As he explained, he realized that he was not going to "blow" the computer up by pressing the wrong button (05Int02).

In summary, there were diverse responses from members regarding computers, website and CD-Roms that began to emerge during the in-person reviews among those not proficient in using computers. Following are examples of these.

1. Computers provide quick access to information;
2. It is easy to learn about computers;
3. It is difficult to learn about computers;
4. Computers are the way of the future;
5. Computers are not of my generation;
6. Computers are a good idea, but not for me.

These results lead to interesting questions about the introduction of new technology and the importance of understanding preconceived views about that technology. Given that there was some resistance, this likely impacted receptivity to the project as a whole.

4.5 Participant Learning

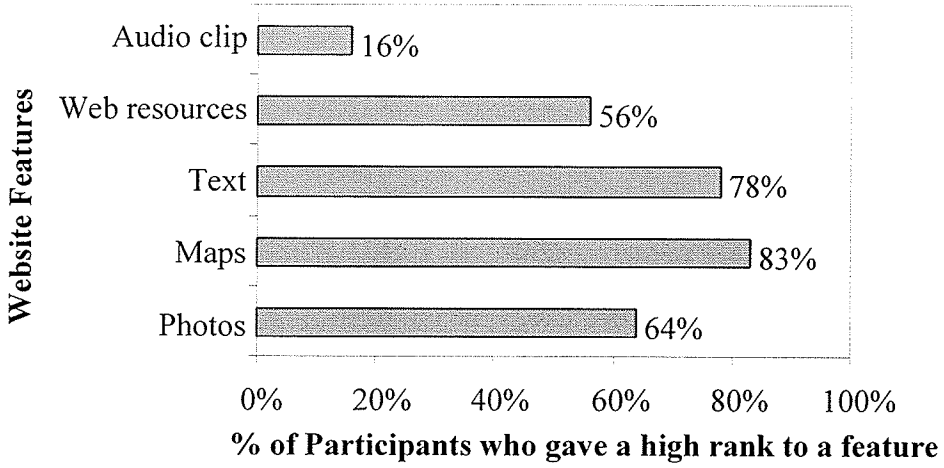
This section considers what participants reported learning from the website as well as factors that emerged during the research that may influence the type of learning that occurred. As indicated in the methods, assessment of learning occurred both through participant observation and by asking participants directly what they had learned. A pre/post test was avoided, given the broad range of interests and knowledge levels of participants. A test would have assumed a common basic level of knowledge. Further, it was initially decided that a test approach could have been intimidating for participants in this context. Given that participants self-reported learning, there is room for error as some may have indicated that more learning occurred than actually had. Participant observation aided in confirming, in some cases, whether participants had learned, particularly if participants voiced that they had learned something new. By asking participants if they had learned something new and if that learning had been useful, this research was able to focus on participant perceptions about the usefulness of the website as a learning tool.

Participants said they learned from both the various types of website features (photos, maps, text, Internet resources) and the specific website topics.

4.5.1 Website Features

The following figure indicates that maps, photos and text were reported, on average, as the most useful aspect of both versions of the website, followed by website resources. The audio recording, which was designed to help participants navigate the site, was the least useful aspect. The percentages shown are based on average data for both versions. It should be noted that photos were found to be significantly more useful on the second website, as indicated by 83% of users. This was likely because of efforts made to make photos more applicable and accessible on the second version.

Figure 7 Usefulness of Web-features



The following discussion considers the development and usefulness of each web-feature in more depth.

Maps. Participant observation indicated that maps were frequently a source of interest for participants. During in-person reviews, maps were often a starting point for discussion on a topic of interest to the member, as shown in the following quotes:

> *We also looked at the Happy Lake map a bit. He wondered how much wood was still available to harvest in the Happy Lake area* (15Review2Fieldnote).
>
> *He was quite interested in the trapper map and we stayed there for a while. He told me that some of the trapper cabin locations were not correct – he knew because he had flown over the area many times. He also showed me where his trapline is and we talked a bit about trapping* (18Review1Fieldnote).
>
> *The first thing we looked at was the map. He immediately went to the north part of the map where he is from and looked at the high caribou population there. He told me about how he had been refused a trapper's cabin there because of the high caribou population. We also looked at population numbers further down...I find I need to explain this map to people because it is difficult to decipher what the dots mean* (18Review1Fieldnote).

As shown in the above quotes, the maps seemed to generate discussion about concerns directly relevant to stakeholders as well as concerns related to broader

sustainable forest management issues. They also allowed participants to "review" the maps and in some cases, critique the information that was on the map, based on their local knowledge. Thus the maps provided both broad and localized information.

The provision of localized information on the maps was problematic as there were issues with map clarity. This was a major issue on BorealBuzz I because the maps that were used had originally been developed for posters, using company software. Three different formats were provided, the first was a PDF (which required high speed to download), the second was an image that was easy to download but had reduced image clarity and the third had a zoom function (clarity was reduced as zoom increased). The situation was improved for the second website, where a smaller number of maps were used and care was taken to provide clear and large markers, again using company software. Notwithstanding, there were still issues with showing highly detailed map information, as the following quote illustrates:

> *He scrolled down to the map for road density and we spent quite a while on it. The letters were too small for him and he wanted to see more detail. We went to the map in the Maps section for more detail but there still wasn't enough, because you couldn't make the map bigger. I opened the map on my hard drive and we looked at that one and he saw the detail he was looking for* (15Review2Fieldnote).

Photos. As with maps, photos provided both broad and localized information about the forests in the region. Effort was also made on both websites to include photos that showed large and small areas, as well as photos that were clear. Unfortunately, detailed information about the photos was not available (such as exact location and time taken) and, for participants interested in highly detailed localized information, this was somewhat problematic. Generally, however, most participants could recognize places in

the photos and, as the following participant discusses, some localized photos were highly relevant.

> *I thought the photographs were excellent. Now maybe I was more interested in those because I have been there; I have seen those kinds of situations, seeing the actual photographs, like that one of the Moose River Bridge, that did me a world of good, because I was trying to get that bridge out of there, because we were just losing moose left and right in cut over areas, just slaughtering them. So I felt so good that I saw that that bridge had been gone. And like all the pictures you had in there, for me anyway, they were invaluable* (05Int04).

Another participant said that the large area photos provided a new perspective, as shown in the following quote:

> *I guess the learning experience of looking at visual presentations, it is a heck of a lot different than...you don't see the forest, you cannot really see over the trees, unless you look at a forest area where it is cut out....and getting another picture, oh, this is what happens with reforestation progress, or something like that* (04Int2).

Some participants also used the photos and maps in tandem, as a photo would trigger a question leading to a review of the map. The following field note entry describes how one participant used both features:

> *Once the program opened, the first thing he did was look at the pictures along the bottom. He noticed right away the turtle "site" and it triggered a memory of seeing an artifact during an operation, reporting it to Tembec, and then never following up on what it was. That memory stayed with him throughout my stay and we were able to check on the maps to point out exactly where he had seen the artifact...(*
>
> *He looked at the images of artifacts, at the maps closely, and found the area that he had been thinking of at the beginning of the session on a map. He is going to ask Tembec about it.*

This participant talked about his preference for photos over textual information.

> *When you have actual pictures of the forest and pictures of the cutting areas and of the crossings and decommissioning the roads, [it is] interesting. [You can] visualize rather than go by what is read* (16Int02).

Text. Textual information included scientific and non-scientific information, referenced where possible. Effort was made to use vocabulary and structure that would be easy to read and accessible. This was improved through the website review process. A number of participants found the text valuable on the website. Notwithstanding, some (66%) felt there could have been more scientific information on the second site, and the same percentage felt that the scientific information was an engaging feature. The following excerpts from field notes and interviews highlight the value of text information:

> *We then went to the text section, and he was most interested in the parks – where development was allowed to take place, and where it wasn't. He seemed to be in agreement with that information* (18Review1Fieldnote).

> *Some information points, like the number of caribou and the areas where they calve, that isn't really brought out in any other way; little points seem to come through...details as to what is happening became more apparent...coming from a school experience, there is a certain amount of repetition that is necessary. ...The most useful aspect of the website was the "textbook" information* (13Int02).

> *[There could have been] more detail on certain things – what kind of wildlife is out there; information on different animals; short run down on how forestry operations effect them because some animals thrive on forestry operations, some don't* (07Int01).

On the second website, text was augmented with a few committee member quotes, including quotes from the company. This was done to enhance the sense of committee culture on the site, thereby adding more committee context to the site. Surveys indicated that 50% of users found the quotes to be valuable on the second website. There was particular interest in the company quote about history of logging in the forest by a few members, as indicated in the following quote:

> *There were some historical perspectives that Vince provided. That was useful. That is something I haven't been updated on* (03Int02).

Internet Resources. Internet resources included numerous links embedded throughout the site as well as compiled on a single page. BorealBuzz II also included a compilation page with summary paragraphs about the linked website. For members with little computer experience, viewing a web-link seemed initially to be more an act of curiosity and a learning experience in itself, as shown in the following quotes.

> *We went to the "read more section," and he was interested in the external links. We looked at the trapping link and he could see the trapping guide and there were some pictures there that he recognized from the magazine* (18Review1Fieldnote).

> *We also looked at the Alaska website on non-timber products and this was of interest to him – how many of the products are used and sold. It was also interesting to him that most products were used for personal consumption in Alaska, and that very few were sold* (15Review2Fieldnote).

Those with greater familiarity with the Internet also found the reference materials to be useful, as indicated in the survey results. The learning data, which is presented below, also found that the Internet resource compilation page scored the highest for learning for BorealBuzz II, underscoring the importance of providing access to external resources for committee members.

Audio. As discussed in the section on participant usage, the audio recording was not as useful as hoped. A better approach would likely have been a brief video clip that provided a tour of the website.

4.5.2 Topics of Learning

Learning about website content was measured during participant observation, through surveys and during interviews. First, survey data will be presented followed by observation and interview data. In a survey, participants were asked about rank the amount of learning they felt had occurred, as well as to indicate their interest in website topics. Both learning and interest levels were included to determine if a connection

between level of learning and interest in the topic might exist. Since survey data about learning was in the form of ranks, with 1=high learning and 5=low learning, the summed data was inverted (1/x) so that the numbers could be accurately portrayed on a graph in Figure 8, with the highest learning appearing as the tallest column. Data about interest level was not ranked; rather participants selected the topics of most interest to them. This data was analyzed as a percentage of total participants, as shown in Figure 9.

Figure 8 Learning from BorealBuzz I and II – By Topic

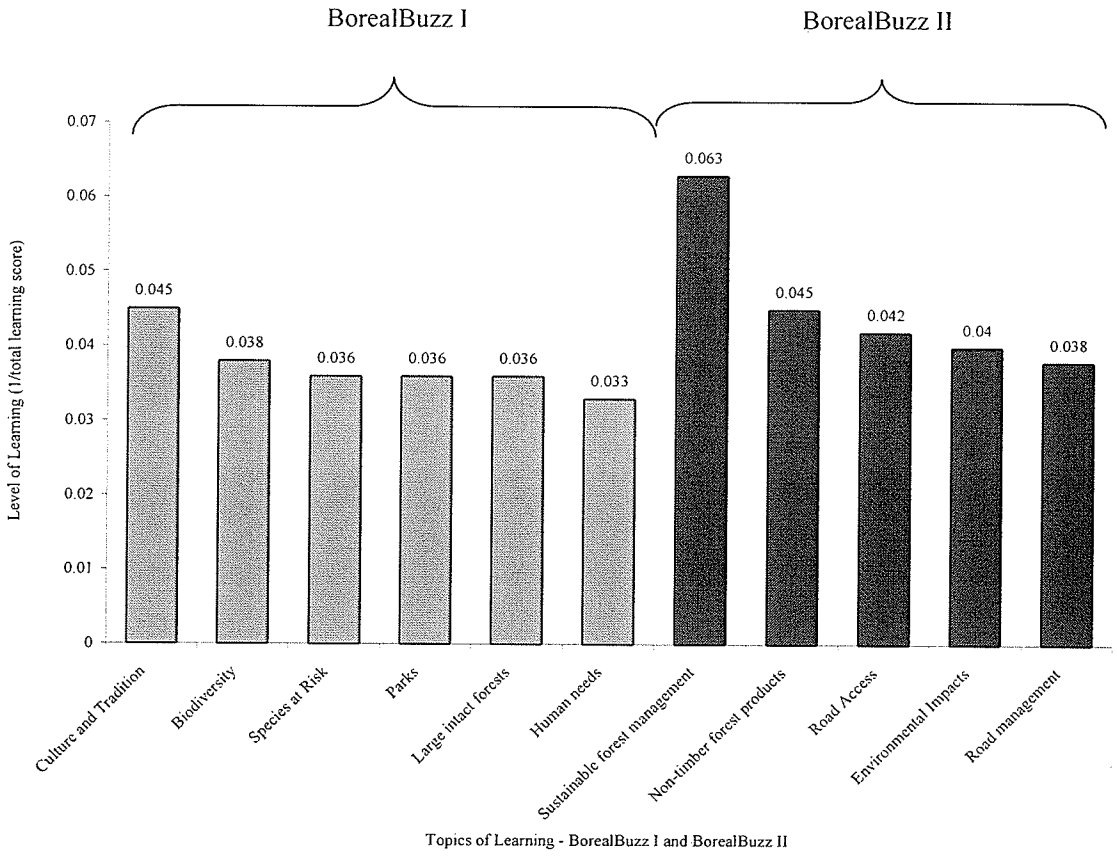
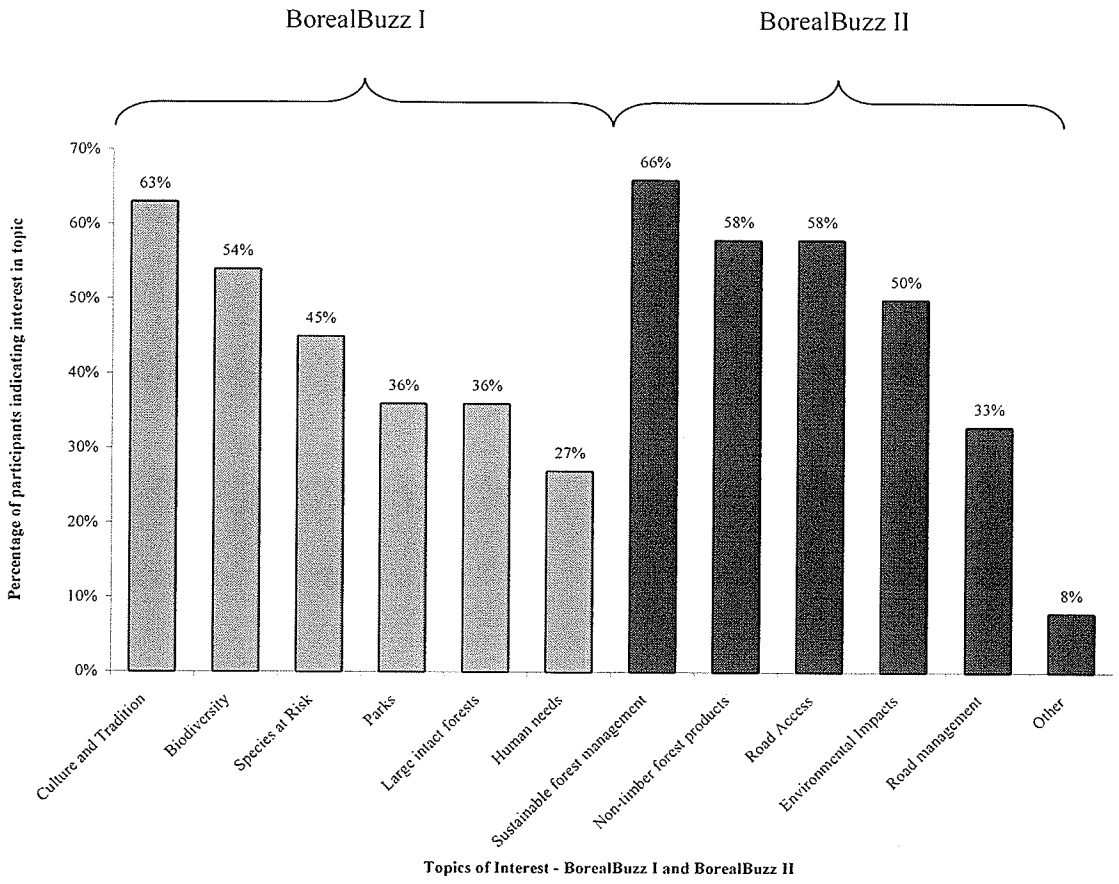


Figure 9 Interest in Topics on BorealBuzz I and II



Overall, the survey data shows that for both websites, most learning occurred for one or two topic areas, and that overall learning was reported to be slightly higher for BorealBuzz II than for BorealBuzz I across the board. Survey data also shows that interest in topics was highest for one to three topics and that interest levels were slightly higher for the top three topics in BorealBuzz II when compared with BorealBuzz I. When comparing both figures, it appears that the higher interest areas for both websites did not correspond to the higher areas of learning. For BorealBuzz I, the topic of highest learning was "culture and tradition" while the topic of highest interest was "large intact forests" followed by "species at risk." For BorealBuzz II, the topics of highest learning were "sustainable forest management" and "non-timber forest products" while the topic

of greatest interest was "road management." Given the diversity of membership interests and learning levels on the SFMAC, and given that learning from the website occurred on an individual basis, it is not surprising that these results are varied and do not show an overall group interest or area of learning.

Participant observation and interview data on learning from the website is somewhat sparse as it was difficult for participants to articulate or remember specific areas of learning. During participant observation, there were occasions when it was clear that participants had learned new information, often because they said so. These events were recorded. Often times, however, participants also used the information to discuss a memory or a thought that the information triggered, and it was not clear that new learning had occurred. As learning from website features was already described, the following excerpts are more focused on content. They concern the two most frequently expressed areas of learning new information – biodiversity and non-timber forest products.

Biodiversity and Endangered Species

> *Regarding the endangered species section, the woodland caribou was interesting, the wolverine was also interesting; the snail did not attract attention – according to regulations under which they [Tembec] operate, it is hard to visualize them doing something on land that would disturb a snail in the size of Lake Winnipeg* (20Int1, paraphrased).

> *We went to the biodiversity page...he hadn't heard of the Owl Lake herd but had known there were caribou in that area. He knew that Tembec was careful not to log in areas in Nopiming where there were calving grounds* (15Review1Fieldnote).

> *Once finished with the map, we went to the image gallery. There his interest sparked at that Owl Lake herd picture; he hadn't seen that herd before. He was also surprised at the number of GPS points that had been taken for caribou; he hadn't realized the numbers were that high. He also hadn't heard of the Woodland Caribou committee* (18Review1Fieldnote).

The tour made me realize how little I know about some endangered species (11Survey1).

Endangered species [was an] eye opener. You are in the forest every day [but] it is not something that you think about every day (01Int01).

Non-Timber Forest Products (NTFP)

Non-timber forest products – here there was some new information. He was surprised to learn about all the different types of NTFPs. He was also interested in the NTFP activity happening in the Pas retraining (07Review02Fieldnote).

My knowledge level increased as a result of being at the meeting and the information that Carissa gave. Very bluntly, the NTFP was always interesting, and I really did not know how much of those products that the forest provides until after I became involved [in the SFMAC] (13Int2).

It was interesting that the harvest of wild mushrooms and the dollar value was almost as large as maple syrup (24Int2).

It was obvious that he had had very little knowledge on this subject and had learned quite a lot. The table on non-timber forest products had been very useful (15Review02Fieldnote).

It is also worth mentioning that one participant took the initiative to publish information on non-timber forest products from the website in a community newsletter. The participant felt that the public was not as informed as it could be about the SFMAC and the issues it discusses. The participant had been especially interested in non-timber forest products and, with permission from the author, submitted an article on the topic to "*The Clipper Weekly,*" October 18, 2004.

While some participants felt that the website had been a useful learning tool, as indicated in the above results, others felt that while they were already familiar with much of the information, they could see the benefit of the website for others. These views are shown in the following quotes:

[It is a] good tool for the people that are little further down the learning ladder; you don't want to get too technical (07Int01).

> *Road closure and management – we have been through [these topics] so many times at meetings that I could evaluate what was there [rather than learn new information]. I thought that for someone who wasn't familiar with [the information], it would have been good. You are more likely to get me to look at it than in a written report and certainly, the accessibility is great* (24Int02).

There were also a number of suggestions on potential website content, including the following:

- a generic forest tour with zoom maps
- a searchable library
- company annual plans, including maps
- wildlife and tree species identification and site specific locations
- impact of forestry operations on wildlife
- videos and photos of forest tours, showing cutovers and treatments
- audio to provide information using a second channel
- information about interest groups involved in the SFMAC
- historical information on the SFMAC, such as previous minutes and decisions
- academic resource documents relevant to meeting topics

Participants also provided suggestions on other ways to inform SFMAC members, including one page summaries, or in the case of the annual plan, a four-page summary, which people could read before or at the meeting. During this research, a four-page summary of non-timber forest products was prepared and distributed before one of the meetings. Participant views of this approach are provided on Table 12.

4.5.3 Perceptions about Being Informed

One emergent aspect of this research was the diversity of perspectives, about the nature of being informed in the context of SFMAC committee meetings, that came through during interviews and website reviews. Roughly, these perspectives include whether participants viewed committee members as being informed, different ways of being informed, the types of information generally associated with SFMAC processes and the relationship between being informed and preparing for meetings. Overall, research

indicated the presence of many different perspectives about the role of information in the committee context. It also shows underlying reasons for diverse opinions about the usefulness of the introduction of a learning tool in the SFMAC context.

When asked to self-assess their level of knowledge, 60% of participants perceived their knowledge level of topics at SFMAC meeting to be above average in at least one topic area, relative to other members; 26% indicated that their knowledge level was average; and 13% indicated that their knowledge level was below average. Also, 66% of participants (N=15) linked being informed with motivation to participate during meetings. Other factors for participating in meetings included a general comfort level with other participants (40%); only a minority (13%) said they were motivated to speak because they thought they would be able to influence the discussion. Thus a majority of participants viewed themselves as generally being informed and also linked being informed with their own motivation to participate during meetings.

When asked if they thought committee members were informed, responses generally indicated that participants are specialists in their areas of interest, rather than generalists, and that it is difficult to have a good knowledge of all topics, as shown in the following quotes:

> *I think we are all experts in some of it, and not experts in all of it, which is one the neat things* (03Int02).
>
> *It gets to a point where the subject matter becomes so involved it is almost too much to cover all the bases* (13Int01).
>
> *Pretty good knowledge...60 to 70% of time. Everyone [is] at different levels* (15Int02).
>
> *Each person at the discussion brings their own strengths and areas more knowledgeable in, maybe some of the others are more knowledgeable because getting both sides* (22Int03).

> *[I] am probably attending meetings so I can ensure there is no radical misinformation. I have enough expertise in trapping to act as an advisor when it comes to fur bearer issues, I can bring it into virtually any topic that comes up* (07Int01).

A related area of emergent data is that committee members tend to bring different kinds of information to committee meetings, based on different ways of knowing. Some participants indicated they learned primarily through experience, while others learned from readings or from other public involvement discussions. The following quotes give a sense of the diverse sources of knowledge committee members identified with.

> *Most knowledge is from experience rather than reading knowledge* (15Int01).

> *In the last several months, through attending the East Side Plan, meeting with Tembec and LP and other meetings, they have all sort of melded into each other. I am fairly well informed on most of the events that are going on there* (07Int01).

> *I would have more knowledge on roads...I have read some articles on road impacts. So I would say that that's a large part of my background, just general political and environmental debates about roads and impacts. I have also been involved in field trips and so on...So I guess it's been both my background reading and my experience during the time that I have been involved in this stuff* (08Int02).

In addition to individual affinity for different ways of knowing, data also emerged regarding the type of information generally associated with SFMAC processes. It became apparent that most of the learning, for participants, occurs during meetings. The two main areas of learning are 1) other participant views and concerns and 2) sustainable forest management.

Participants said they often learned a significant amount about other participant views and concerns during meetings and that this learning was valued among participants, as show by the following quotes:

> *I did learn some new things [at the meeting, October 4, 2004]. The local folks were providing some reasons why roads should stay open. I knew [that view existed] but I had never heard it directly* (03Int02).
>
> *Generally, until I have walked a mile in his moccasins, I wouldn't know what he felt...I am sort of tourism driven, they are product driven. They may not give a damn about what we do for the tourists, but going through with the meeting and hearing each of the different interested parties and participants and being willing to have an open mind, we support each other* (13Int02).

A minority of members felt that views and opinions at meetings are similar among most members and, therefore, did not consider this an important learning area for them.

Participants also said they learned about forest management, including Tembec activities, forest ecosystem dynamics and management. The amount of learning that occurs is variable, as the following quotes suggest:

> *I have learned a lot. I never worked extensively in forestry or wildlife, so I have learned the most about that. While I understand the economics of a situation, I have not understood the silvicultural or forest or wildlife habitat aspects. I had an understanding the importance of some of these issues, but did not understand all of the interactions and techniques and why they did certain things. Over time I have become much more knowledgeable* (24Int02).
>
> *I learn if new topics are introduced. A lot of times we are going back over previous topics. The first time I tend to learn more about them; it is more review after that. Large intact forests was a new topic for many. I had some background on that concept so it was more of a review* (11Int01).

Other types of learning were also reported, such as learning about how to facilitate meetings and about the nature of interactions between different stakeholders. These aspects were also voiced by a minority.

This data indicates that learning about forest management is already occurring for SFMAC members, which means that the website has the potential to enhance the learning that is already occurring during meeting processes. On the other hand, research also indicates that learning largely occurs during meeting processes, not outside of them, which means the website is not only a new source of information, but is also a tool that

brings learning for SFMAC meetings outside of the meeting process itself. Data on views about preparation for meetings further substantiates this thought.

Members indicated that they typically prepare for meetings by reading materials sent to them by Tembec, usually past meeting minutes and the upcoming agenda. This usually takes half an hour. Less frequently, members may choose to review the annual plan and other research reports prepared by Tembec. Also, 55% indicated they preferred to prepare by reading text; 36% preferred viewing a website; and 18% preferred talking with other committee members. The top three factors leading to the amount of preparation that occurred included time availability, interest in the topic and ability to influence the discussion. A minority of participants expressed a sense of responsibility to be knowledgeable at meetings or a concern about the digestibility of materials. Overall, there was a sense that preparation for meetings was not considered to be a major aspect of SFMAC involvement, as shown in the following quote:

> *I don't put a lot into [preparation]; I just kind of bring my experience along with me most of the time. If there is something that I am not really interested in, I don't dig into it too far. So I guess that is the way it goes, everyone brings into it their own interests and something comes up [at the meeting]* (02Int1).

When asked about whether the committee as a whole was prepared, most (64%) indicated that yes, SFMAC members were generally well-prepared for meetings. A minority response (28%) was that members are generally not well prepared for meetings, as indicated by the following participants:

> *I think it would be good if people prepared more, but I am not sure they will, no matter what kind of tools they have. Many around the table have their positions already well established, and information isn't likely to sway their positions* (03Int02).

> *I suspect most people are not well prepared, most people think that they are...It never occurs to them that by getting more knowledge their opinion might change,*

> *a little more knowledge could totally change the way they view things...there are a lot of people there. This is my opinion; they are not concerned about the broader issues, they are concerned about their own issues* (05Int02).
>
> *I would say it depends on the topic, and would say no, most people have their opinions; whether they are well prepared positions depends on knowledge of that topic. You probably don't prepare yourself well enough to go to things like this... if you assume that people will do everything they should do, you are going to get less of a product than if you spoon feed them* (12Int04, Tembec representative).

All of this contextual information sheds light on participant views about the role of being informed at committee meetings, and thus influences the degree of perceived usefulness of a website. As was discussed, a number of participants considered most members, including themselves, to be adequately informed in specific knowledge areas, and consequently to be adequately prepared for meetings. Further, preparation before meetings is not a significant priority. This may be related to the large amount of learning that already occurs at meetings. Also, for those participants who primarily learn from experience, preparation may not be needed in order to be informed in the context of meeting discussion. Finally, learning largely occurs during meetings themselves rather than outside of meetings, which means the website is not only introducing a new tool but is bringing learning outside of the meeting context for a number of participants. In other words, learning is more than content. To summarize, it appears that participants, to some extent, were more informed after viewing the website versions. Also, different perceptions about being informed in the SFMAC context may affect the degree to which participants found the website to be a relevant and useful learning tool.

4.6 Informed Dialogue

The theoretical basis for this research suggests that informed participants will be better able to engage in informed dialogue. Informed dialogue could then increase the potential for critical reflection. In order to measure the extent of informed dialogue, SFMAC

meetings were observed and participants were interviewed. Table 18 summarizes results from meeting observations of four meetings where website related material was raised.

As shown on the table, content raised during the meeting (as recorded in the minutes) was cross-referenced with 44% of BorealBuzz I content and 54% of BorealBuzz II content. Thus, from this more quantitative perspective, it appears that the website may have had some impact on the extent of informed discussion, though not across the board. The data also shows that, a few times during discussions, the website was directly referenced as a source of information, often relating to photos viewed on the site. In one case, a participant had viewed a photo of an artifact on the website which had triggered a question that was then raised during a meeting. In another case, a participant had viewed a photo of a bridge removal on a website and had referenced the photo during the meeting. There were other instances, however, when participants had raised questions or made comments while viewing the website, that were not raised during the meeting (i.e. relating to published moose population numbers (18Review1), species at risk issues (03Int02) and large intact forest issues (20Int02).

Table 15 Web-related Content Raised at SFMAC Meetings

Meet Date	**Meeting 1: May 25, 2004**	**Meeting 2: October 4, 2004**
Information access prior to meeting	BorealBuzz I: HCVA	BorealBuzz II: Road Access
Meeting structure	• Power point presentation on HCVA • Round table on concerns and management strategies for east side • Updates	• Updates • Round table on "public access" concerns and suggestions • 2005 annual plan overview
Specific concerns cross-referenced directly with content on website	• 27 concerns raised during round table • 44% of concerns cross-referenced with website content	• 22 concerns raised during round table • 54% of concerns cross-referenced with website content
Direct website reference at meeting	• Artifacts viewed on website reminded participant of a question they had for Tembec – question was raised and answered	• A member referenced a photo seen on the website • A member brought website content to the meeting • A member indicated they had intended to bring content to the meeting
Comments made about website at meeting	• Tembec was encouraging about website, acknowledged work that had gone into it • Website contains more information than originally thought (through links) • Visibility issues with maps • There were computer access and use issues for some people • Appreciation for website was expressed by some	• N/A

Table 15 Web-related Content Raised During SFMAC Meetings Continued

Meet Date	Meeting 3: November 30, 2004	Meeting 4: February 3, 2005
Information access prior to meeting	BorealBuzz II: FSC background	• BorealBuzz II: Non-timber forest products • Handout on non-timber forest products
Meeting structure	• Overview of FSC Audit by Smartwood • Group Q&A session with Smartwood	• Presentation on caribou management • Round table and discussion on non-timber forest products • Updates
Specific concerns cross-referenced directly with content on website	• N/A	• 20 concerns raised during round table
Direct website reference at meeting	• N/A	• Members looked at handouts during round table session • A member questioned information on the handout (maple syrup in Manitoba)
Comments made about website at meeting	• Website useful for framing information, giving it a sequence, summarizing, providing links. • Information overload is an issue on committees • Specific topics of interest motivate one to review information	• Handout version more accessible for those with limited computer access • Photos made hand-out interesting • Website links useful • Photos encouraged participant to view website links • A participant expressed support for project as a whole

When asked whether the website had helped enable a more informed discussion, a majority of participants indicated that they had not noticed a difference in meeting quality after viewing the website. When asked if the website had helped their own participation, most indicated they had not spent enough time with the website to know; a minority said the website had been useful for providing background information and definitions. An overview of the ways that people thought the website might have helped inform the discussion is listed below:

1. provided a common reference point, "put everyone one the same page" and helped focus the discussion (25% of respondents);
2. enhanced overall knowledge and understanding and helped avoid missteps in the discussion (18% of respondents);
3. defined common jargon used in meetings (12% of respondents); and,
4. provided repetition of information which led to better retention of information (12% of respondents).

One participant offered the following reflection on meeting discussion, indicating that the website had not necessarily been a source of new information, but a reminder of different perspectives on a topic:

> *I was made aware of the different levels of knowledge; I am starting to realize certain things more like how to listen to other views. The website brought up topics that re-opened ideas that probably I wouldn't have thought of* (15Int02).

The Tembec representative also gave a sense of his perspective on the usefulness of the website. After the meeting corresponding to BorealBuzz I, he indicated that while people seemed to be more involved with the topic, it was difficult to pinpoint the impact, given

that personal and organizational opinions, more so than information, tend to come through during meetings. The following quotes, recorded after the meeting corresponding to BorealBuzz II, further emphasize these points:

> *I don't know how much the website has an effect or how much is personal opinion. It depends on what you are talking about. For access control, you may educate people, however people also have their positions. I don't know how much you are going to change a position, though you may change an understanding of others' positions. It depends on how well you do it. If Tembec did that website, and only put a Tembec position, it would show pretty quickly. By having a third party do it, you naturally get both sides* (14Int2).

> *Not sure...is it due to the website or is it due to the interactive component...it could also be the change in members. Whether the website had an impact or whether people are feeling more comfortable as time goes on, it is hard to say. We have developed a core group, so you know that people know each other* (paraphrased 14Int2).

The facilitator also provided interesting insight into the potential impact of the website on meeting discussion. Following the meeting corresponding to BorealBuzz I, he indicated that a number of factors could be associated with the meeting process and outcomes including: the meeting emphasis on values; an informative presentation given to participants at the beginning of the meeting; the website as a tool to provide exposure and help orient participants (thus putting participants in the right mental space); and a general comfort level among members with the process and with other attendees.

Following the meeting associated with BorealBuzz II, the facilitator indicated that the website was an objective tool around which discussion could begin; that the research process could have raised awareness about participation; and that participants seemed more elevated during the meeting which may have been related to the research process.

In summary, it appears that there are a number of less tangible ways in which the website (and research process) may have had an impact on meeting discussion. During

the process of this research, questions began to emerge regarding how participants viewed a productive discussion and to what extent this was related to an informed discussion. Questions were also raised about the role of meeting structure in influencing the type and level of discussion that occurred. These factors are interesting to consider and provide further context for understanding the potential for an informed discussion.

4.6.1 Defining a Productive Discussion

A productive discussion was defined by 80% of participants as either the opportunity for all members to speak or the voicing of diverse views and perspectives in an atmosphere of respect. Approximately 26% indicated that a valuable discussion was one that led to a specific outcome, such as problem solving or the resolution of an issue. (Note: members may have mentioned more than one factor in the above response.) Responses also included the importance of information sharing. These results would indicate that a productive discussion may be associated with a discussion that is informed by way of understanding diverse perspectives and opinions.

The following statements highlight views most commonly presented regarding a productive discussion, often with specific reference to the role of the facilitator:

> *When you get everyone involved, the way Denis does with a round table, open discussion tends to be dominated by certain people. Not that they are trying to dominate; everyone has an opinion and wants their opinion to be heard..*(14Int04).

> *Denis is pretty good at allowing everyone the chance to speak; he doesn't let everyone speak at one time. It seems to be meeting the needs of all. Tembec is getting input from the advisory committee, the advisory committee members are learning, taking back and using the information. It is a two-way street* (06Int2).

> *You put them all in one room, hear all points of view, you may not agree, but you hear each other and walk away thinking differently. There is a benefit to hearing the views of others, and hearing it first hand* (paraphrased, 06Int02).

Different views of people are expressed, everyone has his own view, not all views are good but when you put them all together and then pick out the best one, all of a sudden one or two are the right things. Different views of the same thing – that is very good (15Int2).

It is productive if there is a two-way conversation, if everyone contributes their ideas. That was the case with the round table, everyone had ideas (16Int02).

Where everyone at the table presents their view without fear of contradiction. They are willing to share their view even though others don't agree with it; DePape usually goes around for your opinion... (19Int2).

Meetings that I have been to are productive; everyone that speaks, options and problems are discussed, all out in the open. I have not heard anyone get really mad and not find an answer to their problem (22Int02).

Meetings are productive with the help of a moderator, so as to include as many viewpoints as possible, making sure everyone's viewpoints are expressed. If people are spinning wheels, they are coaxed along, recap to a nice concise point then agree to it. Some people have a hard time vocalizing a viewpoint (22Int3).

It is one that achieved the goals set out for. The facilitated discussion is important but Denis is good at letting a dialogue develop when appropriate and still maintaining the order of things. I have a tendency to jump in with both feet but realize it is disruptive. Dialogue is the most interesting part of the meetings (24Int2).

While many members hinted at the importance of discussions leading to outcomes, this was made explicit by a minority of members, indicated in the following statements:

The most important thing is that all the issues and concerns are brought out and hopefully the discussion contributes in some way to developing alternatives for resolving issues (08Int2).

A productive discussion is one that leads to a measurable outcome. I think this rarely happens and that has to do with the mandate of the group more than the discussion. Rarely is there a measurable outcome for discussions, nor does Tembec adjust a policy. We all learn a lot. I think we are generally all pretty respectful of everyone's opinion (03Int02).

A productive discussion is when you end up with a result, hopefully a positive one. Like you end with hearing the concern, hearing possible solutions, coming to a conclusion with an understanding of other people's requirements, then by consensus, coming to a decision, take whatever action the group would take, a

consensus of action. At [SFMAC] meetings, there is usually more said than done, that is least productive (13Int2).

In summary, a productive discussion is often attributed to all members voicing their views, and less often linked to achieving a measurable outcome or objective. Also, a minority yet important view is that the productivity of the discussion may be more related to the mandate of the SFMAC than to the facilitated process used to encourage discussion. Meeting structure, as indicated by the facilitator in an earlier quote, has an important role in shaping meeting discussions.

4.6.2 Role of Meeting Structure

The current structure used a round table approach, designed to elicit feedback from each participant sequentially. After all participants give their input, which is recorded on a flipchart, the meeting moves on to another topic. It is important to note that given the infrequency of SFMAC meetings, there are usually a number of issues to discuss at a meeting, with limited time to spend on each topic. One of the drawbacks of this approach, however, is that participants are less able to engage in dialogue with each other and the company. During this research, a suggestion was made by a participant that after the round table, the facilitator could allow time for people to respond to each other. This was shared with the facilitator, who enthusiastically experimented with the new approach at a meeting. Both the facilitator and the participant who suggested the change noticed a difference in the level of discussion that took place. Further, it was during this discussion time that the website was referenced at least once, and that additional perspectives not formerly raised were brought forth (SFMAC Meeting Minutes, Appendix 6).

Other suggestions relating to meeting structure included the use of photos during the meeting to enliven topics; increased time allocated to reviewing the annual plan;

opportunity to review annual plan and other documents one month before meeting; and, to expand the role of secretary to include an information research and distribution component. The secretary could be a graduate student looking for experience and able to use research skills.

Meeting structure is a balance between informing participants during meetings and allowing time for them to engage in discussions. The following participant further elaborates on this thought:

> *I think one lesson, if you will, is that productive discussions may not be compatible with too many information presentation items on the agenda. In other words, you have to have a single body of information that you are dealing with and explore and discuss and so on, rather than a whole lot of things just because it happens to be in the planning cycle of Tembec. So again that's a challenge for planning these meetings. If you can only effectively deal with one or two topics in any depth, how do you present the other information? How do you stage things around the year? Should everything be done in one group? There might be other ways of structuring this, rather than a single round table, just because there's only so much that people can process* (08Int02).

Thus, meeting structure has an important role in shaping the type of discussion that occurs and, potentially in the context of this research, the extent to which the website was referenced.

4.7 Critical Reflection

An informed discussion has greater potential to lead to critical reflection and potentially to transformative learning. Reflection, in the transformative learning sense, is connected to critical thinking and re-thinking underlying assumptions. This research found that it was challenging for participants to talk about reflection. For example, while 58% said that BorealBuzz II encouraged them to reflect, and 50% said they gained a new insight, it was difficult for them to verbalize what that reflection was in an interview. Some critical thinking on the topics of the second website did emerge during reviews, such as road

building practices (such as over water bodies) (05Review02), road density issues (08Int02) or road decommissioning practices (15Review02). Often times, however, critiques corresponded to personal biases and opinions rather than to critical thinking. Some of these statements emerged during the meeting as noted in Table 12. When asked if participants had had new insights as a result of the meeting, a strong majority indicated that they had not, even though they had learned new information.

While limited reflection seemed to occur as an outcome of the meetings, some participants did take the opportunity to reflect on this research. Two participants who were skeptical at the beginning of the project and wondered what the usefulness of the website would be, indicated greater acceptance of the idea at the end. The following statements illustrate these shifts.

> *It's pretty neat, prior to this I hadn't considered how a webpage might facilitate this process, and after seeing the first one, the blinders came off. This has potential to be a really useful resource, but it is not going to be easy because there is an overwhelming amount of information. For this to develop, I don't think one person could do it, it would need to be a subcommittee, with someone that could bring each of the perspectives, and is familiar with all the industry research and information – it would have to be a small group who could provide the information and synthesize. For me, I think the website was mostly demonstrating potential. Most of the topics I already had a pretty good grasp of* (03Int02).

> *Well, I think at the beginning I was a little skeptical, but I think you have worked hard to adapt the website format to something useful, with the feedback you received to make it more useful and more accessible to folk and more successful. I think, in stimulating prior reflection and the discussion aspects* (08Int2).

While the following reflections are less indicative of a perspective shift, they do indicate that participants reflected on the potential value of websites as a public involvement tool.

> *Ideally, everybody on the committee, before the meeting, should get a whole bunch of information, and should have time to go through it, and be as up to date on the information as they possibly can. Reality says that that is impossible; that's why this website is such a good idea, because the information is all in one place, nobody has to go looking for it. And the website is broken down into sections and*

> *there is all manner of information available just at a click; so any information a person wants is there and very accessible. On the other hand, there may be benefits to people going to committee meetings with all their biases and prejudices intact, because they may be able to make a stronger argument one way or another* (05Review02).

> *The product is good because it can prevent radicals from getting set in their ways, and prevent the use of misinformation. I think most committee members are quite in tune with computers. The information is there, and I know where to look for it. There are two sides, the committee side of things and the general public. A good bit of legitimate information will be a big advantage to stopping the spread of wrong information* (07Int01).

These comments indicate that these participants see the value of information, either for being up to date before a meeting or for ensuring the spread of legitimate information. However, there is also an underlying sense that committee members may not need a new information source to function effectively as a committee.

Finally, the following statement includes the recognition of computer use capability when considering the usefulness of the tool:

> *Something that I want to make very clear – the median age is 50, you are talking to people who grew up in the pencil and paper era and this is all new to them. Two to three years into the program, if you kept the website going, the level of understanding would be higher and it would be proportionate to their computer literacy* (05Int02).

At this point it is important to mention that the above comments are from individual members and do not necessarily represent the thinking of the majority of the committee. One of the reasons that there are not a lot of quotes which emphasize skepticism or discontent with the project is that those types of comments were very difficult to retrieve from participants, who would more likely be silent rather than speak against the research project. Some were even concerned that if they were "negative," this research project would be threatened. This was especially apparent during group discussion about the website at meetings, when the same participants (such as those

quoted above) would speak about the merits of the project while others would remain silent. Often those who remained silent were also those who had difficulty with the technology or were not convinced that additional preparation was needed for meetings to be productive.

4.7.1 Critical Reflection about Tembec Activities

An emergent question in this research was the extent to which participants felt comfortable with respect to Tembec activities – essentially how critical they were of those activities. When asked, 60% of participants indicated relative alignment with the perspective demonstrated by the company representative most of the time. In fact, participants said they sometimes agreed less with each other than with the forest company.

> *I am very comfortable with Tembec's views – we can't survive unless we have timber products for pulpwood; they have to have the wood to sustain their business* (paraphrased 13Int02).
>
> *They [Tembec] are doing everything that is reasonable, trying different things, trying the best they can* (01Int02).
>
> *I think the reps from Tembec have a more broad understanding of the various perspectives. My views differ less from theirs than some other groups; they understand both sides* (03Int02).
>
> *Could remember a time when disagreed with Tembec, then understood it differently; felt that they were on the right track* (15Int02).
>
> *Probably more in agreement in the last 2 to 3 years than the previous 2 to 3 years, though there are some things I am still worried about and have some fundamental disagreement with the paper company* (24Int02).
>
> *On the same page with Tembec, I think their objectives are great. The thing is that before, channels that had to be done before, environmentally wise weren't needed or required and I think they are going about it right with the 10 year plan; anything for the area is an asset* (31Int02).

Participants indicated a number of reasons why they were in general agreement with Tembec on issues – that Tembec is careful not take drastic stances during meetings (22Int03); that most participants have generally been aligned with Tembec given their economic power in the region (19Int02); or that Tembec generally has a better understanding of the issues (03Int02). Another reason could be Tembec's recent commitment to become Forest Stewardship Council certified, which involves an audit process and, in essence, monitors Tembec's activities. Positive press in the media regarding certification could be an important factor, as the following participant indicated:

> *People aren't trained to think critically and want to believe the rosy picture. If you are closely related to Tembec, you want to believe the ads* (03Int02).

In summary, due to their overall alignment with Tembec views, participants may be less motivated to be critically reflective of the company's activities.

4.8 Summary

This chapter has summarized data regarding participant response to the website, learning from the website, the level of dialogue at meetings and the potential impact of the website on dialogue and reflection, as well as emergent data regarding the committee context for learning and meeting discussions. These findings highlight the relevance of the computer technology capability to research outcomes, overall interest in visual website features, the importance of different knowledge levels in relation to learning from the website, and the influence of committee context and meeting structure on meeting discussions.

CHAPTER 5: PERSPECTIVES ON LEARNING, DIALOGUE AND WEB-BASED TOOLS

5.1 Overview

In this chapter, the interpretation of research results and relevant literature are interwoven according to the main themes of this research: the web-tool development process (5.2), participant interface with technology (5.3), the effectiveness of the websites as learning tools (5.4), and the impact of the websites on SFMAC discussions (5.5).

5.2 Web-Tool Development

The Internet is increasingly used as a communication tool for stakeholder advisory groups. Websites, often sponsored by the company (i.e. Tolko http://www.tolkomanitoba.com and the Crowsnest Forest Public Advisory Committee http://www3.gov.ab.ca/srd/regions/southwest/c5/gro.html) are a source of information on company plans, advisory committee meeting minutes and terms of reference, and maps. The websites developed in this thesis had a slightly different focus and approach. Here, the focus was to provide an alternative to complex and lengthy text by posting photos and maps on the web, using a structured web-tour approach. As established in the literature review, web-tours are increasingly used in educational settings to give students supplemental information about places in preparation for a real tour.

The use of transformative learning principles to engage committee members was instrumental in improving the website. The simple act of asking participants for suggestions and then acting on those suggestions not only led to a better product, but also strengthened support for the project among those who were skeptical that the project

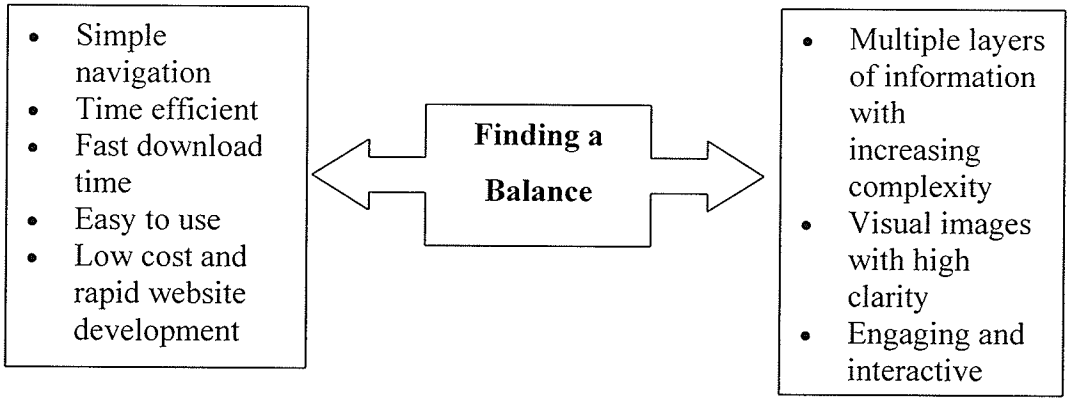
would be of limited value for those with little computer access or experience. This was most clearly stated by an initially skeptical participant, who stated,

> *Well, I think at the beginning I was a little skeptical, but I think you have worked hard to adapt the website format to something useful, with the feedback you received to make it more useful and more accessible to folk and more successful I think in stimulating prior reflection and the discussion aspects* (08Int2).

This research found that, on the whole, more positive feedback was obtained for the second website (www.borealbuzz.com/borealII), as shown in the results. Keys areas of improvement included layout, relevance of information, and clarity of photos and maps.

In addition to improving the website, the use of an adaptive approach in website development allowed for a greater understanding of the dynamics involved in the process of communicating complex information using a website, as summarized in Figure 10. On the one hand, there was a need to keep the navigation of the site simple and time efficient and on the other hand, there was a need to ensure sufficient depth and complexity of information to address different knowledge levels. Also, given the focus on visuals, there was a need to include visual images with clarity, which also meant larger visual images and longer download times for those on low speed. Finally, there was a need for the website to be engaging and interactive for as many users as possible, while at the same time, working with the technological capacity of members. All of these factors were also mediated by budget and time parameters for website development.

Figure 10 Factors Influencing Communication of Complex Information



Overall, the tendency was towards multiple layers of information and greater image clarity, which meant that the website was not as structurally simple or time efficient as it could have been. The web-tour approach was a useful remedy as it enabled a directional, step-by-step approach to the overall website, meaning that users were faced with fewer choices about where to go next in order to view the primary layer of information. Those with greater interest could then drill down into the next layer of information. The balance was also tipped slightly in favor of simple design through the use of basic website code (and the absence of more sophisticated code that allows for more engaging and interactive features). Simple code was needed so that users with older and slower computers could access all of the features. As shown in the results, most people found the second website easier to navigate and also more informative, which indicates progress was made.

5.3 Response to BorealBuzz

The results indicated that, initially, about a third of participants had high computer skills while nearly a half had low skills. Also, a number of participants with low skill levels expressed resistance to the initial concept of BorealBuzz, for reasons such as lack

of access, low skill level and lack of interest in learning. This data appears to be part of a larger trend regarding computer use in rural areas and with the ageing population. In this research, those with high computer skills (30% of participants) tended to live in urban areas (27% of participants) and were employed (63% of participants). On the other hand, participants with low computer skills (45%) also often lived in rural areas (68%) and were retired (36%). These trends appear to be part of a larger trend known as the digital divide and a significant amount of research on the digital divide has been conducted in Canada and worldwide.

The digital divide is a gap in technological infrastructure, access, use, skills and literacy that is associated with segments of the population that are between 64 to 74 years of age, less educated, have lower household income, and are rural dwelling (Dryburgh, 2002). Non-users also face a number of barriers to Internet use, the greatest of which is cost, followed by access to computers or the Internet, low skills and support, negative attitudes towards computers (such as computers are for "brainy" people, youth, middle class, or are difficult to use, and concern about safety), and lack of interest in content (Cullen, 2001).

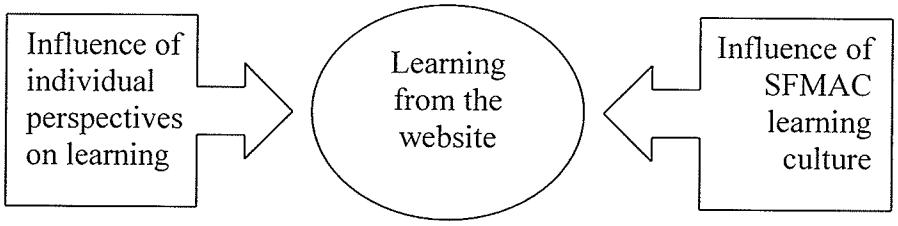
In this research, 80% of participants reported having access to the Internet or a computer either at home, at work or in the community, yet the skill level was much lower (45%) and some participants also had negative attitudes towards using computers, as outlined in the results. Thus, skill level and attitude were important considerations, in addition to access. In this research, attempts were made to address skill level by providing on the spot training, and about a third of participants reported that their skill level increased.

Given that all participants who normally attend SFMAC meetings were willing to participate in this research, in face of issues associated with the digital divide, it is of interest to consider the underlying motivations for their participation. A likely factor was the support shown by the SFMAC facilitator and the Tembec representative for this project. There was some indication that Tembec has an influential role, given supportive comments made by some committee members about the company (as will be discussed later). This finding is not unlike those of Parkins (2002) who found that the sponsoring company of an advisory committee can have an important role in shaping group culture. The facilitator is also influential, particularly over group process, and support from him may have also led to membership participation.

5.4 Learning from the Website

This research found that learning occurred both from website features and from website content. It also found that attitudes and perceptions about learning, both about individual members and about the SFMAC as a whole, were important considerations when analyzing how the website was perceived as a learning tool. Based on this contextual information, it appears that there may be a "learning divide" on the committee, whereby learning is perceived as an important aspect of SFMAC function by a smaller subset of the larger group. These ideas are explored more fully in this section.

Figure 11 Learning from Website



A Learning Divide?

5.4.1 Dimensions of Learning from the Website

As indicated in the results section, participants reported learning from website features, such as photos, maps, text and internet resources, as well as from the various topics that were posted on the website. At a group level, certain topics, such as non-timber forest products and species at risk, were less familiar than other topics, such as road management, which had been explored at some depth during meetings. Learning seemed to vary from individual to individual, depending on initial knowledge level or interest area. Newer participants to the process seemed to indicate a greater need for learning. Others indicated they were expert in certain areas and less so in others, which meant that certain areas would be more useful for them. Also, while some participants already knew the information on the site, they said it could be useful for others who were "lower on the knowledge ladder." These varied responses regarding learning from the website led to more in-depth questioning about participant views regarding learning and what it meant to be an informed participant. There appeared to be both individual and collective perspectives about the role of learning on the SFMAC; these perspectives add further understanding to the potential for integration of a website in the SFMAC context.

Individuals identified perspectives about preferred ways of knowing, as well as appropriate levels of knowledge for the participants on the SFMAC. Participants seemed to indicate an affinity for knowledge that was gained either from experience, from education and work or from other public involvement processes. Different ways of knowing in the stakeholder context have been further elucidated by Glicken (1999), who identified knowledge held by residents and land owners as being largely experiential, based on common sense and personal gain, knowledge held by experts as being largely cognitive and based on scientific evidence, and knowledge held by members of interest groups has being largely value-based. It was observed during this research that those with highly localized knowledge tended to gravitate towards localized information, such as specific photos and maps, while those with more conceptual or value-based knowledge were more concerned with the idea or concept being portrayed in a photo or map. For example, when viewing a photo of a river crossing, an "experiential knower" might emphasize issues related to the exact location, while a "value-based or cognitive knower" might emphasize issues related to best practices in building road crossings to reduce impact. Different ways of knowing would thus influence the type of learning that occurred from the website. It also emphasizes the importance of including content that appeals to both localized and broad issue base knowledge levels.

Participants also indicated knowledge on the committee was highly specialized among members, and a majority felt that they had an above average knowledge level of at least some of the subjects discussed at SFMAC meetings (60%). Members also said that informed participation was important, though feeling at ease with other group members was also an important indicator of participation during meetings. Given that a number of

members seemed comfortable with their knowledge level, it is not surprising that preparation for meetings was largely minimal, as shown in the following quote:

> *I don't put a lot into [preparation]; I just kind of bring my experience along with me most of the time. If there is [a topic] that I am not really interested in, I don't dig into it too far* (02Int1).

The discussion so far has focused on the majority of members. As shown in the results, there was also a minority who was more critical of the majority of members, saying that their contributions were mostly based on opinions, or that members in general were not as prepared as they could be for meetings. Since meeting preparation is not emphasized as part of meeting culture, with the exception of the option to review Tembec documents from time to time, the results would indicate that SFMAC member are generally not motivated to obtain additional information before meetings unless the topic pertains to something that is relevant to their specific concerns.

It is valuable to consider, for a moment, the implications of this contextual finding. That SFMAC members are not more fully preparing before meetings, such as requesting additional information, means that the majority of information is provided at the discretion of the forest company, often during meetings. Parkins (2002) echoes this result, finding that advisory committee members generally rely on the company for information. This leads Parkins to be critical of the informing process of advisory committees, suggesting that committee members become well-versed in the company activities over time, and actually become biased towards the company. Indeed, this research found a certain degree of alignment with company perspectives, as will be later discussed. Given the importance of access to full and complete information for meaningful public involvement, as outlined in the public involvement literature (i.e.

Fitzpatrick and Sinclair, 2003), these results question the degree of meaningful involvement at the SFMAC during SFMAC processes.

In addition to views about knowledge and preparation, it is also worthwhile to consider the perceived role of information at meetings. As already suggested in the previous discussion, some members bring personal experience and/or opinions based on beliefs to meetings. The importance of meetings as opportunities to share views and concerns, and the importance of an equitable opportunity to do so, was also highlighted in the results. One could argue that learning tools carry the potential of helping participants better articulate their concerns and views by providing conceptual and factual information as support for arguments. Indeed, there is a small amount of evidence that this took place, as will be discussed in the next section. On balance, however, there seemed to be less of an emphasis on articulating well informed arguments during meetings, and a greater emphasis on sincere and appropriate discussion (using terms from Habermas' validity claims). The lack of emphasis on informed arguments at meetings was validated by a small group of members. As shown in the results, some members indicated a sense of responsibility to fill the gap by sharing their conceptual and research knowledge, although they found it difficult to articulate the information in a way that would be understood by the group as a whole. Others indicated that meetings were less productive than they could be because there was rarely a measurable outcome around which to build informed arguments. The majority of members, however, were more inclined to view the group process as a favorable one because it provided the opportunity to voice concerns that may not otherwise be voiced.

These results ultimately point towards a learning divide on the SFMAC, where some members feel a strong sense of responsibility to be informed for meetings, while a majority simply bring their experience and already held knowledge to meetings. This learning divide then impacts the potential level of integration of a website as a tool for preparation and learning outside of the meeting context. For the website to succeed in this context, it would need to be welcomed by a majority of members, which could have implications for meeting process and overall SFMAC goals.

5.5 Website as a Tool to Enhance Discussion

By informing participants, this research sought to enhance the level of informed discussion taking place during meetings. There was some evidence that the website helped inform the discussion, as website content was referenced directly and indirectly during the meetings, to some extent. Further, participants reflected on a number of ways that the website could have been useful to the meetings, other than providing direct content, such as providing a common reference point, structuring the information, or providing greater awareness of different perspectives. On the other hand, the company representative thought it was difficult to pinpoint to impact of the website, given the predominance of opinions expressed at meetings. These perspectives led to further questioning about the role of information at SFMAC meetings and a greater understanding of potential influences.

The role of SFMAC process and history. A majority of participants indicated that a productive meeting was one where all participants had an opportunity to express their views and concerns, while a minority associated it with outcomes. This would indicate that meeting process may be a more emphasized aspect of SFMAC meetings, over meeting outcomes. Indeed, research conducted by McGurk (2004) also found that while

forest management stakeholder advisory groups were able to influence site-specific forest management as an outcome, there was inadequate involvement in long term forest planning, as discussed in Chapter 2.

Meeting process relates to meeting structure. In fact, meetings are often structured to allow all participants to have an opportunity to voice a concern or opinion relating to the topic of discussion. As the results show, there is a balance between allowing all members to speak and allowing members to engage in discussion about a topic, given the typically large agendas at meetings. It is not surprising, however, that meeting structure tends to favor an equal participation process, given the history of the SFMAC.

The SFMAC was formed in an atmosphere of conflict, at a time when environmental, resource based and aboriginal perspectives challenged each other in heated debates and, at times, members stormed out of meetings (Miller, Pers Comm, 2005). A number of participants talked about the benefit of having a facilitator who was introduced to provide a neutral tone to the meeting, as shown in the results. It is therefore possible that committee members continue to focus on the relative peace present in the group, *compared to how it used to be*, and that a facilitated process that ensures all voices are heard is the accepted process for ensuring relative peace is maintained.

Relevance of information on website to SFMAC discussion. There is some evidence to suggest that information participants learned from the website, or questions raised while reviewing the website were not raised during the meeting because the topic of discussion was tangentially related to their concerns. For example, some participants had questions about information in the High Conservation Value Forests report from BorealBuzz I, however these were not raised during the meeting, possibly because the

meeting discussion did not focus on questions about the report (which people could submit to the company in private). Instead, the discussion asked people about what they valued in the forest. This is not to say that the latter was not valuable, only that the opportunity to raise information from the website may not have been readily apparent in that case.

There is also some evidence to suggest that participants referenced the website when the information helped support already held ideas and opinions. This occurred a few times, when photos and maps from the website were referenced. This is consistent with research by Haklay (2002) who found that people tend to more readily use information if it supports already held views.

A related point is that information on the website may not have been as relevant to individual members as it could have been. This was necessarily so given the intention of creating a direct link between website content and meeting discussion. At the same time, a number of suggestions were made for website content that were not realized, many of them relating to the impact of logging on the boreal forest, or forest practices and planning.

5.5.1 Level of Critically Reflective Discussion

Critical reflection can be an important aspect of meaningful dialogue (Diduck, 1999; Sinclair and Diduck, 2001). One of the challenges of this research was obtaining data on reflection as it was difficult for participants to articulate whether reflection had occurred. There were some instances of reflection such as on website content, on underlying assumptions, on the overall concept of this research and on meeting discussions in general. There were also occasions during meetings where participants

raised a critical concern about a harvesting practice or location. However, when asked whether the meeting discussion had resulted in critical reflection, the majority of participants indicated that it had not.

Two possible factors lead to this result. First, participants may not have been accustomed to thinking or speaking about "reflection." Second, SFMAC members may be less inclined to be critically reflective due to meeting process and alignment with company values. Each of these possibilities is more fully explored below.

Participants not accustomed to critical reflection. First, participants may not have been accustomed to critical reflection, or verbalizing such reflections to others. Recent literature on transformative learning indicates that critical reflection may be a human developmental stage (Merriam, 2004). Merriam suggests that while transformative learning is said to enhance cognitive development, leading to more autonomous and mature thinking, high cognitive functioning may also be needed as a prerequisite for transformative learning, which may include a way of thinking that "allows for acceptance of inherent contradictions and ambiguities, alternative truths and different worldviews"(Merriam, 2004, p. 64). This type of reflection, called premise reflection, involves examining underlying assumptions and is different from reflection on content of an experience or reflecting on how to handle an experience.

Merriam sites studies suggesting that most adults do not operate at higher levels of cognitive functioning and that critical inquiry was found to be even rare among graduate students (i.e. King et al., 1994). In response to Merriam's review, Mezirow, a leading contributor to transformative learning theory, agrees that adult cognitive development is a prerequisite to transformative learning and sees the building of this

capacity as a role of adult education (Mezirow, 2004). On the other hand, Merriam suggests that transformation of perspective can occur for people without conscious reflection (i.e. Taylor, 2001; Kovan and Dirkx, 2003). In these cases, emotional and transpersonal dimensions were attributed to the transformation. Mezirow, who responds by suggesting that there is inadequate research on how transformational learning occurs for people of different cultures or socio-economic situations, also maintains that rationality is autonomous of social or cultural background and is a foundational to transformative learning (Mezirow, 2004). In the context of the SFMAC, which consists of highly educated and non-educated members, it is possible that a number of members have not yet reached the capacity to reflect critically, as defined by Mezirow. The minority of members who seemed to express critical reflection were also highly educated. On the other hand, while this research focused on cognitive critical reflection as leading to transformation, there could have been other modes of transformation not measured by this research.

Influence of meeting structure on critical reflection. SFMAC process and culture may be influencing the level of critical dialogue that occurs at meetings. As was previously discussed, meeting structure perhaps could have further enhanced critical reflection. Critical reflection is an aspect of rational discourse, which, as pointed out in Chapter 2, enables one to learn about the perspectives of others, reflect on one's own views, and develop and accept new perspectives. This process involves a kind of dialogue that allows for substantive deliberation. To some extent, critical dialogue seemed to be improving as opportunities for more open dialogue were generated at meetings, as was

discussed. The potential for this to further expand also exists as members are increasingly asked to think critically about discussion topics.

Participants not critically reflective of company activities. The results show that a number of participants are generally aligned with company values and would like to see the company succeed. Some of these participants had been critical of the company in the past, but were currently more comfortable with company activities. This could possibly relate to the company's country-wide goal of FSC certification, which is known for its emphasis on consultation and on site-specific sustainable practices. On the other hand, there is some research to suggest that alignment with the company may be part of a larger trend among resource management advisory committees, which become less critical of company activities and develop views that are less representational than the publics they represent (Parkins, 2002). Alignment with the company perspective could also be conceived of as a trust relationship. Parkins (2005, p.1) suggests that, "whereas trust can serve to facilitate the smooth functioning of democratic processes, it can also diminish the critical nature of discussion and debate and serve to de-politicize spaces." Diminished critical discussion also calls into question the legitimacy of stakeholder advisory committees as mechanisms for public review of company practices. Parkins suggests that a certain amount of distrust can be a valuable source of healthy skepticism and introduces the term "critical trust" characterized by "high levels of general trust as well as high levels of skepticism" (p. 18). Parkins also offers suggestions for promoting critical trust including greater involvement of committee members in driving the agenda and encouraging committee members to bring larger forest management discourses into the committee process (Parkins, 2005). These perspectives are useful for this research as they

confirm findings from this research regarding a lack of critical discourse on company activities, which may also impact motivation of participants to be informed.

5.5.2 Post-Data Collection Occurrences

Up to this point, the analysis has been drawn from data collected during the research period of February 2004 to February 2005. After data was collected, the researcher continued to observe two additional meetings held by the SFMAC. Two major occurrences of interest emerged. The first occurrence relates to the use of visual images during meetings. At one meeting, the display of photos taken during a forest tour prompted critical questions and led to an in-depth discussion lasting 20 minutes, and culminating in a commitment from the company to investigate the issue further. This emphasized the importance of visual tools in public processes.

The second event occurred during the same meeting. The company, bound to carry out suggestions made in the FSC audit, provided an outline of several ways the SFMAC could have a greater role in planning, including an in-depth review of the company's long term plan. As a result, two sub-committees were formed around two topics of interest – wood supply and public involvement. The first committee consisted of three individuals with expertise in modeling and the second committee included an aboriginal representative, a municipal representative, and an individual with an academic background. The sub-committees will review and advise Tembec and report findings to the larger group. The formation of sub-committees provided a forum for SFMAC members with "expertise" and interest to provide input into the company plan, while at the same time allowing those who did not volunteer the ability to continue acting as a forum for sharing views and concerns. This allowed for the diversity of interests and

needs on the SFMAC to be addressed while at the same time allowing for a continuity of process. The role of an information tool in this new context might be quite different than what this research found.

5.6 Summary

This chapter provided a discussion of the results beginning the characterization of website development as a balancing act between simplicity of design and complex features. This was followed by exploring response to the website in the context of the digital divide. Then, the discussion turned to participant learning from the website, highlighting diverse views about learning that point to a learning divide. The level of informed discussion was considered with attention to possible influences that emerged from the research, including SFMAC process and history, and relevance of information to meeting discussions. Critical reflection at meetings may also be influenced by several factors including the cognitive development, influence of process and a sense of alignment with company perspectives among some members.

CHAPTER 6: CONCLUSIONS AND RECOMMENDATIONS

6.1 Overview

This chapter provides a brief overview of the research (6.2), along with conclusions drawn from the research (6.3) and recommendations regarding the introduction of a website into a public involvement context, including specific recommendations for the SFMAC, and methodological and theoretical considerations (6.4). The chapter concludes with suggestions for future research (6.5)

6.2 Research Overview

Public involvement literature continues to voice concern that the public is not always provided with the appropriate tools to support meaningful participation in natural resource management decisions (McFarlane and Boxall, 2000a; Sinclair and Diduck, 2001; Fitzpatrick and Sinclair, 2003). When involvement is meaningful, it is thought that better decisions are made, conflicts are more adequately handled and issues reflecting economic, social and environmental values are addressed more effectively. Adequate access to appropriate information in an accessible form is a key issue when diverse members of the public come together in a stakeholder advisory setting (McFarlane and Boxall, 2000a). It is thought that an informed public is better able to learn and communicate during public deliberation, and thus engage more fully and meaningfully in the process (Sinclair and Diduck, 2001).

The application of web-based tools is increasingly used to inform the public, particularly as a planning tool, and the literature is beginning to speak about its effectiveness (Bell, 2001; Karjalainen and Tyrainen, 2002; Klemm and Tuthill, 2003). This research considered the use of web-based tools in the specific context of a

stakeholder advisory committee. This context is different from the broader public context because information and format is fine-tuned to a specific group of people.

The purpose of this research was to explore the potential of web-based tools as a means of helping stakeholder advisory committees engage more meaningfully in collaborative dialogue and learning within the complex of public participation process of sustainable forest management. The objectives of this study were to:

1. Adaptively construct a web-based tool to provide information relevant to SFMAC meetings to committee members.
2. Consider the effectiveness of web-based tools in communicating complex information in stakeholder advisory processes.
3. Explore the potential of web-based tools to promote meaningful public participation through learning and dialogue, within the social context of advisory committees.
4. Add insight to the best practices of using web-based tools in a public participation context.
5. Make recommendations to the forest planning committee regarding the integration of web-based tools into public participation programs.

The research embodied a naturalistic inquiry, case study approach within a participatory action framework. Over the course of the research, two websites were designed and tailored to the SFMAC. Participants were observed reviewing the website and provided feedback verbally and through questionnaires. Six SFMAC meetings were observed and participants in those meetings were later interviewed. Throughout the

process, a field note journal was also kept. This data was then reviewed and analyzed through lenses of public involvement, learning and communication.

6.3 Conclusions

Research findings have led to the following conclusions.

1. A website has a number of potential benefits for the stakeholder advisory process.

One of the highlights of this research concerns the *potential* of the website to shape the stakeholder advisory process. For example, stakeholder committee members gained greater awareness of this potential over the course of this research, often after the BorealBuzz website had been viewed. Given that this research involved *piloting* a website in a committee context, it is not surprising that there was greater understanding about the potential of the website in that context, rather than realized gains. In order to gain more insight into the effectiveness of the website as tool to inform discussion, research over a much longer time period, during which the website would be more fully integrated into the committee context and technology-related barriers would be overcome, is needed. Also, the potential of introducing a website into a stakeholder advisory committee could be better realized if a number of influencing factors, outlined in this research, were addressed.

2. An iterative, participatory approach is essential.

This research found that the process of obtaining feedback from committee members led to a website that was more useful and reflective of committee members' interests. While this process can be time and energy intensive, it is essential when the goal is to accommodate the broad range of interests and learning needs that exist within a stakeholder advisory committee.

3. The digital divide is alive and well.

It is not surprising that there was some resistance to the use of computer technology on the committee, given that the SFMAC generally fits within the parameters of what is considered to be the digital divide. The influence of the digital divide includes and reaches beyond technological infrastructure and access to also include skill level and attitudes regarding computer technology. The successful integration of a website into the SFMAC context would, therefore, require not only a shift in computer infrastructure access, but also in attitude and skill level for some members. Also, widespread use of internet technology on the SFMAC may require that a majority of members adopt the Internet as a relevant information source in daily life and/or perceive it as relevant to committee meetings.

4. Website development requires a dynamic balancing act between user-friendliness and complex content.

The communication of complex information, in a way that is user-friendly for multiple user levels, was a challenge of website development. BorealBuzz tended towards multiple layers of information, thereby increasing the complexity of design and allowing for greater depth of information. Added complexity was tempered by the use of a web-tour approach which reduced the number of choices required to view the basic level of the website, as well as simple coding that enabled rapid download on slower computers.

5. Visual formats are effective in communicating information to a diverse audience.

Maps and photos enabled the communication of both localized information and broad concepts to the diverse stakeholder audience. The findings of this research emphasized both experiential and cognitive ways of knowing and thus the usefulness of the website

depended, in part, on its ability to relay both types of information in an effective way. This also has implications for the way information is traditionally relayed to committee members and underlines the importance of including visual formats.

6. A learning divide may exist on the SFMAC.

Given different perceptions about learning and informed participation, there may be a division between participants who perceive learning as central to their role on the committee and those who do not. The former seem to embrace learning before, during and in-between meetings and they are more inclined to pursue new learning opportunities. For the latter, learning is not a priority and they prefer to learn at meetings, as a by-product of interaction. While this learning divide is not surprising, given that learning is not a direct expectation of members, it does have implications for how far the committee is able to develop and progress.

7. Productive discussion is not necessarily defined as informed discussion.

Some members seem to define productivity as the opportunity for all to *participate* in the meeting. For these members, participation does not require meeting preparation nor does it require that additional information be included in a discussion. The only requirement is that the participant be knowledgeable in their area of concern and be willing to listen to the concerns of others. Other members define productive discussion as achieving a *measurable outcome*. For these members, participation presupposes a level of knowledge about the topic being discussed, whether or not the topic is directly relevant to committee member interests. Meeting process, including the emphasis on equal participation, likely influences how members define meeting productivity. Beyond process, however, there may be other influencing factors relating to goals and objectives of the committee.

Ultimately, for the website to be perceived as a relevant tool by the majority of members, both definitions of a productive discussion would need to be widely adopted by committee members.

8. Alignment with company perspectives may reduce healthy skepticism.

This research confirmed findings by Parkins (2002, 2005) that resource based advisory groups tend to develop greater alignment and trust with company perspectives over time, leading to reduced motivation to critically reflect on company activities. This has implications for motivation to be informed and to participate in critical dialogue regarding practices, and in a broader sense, reduces the legitimacy of stakeholder advisory groups as forums for public scrutiny of company activities.

9. Reduced opportunities for critical reflection limit the degree of learning.

The process of critical reflection leads to learning (Mezirow, 1991, Freire, 1972) which impacts the legitimacy of the public involvement process (Sinclair, 2001). In this research, learning through critical reflection was limited; this may have been influenced by lack of preparation before meetings, infrequent field tours, and a meeting structure that promoted less open discussion. This implies that the conditions for critical reflection must be present if learning and dialogue are to lead to greater legitimacy of the process.

6.4 Recommendations

The findings of this research point to a number of recommendations regarding the introduction of a website into a public involvement context, as well as specific recommendations for the SFMAC. They also point to the need for better methods and theory.

1. Carefully integrate Website into Public Involvement Process

As this research indicates, introducing a website is not an instant recipe for creating an informed and critically reflective public. When introducing a website into a public involvement process, such as a stakeholder advisory committee, it is recommended that a ***long term approach*** be taken to help ensure successful integration. At the outset, ***lifelong learning*** would be a cornerstone of the approach and would also be embedded in public involvement objectives. The approach would ideally involve a ***neutral champion*** for the project, to find solutions to digital and learning divides, should they exist. Further, ***buy-in*** from the advisory committee regarding the potential of the tool to improve information access would be needed in order to overcome potential resistance. The approach would also involve narrowing the gaps of the digital divide by providing extensive ***website training*** over time and ***ease of access*** where possible (such as provision of facilities). Also, ***alternative mechanisms*** to inform those disinterested in computer technology, such as a print version, would be essential for ensuring equal access of information. Further, the approach would ***embed*** the website within the advisory committee process, and information on the website would have relevance to the meeting discussion. Ideally, the information would also be ***relevant*** to issues and concerns of committee members. In a forestry context, background information about forest practices and related impacts on the environment would also be provided, particularly for new members. The website would use ***visuals,*** such as photos and maps, as much as possible. The website would also include ***information about the group or committee***, such as meeting minutes, past decisions, and member-specific information. Finally, the website would be viewed as a ***dynamic product*** that would reflect the learning needs and interests of the group or committee. Website use would be monitored over time and there would be feedback

mechanisms for members as well as opportunities for members to contribute content to the website, which would be monitored for quality.

2. Further Enhance SFMAC Process

Develop a vision statement, goals and objectives for the SFMAC. Given the FSC mandate that the SFMAC develop an action list, it may be useful to first bring into the open current views about SFMAC purpose, goals and objectives. Then, the committee could work collectively to develop a vision statement that all could agree on. A vision statement could engage SFMAC members and give a sense of purpose. An example of a vision statement might be: "A healthy forest for all." Then, goals and action items could be developed that would align with the vision as well as criteria for FSC certification.

Update the SFMAC terms of reference to include an objective for learning. A greater emphasis on learning could encourage participants to stretch beyond what is currently known. By including learning in the Terms of Reference, a message would be sent that there is an expectation that participants will be on a learning curve as part of their membership on the committee.

Encourage healthy skepticism on the SFMAC. Following Parkins (2005), it is suggested that committee members be increasingly involved in setting the committee agenda, as well as more involved in applying knowledge to meeting processes. The latter could be done by encouraging participants to bring information resources to meetings if the topic of the meeting is within their areas of specialty. This could be in the form of photos, maps, written information or even a five-minute overview of the issue from their perspective. Further, participants who are members of advocacy groups could be encouraged to engage the committee in broader sustainable forest management discourse.

Provide information in accessible formats. Reduce annual plans and research documents to two- to four-page summaries that provide committee members with the main points. Also, offer the source document for those who would like to review the information further. Consider developing a library of information that is electronically accessible and provides access to past SFMAC minutes as well as other relevant information. If Tembec decided to construct a website for the general public, a separate page could be set aside specifically for the SFMAC and include access to information for those members who use the technology regularly. The information should also be provided in hard copy at meetings, to members with limited access or ability.

Introduce more interactive discussion during meeting process. From a meeting perspective, meeting structure could alternate as follows: two meetings a year focused mainly on content and limited but equal participation from all committee members; and two meetings that allow for more involved discussion on a fewer number of topics. For the latter, there could be a specific objective, such as the development of a recommendation to the forest company regarding one of its practices.

3. Improve Methodological Tools

Based on the experience of this research, the following suggestions could enhance methodology in this type of research.

Expand the use of visuals. Website images were limited to photos and maps provided by the company. An alternative approach would be videos or photos taken by foresters with the intention of informing the SFMAC. These types of visual images could be very useful especially when a location is remote and unlikely to be visited on a SFMAC field tour.

Develop website as an educational tool. Further emphasis could be placed on the development of the website as an educational tool. In this research, the focus was on providing greater access to information and was based on principles of transformative learning. The development of web-based tools using other educational methodology would provide additional understanding of adult learning in the advisory committee context.

Provide computer training. Given the low skill level of some participants, a computer training module at the beginning would have been useful. Another approach would be to pair committee members with high and low skills together, and suggest that those with high skills train those with lower skills. Computer training early on may have relieved some of the learning pressure those participants experienced as they both tried to learn to use the program as well as learn the material.

Use more extensive tools for measuring critical reflection. In this research, critical reflection was measured in a similar way to learning – thorough observation and in dialogue with participants. Questions regarding reflection were open-ended, allowing participants to respond using their own definitions for reflection. It is possible that more extensive measurement tools may have been more effective to measure reflection. Kember, Leung et al. (2000) used a survey in their research to test for different layers of reflection, ranging from understanding, to reflection, to critical reflection. The survey is elaborate and had a high reliability among nurses. One of the challenges of using such a tool in this context would be ensuring the language was appropriate for as many members of the stakeholder committee as possible.

4. Develop a Comprehensive Public Involvement Theory

While the theories used in this research were useful, they were also limited and partial. For example, public involvement research tends to focus more on involvement processes and outcomes and less on individual interiors (values and cognitive development), cultural context (culture and history of advisory group), and skills and abilities (communicative and technological competence). These lesser used perspectives were invaluable for this research because they allowed for a greater understanding of potentials and barriers to a more informed process. Therefore, there is a need for a comprehensive public involvement theory that combines various perspectives on meaningful involvement, including 1) participants' interiors (values and cognitive development); 2) skills and abilities (technological competence); 3) discussion context (culture and history of advisory group) and 4) meeting framework (meeting organization and terms of reference for participants).

6.5 Future Research

This research suggests several potential areas for future research.

1. Long term integration of website into committee context

It would be useful to observe any shifts that might occur in SFMAC perspectives on learning and dialogue due, in part, to the integration of a website into the committee process. This would also further understanding about best practices regarding the integration.

2. Long term impacts of implementation of FSC recommendations

Implementation of FSC recommendations, including the development of an annual action plan, a formalized dispute resolution mechanism and increased involvement of the committee at the planning level, may require addressing membership perspectives regarding meeting goals and the benefits which members currently derive from meetings.

Research into this process could lead to best practices regarding the implementation of recommendations that require a shift in perspective for members of an advisory committee.

3. Mechanisms for introducing healthy skepticism

Given what is known about this committee through this and other research, further insight into what mechanisms worked best to encourage and sustain healthy skepticism would be useful. This could also involve the development of a process that would raise participant comfort level with healthy debate while at the same time maintaining a general level of trust. Research into promoting critical reflection and healthy skepticism would also further the aim of public involvement theory to increase meaningful involvement in decision making.

6.6 Summary

These research findings indicate that there is much to be learned about the integration of information technology in the stakeholder advisory committee context. This is not surprising since a diversity of perspectives – expert and experiential – regarding information, learning and dialogue are at play. It is also apparent that *meaningful public involvement*, as much a process as an idea; shapes and is shaped by the *many meanings* of informed participation. The inclusion of these perspectives makes the story told in this thesis more complete.

REFERENCES

Applestrand, M. (2002). "Participation and societal values: the challenge for lawmakers and policy practitioners." Forest Policy and Economics **4**: 281-290.

Arnstein, S. R. (1969). "A Ladder of Citizen Participation." Journal of the American Planning Association **35**: 216-224.

Ball, J. (2002). "Towards a methodology for mapping 'regions for sustainability' using PPGIS." Progress in Planning **58**: 81-140.

Baumgartner, L. M. (2001). "An Update on Transformational Learning." New Directions for Adult and Continuing Education **89**: 15-24.

Beckley, T. M. (2000). Sustainability for Whom? Social Indicators for Forest-dependant Communities in Canada. Project Report 2000-34. Edmonton, Sustainable Forest Management Network.

Beierle, T. C. (2002). "The Quality of Stakeholder-Based Decisions." Risk Analysis **22**(4): 739.

Bell, S. (2001). "Landscape pattern, perception and visualisation in the visual management of forests." Landscape and Urban Planning **54**: 201-211.

Bernard, H. R. (2002). Research Methods in Anthropology: Qualitative and Quantitative Approaches. Walnut Creek, AltaMira Press.

Buchy, M. and S. Hoverman (2000). "Understanding public participation in forest planning: a review." Forest Policy and Economics **1**: 15-25.

Calman, L. (2002). "NVivo CD-Rom QSR International, Australia, 2000, (www.scolari.co.uk/qsr/qsr_NVivo.html) 95 Educational Single-user Licence, 141 Student Single-user Licence." Journal of Advanced Nursing **37**(3): 312.

CHAPTER 7: REFERENCES

Applestrand, M. (2002). "Participation and societal values: the challenge for lawmakers and policy practitioners." Forest Policy and Economics **4**: 281-290.

Arnstein, S. R. (1969). "A Ladder of Citizen Participation." Journal of the American Planning Association **35**: 216-224.

Ball, J. (2002). "Towards a methodology for mapping 'regions for sustainability' using PPGIS." Progress in Planning **58**: 81-140.

Baumgartner, L. M. (2001). "An Update on Transformational Learning." New Directions for Adult and Continuing Education **89**: 15-24.

Beckley, T. M. (2000). Sustainability for Whom? Social Indicators for Forest-dependant Communities in Canada. Project Report 2000-34. Edmonton, Sustainable Forest Management Network.

Beierle, T. C. (2002). "The Quality of Stakeholder-Based Decisions." Risk Analysis **22**(4): 739.

Bell, S. (2001). "Landscape pattern, perception and visualisation in the visual management of forests." Landscape and Urban Planning **54**: 201-211.

Bernard, H. R. (2002). Research Methods in Anthropology: Qualitative and Quantitative Approaches. Walnut Creek, AltaMira Press.

Buchy, M. and S. Hoverman (2000). "Understanding public participation in forest planning: a review." Forest Policy and Economics **1**: 15-25.

Calman, L. (2002). "NVivo CD-Rom QSR International, Australia, 2000, (www.scolari.co.uk/qsr/qsr_NVivo.html) 95 Educational Single-user Licence, 141 Student Single-user Licence." Journal of Advanced Nursing **37**(3): 312.

Carr, D. and K. Halvorsen (2001). "An evaluation of three democratic community-based approaches to citizen participation: surveys, conversations with community groups and community dinners." Society and Natural Resources **14**: 107-126.

Canadian Council of Forest Ministers (CCFM). (2003). Defining Sustainable Forest Management in Canada Criteria and Indicators 2003.

Clover, D. E. (1995). "Theoretical foundations and practice of critical environmental adult education in Canada." Convergence **28**(4).

Clover, D. E. (2003). "Environmental Adult Education: Critique and Creativity in a Globalizing World." New directions for adult and continuing education **99**.

Creswell, J. W. (2003). Research Design: Qualitative, Quantitative and Mixed Methods Approaches. Thousand Oaks, CA, Sage Publications.

Canadian Standards Association (CSA). (2003). Z809-02 Sustainable Forest Management: Requirements and Guidance Update No. 1.

Daniel, T. C. and M. M. Meitner (2001). "Representational Validity of Landscape Visualizations: the effects of graphical realism on percieved scenic beauty of forest vistas." Journal of Environmental Psychology **21**(1): 61-72.

Diduck, A. (1999). "Critical education in resource and environmental management: Learning and empowerment for a sustainable future." Journal of Environmental Management **57**: 85-97.

Diduck, A. and A. J. Sinclair (1997). "The Concept of Critical Environmental Assessment Education." The Canadian Geographer **41**(3): 294-307.

Diduck, A. and A. J. Sinclair (2002). "Public involvement in Environmental Assessment: The Case of the Nonparticipant." Journal of Environmental Management **29**(4): 578-588.

Dryburgh, H. (2002). Changing our ways: Why and how Canadians use the Internet. Catalogue no.56F0006XIE. Ottawa, Statistics Canada.

Dunster, J. and K. Dunster (1996). Dictionary of Natural Resource Management. Vancouver, UBC Press.

Fitzpatrick, P. and A. J. Sinclair (2003). "Learning through public involvement in environmental assessment hearings." Journal of Environmental Management **67**: 161-174.

Freire, P. (1972). Pedagogy of the Oppressed. Harmondsworth England, Penguin Education.

Forest Stewardship Council (FSC) (2003). National Boreal Standard Draft 2.1. C. W. Group.

Glicken, J. (1999). "Effective Public Involvement in Public Decisions." Science Communication **20**(3): 298-327.

Green, A. O. and L. Hunton-Clarke (2003). "A typology of stakeholder participation for company environmental decision-making." Business Strategy and the Environment **12**: 292-299.

Greenpeace, Natural Resources Defence Council, et al. (2003). Through the Trees: The truth behind logging in Canada.

Grimble, R., M.-K. Chan, et al. (1995). Trees and trade-offs: a stakeholder approach to natural resource management. Gatekeeper Series No. 52. London, International Institute for Environment and Development.

Habermas, J. (1984). The Theory of Communicative Action Volume 1 Reason and the Rationalization of Society. Boston, Beacon Press.

Haklay, M. (2002). "Public environmental information: understanding requirements and patterns of likely public use." Area **34**(1): 17-28.

Jenkins-Smith, H. C. and P. Sabatier (1993). The Dynamics of Policy-Oriented Learning. Policy Change and Learning: An Advocacy Coalition Approach. P. A. Sabatier and H. C. Jenkins-Smith. Boulder, CO, Westview Press.

Johnson, R. L., M. W. Brunson, et al. (1994). "Using Image-Capture Technology to Assess Scenic Value at the Urban/Forest Interface: a Case Study." Journal of Environmental Management **40**: 183-195.

Kangas, J. and R. Store (2002). "Internet and teledemocracy in participatory planning of natural resources management." Landscape and Urban Planning **62**: 89-101.

Karjalainen, E. and L. Tyrväinen (2002). "Visualization in forest landscape preference research: a Finnish perspective." Landscape and Urban Planning **59**(1): 13-28.

Kennedy, J. J., J. W. Thomas, et al. (2001). "Evolving forestry and rural development beliefs at midpoint and close of the 20th century." Forest Policy and Economics **3**: 81-95.

King, K. P. (2002). "Educational technology professional development as transformative learning opportunities." Computers and Education **39**: 283-297.

Kingston, R., S. Carver, et al. (2000). "Web-based public participation geographical information systems: an aid to local environmental decision making." Computers, Environment and Urban Systems **24**: 109-125.

Klemm, D. E. B. and G. Tuthill (2003). "Virtual field trips: best practices." International Journal of Instructional Media **30**(2): 177-193.

Kotak, B. (2004). Presentation to the Sustainable Forest Management Advisory Committee on Forest Stewardship Council Certification, May 25, 2004. C. Wieler. Pine Falls, Manitoba.

Kovan, J. T. and J. M. Dirkx (2003). ""Being called awake": The role of transformative learning in the lives of environmental activists." Adult Education Quarterly **53**(2): 99-118.

Leskinen, L. A. (2003). "Purposes and challenges of public participation in regional and local forestry in Finland." Forest Policy and Economics.

Lincoln, Y. S. and E. G. Guba (1985). Naturalistic Inquiry. Beverly Hills, Sage Publications.

Littlejohn, S. W. (1992). Theories of Human Communication. Belmont California, Wadsworth Publishing Company.

Manitoba Conservation, F. B. (2002). Next Steps: Prioirites for Sustaining Manitoba's Forests. Winnipeg, Manitoba Conservation.

McCool, S. F. and K. Guthrie (2001). "Mapping the dimensions of successful public participation in messy natural resources management situations." Society and Natural Resources **14**: 309-323.

McDonald, B., R. M. Cervero, et al. (1999). "An Ecological Perspective of Power in Transformational Learning: A Case Study of Ethical Vegans." Adult Education Quarterly **50**(1): 5-23.

McFarlane, B. and P. Boxall (2000a). "Factors influencing forest values and attitudes of two stakeholder groups: the case of the Foothills Model Forest, Alberta, Canada." Society and Natural Resources **13**: 649-661.

McGurk, B. C. (2003). Public Involvement in Forest Management and Planning in Manitoba: The Role of Stakeholder Advisory Committees (SACs). Natural Resources Institute. Winnipeg, University of Manitoba.

Merriam, S. B. (2004). "The role of cognitive development in Mezirow's transformational learning theory." Adult Education Quarterly **55**(1): 60-68.

Mezirow, J. (1991). Transformative Dimensions of Adult Learning. San Francisco, Jossey-Bass.

Mezirow, J. (1995). Transformation Theory of Adult Learning. In Defense of the Lifeworld: Critical Perspectives on Adult Learning. M. R. Welton. New York, State University of New York.

Mezirow, J. (1997). "Transformative Learning: Theory to Practice." New directions for adult and continuing education **74**.

Mezirow, J. (2000). Learning as Transformation" critical perspectives on a theory in progress. San Francisco, Jossey-Bass.

Mezirow, J. (2004). "Forum comment on Sharan Merriam's "The Role of Cognitive Development in Mezirow's Transformational Learning Theory"." Adult Education Quarterly **55**(1): 69-70.

Morris, N. (2003). "A comparative analysis of the diffusion and participatory models in development communication." Communications Theory **13**(2): 225-248.

Morrow, R. A. and C. A. Torres (2002). Reading Freire and Habermas: Critical Pedagogy and Transformative Social Change. New York, Teachers College Press.

Natural Resources Canada (NRCan) (2003). The State of Canada's Forests 2002-2003 Looking Ahead. Canada, Natural Resources Canada.

Orland, B., K. Budthimedhee, et al. (2001). "Considering virtual worlds as representations of landscape realities and as tools for landscape planning." Landscape and Urban Planning **54**(1-4): 139-148.

Palerm, J. R. (2000). "An Empirical-Theoretical Analysis Framework for Public Participation in Environmental Impact Assessment." Journal of Environmental Planning and Management **43**(5): 581-600.

Parkins, J. (2002). "Forest management and advisory groups in Alberta: an empirical critique of an emergent public sphere." Canadian Journal of Sociology **27**(2): 163-184.

Parkins, J. (2005). "The distrustful citizen: theories and observations from small-group settings." Canadian Forest Service.

Phillips, J. J. (1983). Handbook of Training Evaluation and Measurement Methods. Houston, Gulf Publishing Company.

QSR International (2005). NVivo.

Renn, O., T. Webler, et al. (1995). Fairness and Competence in citizen participation: Evaluating models for environmental discourse. Boston, Klewer.

Roberts, R. and N. Marshall (1996). "Stakeholder Consultation: Only one component of public involvement." Praxis Papers.

Robinson, D., M. Robson, et al. (2001). "Towards increased citizen influence in Canadian Forest Management." Environments **29**(2).

Rogers, E. M. (1962). Diffusion of innovations. New York, Free Press.

Rowley, J. (2002). "Using Case Studies in Research." Management Research News **25**(1).

Santos, S. L. and C. Chess (2003). "Evaluating Citizen Advisory Boards: The Importance of Theory and Participant-Based Criteria and Practical Applications." Risk Analysis **23**(2).

Schusler, T. M., D. J. Decker, et al. (2003). "Social learning for collaborative natural resource management." Society and Natural Resources **15**: 309-326.

Shor, I. (1993). Education is Politics: Paulo Freire's Critical Pedagogy. Paulo Freire: A Critical Encounter. P. McLaren and P. Leonard. New York, Routledge: 25-35.

Sinclair, A. J. and A. Diduck (1995). "Public Education: an undervalued component of the environmental assessment public involvement process." Environmental Impact Assessment Review **15**: 219-240.

Sinclair, A. J. and A. P. Diduck (2001). "Public involvement in EA in Canada: a transformative learning perspective." Environmental Impact Assessment Review **21**: 113-136.

Spicer, J. J. and J. Stratford (2001). "Student perceptions of a virtual field trip to replace a real field trip." Journal of Computer Assisted Learning **17**: 345-354.

Stainfield, J., P. Fisher, et al. (2000). "International virtual field trips: a new direction?" Journal of Geography in Higher Education **24**(2): 255-262.

Tahvanainen, L., L. Tyrväinen, et al. (2001). "Forest management and public perceptions - visual versus verbal information." Landscape and Urban Planning **53**: 53-70.

Tanz, J. S. and A. F. Howard (1991). "Meaningful public participation in the planning and management of publicly owned forests." Forestry Chronicle **67**(2): 125-130.

Taylor, E. W. (2001). "Transformative learning theory: a neurobiological perspective of the role of emotions and unconscious ways of knowing." International Journal of Lifelong Education **20**(3): 218-236.

Tembec (2003). Press Release: The Home Depot and Tembec team up to offer environmentally friendly lumber to consumers. Tembec to supply The Home Depot with FSC certified lumber. Atlanta and Montreal, Tembec.

Tuthill, G. and E. B. Klemm (2002). "Virtual field trips: alternatives to actual field trips." International Journal of Instructional Media **29**(4): 453-465.

Vasseur, L., L. LaFrance, et al. (1997). "Advisory Committee: A power tool for helping decision makers in environmental issues." Journal of Environmental Management **21**(3): 359-365.

Webler, T., H. Kastenholz, et al. (1995). "Public Participation in Impact Assessment: a social learning perspective." Environmental Impact Assessment Review **15**: 443-463.

Webler, T. and S. Tuler (2000). "Fairness and Competence in Citizen Participation Theoretical Reflections From a Case Study." Administration and Society **32**(5): 566-595.

Welton, M. R. (1995). The Critical Turn in Adult Education. In Defense of the Lifeworld. M. R. Welton. New York, State University of New York Press.

Welton, M. R. (1995). In Defense of the Lifeworld. In Defense of the Lifeworld: Critical Perspectives on Adult Learning. M. R. Welton. New York, State University of New York: 127-.

Williams, D. R. and S. I. Stewart (1998). "Sense of place. An elusive concept that is finding home in ecosystem management." Journal of Forestry **96**: 18-23.

World Resources Institute (WRI). (2000). Canada's Forests At A Crossroads: An Assessment in the year 2000. G. F. W. Canada. Washington, DC, World Resources Institute.

APPENDIX 1 APPROVAL LETTERS AND CONSENT FORMS

Ethics Approval for Survey and Interview Research

APPROVAL CERTIFICATE

20 April 2004

TO: **Carissa Wieler**
Principal Investigator

FROM: **Karen Duncan, Interim Chair**

Joint-Faculty Research Ethics Board (JFREB)

Re: **Protocol #J2004:078**
"Enhanced Engagement of a Forest Management Stakeholder Advisory Committee using Web-based Field Tours"

Please be advised that your above-referenced protocol has received human ethics approval by the **Joint-Faculty Research Ethics Board**, which is organized and operates according to the Tri-Council Policy Statement. This approval is valid for one year only.

Any significant changes of the protocol and/or informed consent form should be reported to the Human Ethics Secretariat in advance of implementation of such changes.

Please note that, if you have received multi-year funding for this research, responsibility lies with you to apply for and obtain Renewal Approval at the expiry of the initial one-year approval; otherwise the account will be locked.

Consent For Use Of Photos From Manitoba Conservation On Borealbuzz I Website

From: Richmond, Kelly-Anne (CON) [mailto:I ..]
Sent: Tuesday, March 30, 2004 9:26 AM
To:
Subject: East Side Photos 1 of 4

Hi Carissa,
I'll send the pictures in batches. These are from the Bloodvien River. Please credit the photos to Manitoba Conservation when using and note that they are not to be distributed or used elsewhere. I would appreciate seeing the final project if possible. Thanks,

---

Kelly-Anne Richmond
Protected Areas Specialist
Manitoba Conservation
Box 53 - 200 Saulteaux Crescent
Winnipeg, MB R3J 3W3
Phone 204.945.4040
Fax 204.945.0012
Email
www.manitobaprotectedareas.com

NOTE: Other photos used were provided for use from Tembec, Pine Falls.

Participant Consent Form for Electronic Survey

Enhancing engagement of a forest management stakeholder advisory committee using web-based field tours

Carissa Wieler

Sustainable Forest Management Network

This consent form, a copy of which you may print for your records, is only part of the process of informed consent. It should give you the basic idea of what the research is about and what your participation will involve. If you would like more detail about something mentioned here, or information not included here, you should feel free to ask. Please take the time to read this carefully and to understand any accompanying information.

Dear participant,

My name is Carissa Wieler, and I am a graduate student at the Natural Resources Institute (NRI), University of Manitoba.

The research project being undertaken is a Sustainable Forest Management Network (SFMN) project and is part of a larger study being conducted by Dr. John Sinclair, NRI. The purpose of my research is to develop and assess a communication and learning web tool to enhance participation during advisory committee meetings. By virtue of taking the web tour, you have been asked to participate in this survey. For this part of the research, participants are asked to provide their feedback on the website as well as general thoughts on the usefulness of the tool. The results of this survey will be used to improve the website, as well as to provide insight into the use of this type of tool for advisory committee processes.

The survey should take no longer than 15 minutes. You can at any time end the survey by clicking the link to the Home page or closing the website. Your responses will be held in strict confidence and the results of this study will be reported with no reference to specific participants. Your mailing address may be requested if you wish to receive the summary of research findings.

Your signature on this form indicates that you have understood to your satisfaction the information regarding participation in the research project and agree to participate as a subject. In no way does this waive your legal rights nor release the researchers, sponsors, or involved institutions from their legal and professional responsibilities. You are free to withdraw from the study at any time, and/or refrain from answering any questions you prefer to omit, without prejudice

or consequence. Your continued participation should be informed as your initial consent, so you should feel free to ask for clarification or new information throughout your participation.

Thank you for your time and consideration.

Carissa Wieler
Masters Student, Natural Resources Institute
70 Dysart Road, University of Manitoba Wpg, MB R3N 2T2
( ) , _____

This research has been approved by the University of Manitoba Joint Faculty Ethics Review Board. If you have any concerns or complaints about the project you may contact my supervisor Dr. John Sinclair, NRI at (204) 474-8374 or the Human Ethics Secretariat at (204) 474-7122. A copy of this consent form has been given to you to keep for your records and reference.

Participant Consent Form for Participant Interview

Enhancing engagement of a forest management stakeholder advisory committee using web-based field tours

Carissa Wieler

Sustainable Forest Management Network

This consent form, a copy of which will be left for you, is only part of the process of informed consent. It should give you the basic idea of what the research is about and what your participation will involve. If you would like more detail about something mentioned here, or information not included here, you should feel free to ask. Please take the time to read this carefully and to understand any accompanying information.

Dear participant,

My name is Carissa Wieler, and I am a graduate student at the Natural Resources Institute (NRI), University of Manitoba.

The research project being undertaken is a Sustainable Forest Management Network (SFMN) project and is part of a larger study being conducted by Dr. John Sinclair, NRI. The purpose of my research is to develop and assess a communication and learning web tool to enhance participation during advisory committee meetings. By virtue of haven taken the tour and attended the SFMAC meeting on the topic of the tour, you have been asked to participate in this survey. For this part of the research, participants are asked to provide their thoughts and reflections about the usefulness of this type of tool in relation to preparing for SFMAC meetings. The results of this survey will be used to assess the website, as well as give insight into the use of this type of tool for advisory committee processes.

The interview should take no longer than 1 hour and may be tape recorded with your permission. You can at any time end the survey by clicking the link to the Home page or closing the website. Your responses will be held in strict confidence and the results of this study will be reported with no reference to specific participants. Your mailing address will only be requested if you wish to receive the summary of research findings.

Your signature on this form indicates that you have understood to your satisfaction the information regarding participation in the research project and agree to participate as a subject. In no way does this waive your legal rights nor release the researchers, sponsors, or involved institutions from their legal and

professional responsibilities. You are free to withdraw from the study at any time, and/or refrain from answering any questions you prefer to omit, without prejudice or consequence. Your continued participation should be informed as your initial consent, so you should feel free to ask for clarification or new information throughout your participation.

Thank you for your time and consideration.

Carissa Wieler
Masters Student, Natural Resources Institute
70 Dysart Road, University of Manitoba Wpg, MB R3N 2T2
( ) ,

This research has been approved by the University of Manitoba Joint Faculty Ethics Review Board. If you have any concerns or complaints about the project you may contact my supervisor Dr. John Sinclair, NRI at (204) 474-8374 or the Human Ethics Secretariat at (204) 474-7122. A copy of this consent form has been given to you to keep for your records and reference.

I give my consent for an interview:

Participant Signature Date

I give my consent for the interview to be tape-recorded for research purposes:

Participant Signature Date

Researcher Signature Date

APPENDIX 2: WEBSITE SURVEYS FOR BOREALBUZZ I AND BOREALBUZZ II

BorealBuzz I Website Survey

[Participants automatically received the following survey after taking the web tour.]

1. The web-tour currently has 7 stops. Would you like to see:
    - same number of stops
    - more stops
    - fewer stops
2. The web-tour currently uses a mix of maps, pictures, text and links to more information. Which parts did you find most helpful? (pick all that apply)
    - maps
    - pictures
    - text
    - links to more information
3. Regarding the concepts presented during the tour, would you generally like:
    - more information
    - same amount of information
    - less information
4. Are there changes that you would like to see to the written part of the tour?

    Level of difficulty:
    - make it easier to understand
    - increase the challenge
    - keep it the same level of difficulty

    Length of written text:
    - make it shorter
    - make it longer
    - keep it the same length
5. Are there changes you would like to see to the image part of the tour?

Number of images:

- reduce the number of images
- use more images
- keep the number of images the same

Image quality:

- improve image quality so I can see it better
- reduce image quality so it downloads faster
- keep the image quality the same

6. Are there other changes you would like to suggest for the webtour? Please explain:

7. This website was intended to help you prepare for an upcoming SFMAC meeting. After taking the tour, to what extent do you feel it has helped you prepare?

- reasonably well
- very well
- no change
- not well

8. What concepts did you find most interesting about the tour?

- Biodiversity
- Species at Risk
- Habitat (Owl Lake Herd)
- Forest Fragmentation
- Large roadless areas
- Socio-economic features
- Heritage and cultural features
- Other: _____

9. What did you find least interesting about the tour?

- Biodiversity (Woodland caribou)
- Species at Risk
- Habitat (Owl Lake Herd)
- Forest Fragmentation
- Large roadless areas

- Socio-economic features
- Heritage and cultural features

Other: _____

10. Did your understanding of the following concepts change after viewing the webtour?

Improved 1 2 3 4 5 Decreased (3= stayed the same)

- Biodiversity (Woodland caribou) 1 2 3 4 5
- Species at Risk 1 2 3 4 5
- Habitat (Owl Lake Herd) 1 2 3 4 5
- Forest Fragmentation 1 2 3 4 5
- Large roadless areas 1 2 3 4 5
- Socio-economic features 1 2 3 4 5
- Heritage and cultural features 1 2 3 4 5

Other: _____

11. One of the goals of the web-tour was to give you a chance to reflect on concepts before an SFMAC meeting. Were there statements made in the tour that you disagree with? Please explain:

12. With regards to bias, do you think there was information that was inappropriately biased in favor of Tembec? Please explain:

13. Did you use the website or the CD-Rom version?

- Website
- CD-Rom

If you used the website, please proceed to Question 15.

If you used the CD-Rom, please proceed to Question 16.

14. Has your comfort level with using the Internet changed since viewing the website?

My comfort with using the Internet has:

- stayed the same
- improved slightly
- improved dramatically
- decreased

15. Would you consider using a web-tour to prepare for an SFMAC meeting again in the future? Yes/No

16. What do you think are the biggest barrier to using this type of tool to prepare for SFMAC meetings? (Please choose 3)

- Computer access
- Internet access
- Downloading maps
- Downloading images
- Website ease-of-use
- Complexity of information presented
- Overall time to take tour
- Other:_____

17. Are there any other comments you would like to make about the web-tour?

BorealBuzz II Website Survey

The following survey asks you about your thoughts about the BorealBuzz.com Part 2 website. Your feedback will be used to improve the website, as well as to find out about the usefulness of it. Before you begin, please ensure that you have read the Survey Consent Form. Thank you.

Name (Optional): _____

1. How much time did you spend on the tour?
    - o less than 40 minutes
    - o 40-60 minutes
    - o more than 60 minutes
2. Which of the following elements of the website did you find most useful? (pick all that apply)
    - o Photo gallery
    - o Audio Clips
    - o Written Text
    - o Maps
    - o Website links
    - o Quiz
3. Which of the following statements do you agree with the most?
    - o It took me a while to learn how to navigate the website, even after listening to the audio clips.
    - o It took me a while to learn how to navigate the website, and I did not listen to the audio clips.
    - o I was quickly able to navigate the website, with the help of the audio clips.
    - o I was quickly able to navigate the website, without the help of the audio clips.
4. Which of the following statements do you agree with the most?
    - The second version of the website was easier to navigate than the first version.

- The second version of the website was more difficult to navigate than the first version.
- Because I viewed the first website, the second website was easier to navigate.
- Both versions were equally difficult to navigate.
- Both versions were equally easy to navigate.

5. Are there changes that you would like to see to the written part of the tour?

   Level of difficulty:

   - make it easier to understand
   - include more scientific and technical information
   - keep it the same level of difficulty

   Length of written text:

   - make it shorter
   - make it longer
   - keep it the same length

6. Are there other changes you would like to suggest for the webtour? Please list and explain:

   _____

   _____

   _____

   _____

7. This website was intended to help you prepare for an upcoming SFMAC meeting. After taking the tour, to what extent do you feel it has helped you prepare?

   - reasonably well
   - very well
   - no change
   - not well

8. What topic areas did you find most interesting about the tour?

   - Road Tour- Environmental Impacts

- Road Tour- Road Management
- Road Tour- Road Access
- Non-timber forest products
- Sustainable Forest Management
- Other: _____

9. What did you find least interesting about the tour?
    1. Road Tour- Environmental Impacts
    2. Road Tour- Road Management
    3. Road Tour- Road Access
    4. Non-timber forest products
    5. Sustainable Forest Management
    6. Other: _____

10. Do you think your understanding of the following concepts change after viewing the web tour?

    1= improved understanding, 3= neutral, 5= decreased understanding

    - Road Tour- Environmental Impacts 1 2 3 4 5
    - Road Tour- Road Management 1 2 3 4 5
    - Road Tour- Road Access 1 2 3 4 5
    - Non-timber forest products 1 2 3 4 5
    - Sustainable Forest Management 1 2 3 4 5

11. Was there anything missing from the website in terms of information, or features that you would suggest including?

_____

_____

_____

12. What parts of the website were the most engaging (select all that apply)?
    - Quotes from famous people
    - Headlines throughout the text

- Photographs
- Scientific information
- Interview with Vince Keenan
- Quotes from other members of the committee
- Overall design and layout of the site
- Other: _____

13. The following questions make comparisons between version 1 and version 2 of the website. Please indicate which version most applies to the below statement.
    - The overall tone of the website is appropriate for the SFMAC.
      Version 1 Version 2 Neither Both
    - The purpose of the website was clear. Version 1 Version 2 Neither Both
    - The website triggered my memory. Version 1 Version 2 Neither Both
    - I learned new information. Version 1 Version 2 Neither Both
    - I was encouraged to reflect on the information presented.
      Version 1 Version 2 Neither Both
    - I gained a new insight. Version 1 Version 2 Neither Both

    Please expand on your answers here:

_____

_____

_____

_____

14. Do you think bias was present on the second website in terms of tone and information? If so, was this bias inappropriate? Please explain:

_____

_____

_____

_____

15. Did you use the website or the CD-Rom version?
    - o Website
    - o CD-Rom

16. Has your comfort level with using computers (including the Internet) changed since viewing the second website?

    My comfort with using the computers has:
    - o stayed the same
    - o improved slightly
    - o improved dramatically
    - o decreased

17. If you had the opportunity, would you consider using a web-tour to prepare for an SFMAC meeting again in the future? Yes No

18. Are there any other comments you would like to make about the website?

_____

_____

_____

_____

APPENDIX 3 INTERVIEW SCHEDULES FOR BOREALBUZZ I AND BOREALBUZZ II

Interview Schedule for BorealBuzz I

[Participants were interviewed after having taken the web-based forest tour and participating in a group dialogue that included the topic of the tour.]

Warm-up:

1. Ask for name, occupation, location of work
2. How long have you been a participant in SAC?
3. How frequently do you attend SAC meetings?
4. What interest do you represent on SAC?
5. What is your or your group's interest in Tembec's forest practices?
6. How many times have you visited the web-based forest tour?

Group dialogue and the web-based forest tour:

7. How would you describe the typical group discussion that generally happens at SAC meetings?
8. How would you describe your typical participation during group discussions at SAC meetings?
9. What are some things that might influence how the group interacts during SAC meetings?
10. To what degree do you believe increased knowledge about forest issues enable you to have more influence during advisory committee meetings?
11. Did you notice yourself or others talking about the content of the web-based tour during the SAC meeting?

Learning, communication and the web-based forest tour:

12. To what degree do you believe increased knowledge about forest issues will help you communicate better with other advisory committee members?
13. Compared with going on a real forest tour, did you learn more, less or the same using the web-based for tour?
14. Compared with reading text, was the information you learned from the web-based forest tour more, less or the same?
15. Was there any information in the tour that surprised you? If so, to what degree did you rethink your views and opinions about that topic after the tour?
16. How helpful was it to use pictures as a way of communicating about high value conservation areas?
17. Were there any images that caused to you rethink your views on the topic presented? If so, please describe the experience.
18. Were there any words or concepts that became more meaningful to you after viewing the tour? What were they?
19. Did your ability to express your opinions and thoughts about high value conservation areas change after viewing the tour?

Using web-based tools in public involvement

20. What is your view on using this tool in the future for other SAC topics?
21. In your opinion, what could improve the tool?
22. If a website were further developed that included features such as chat, or web-space for your group to post information and concerns, how valuable do you think it would be a) to the group; b) to you personally?

23. Would you like to be involved in the development of future web-based forest tours? If so, in what way(s)?

Interview Schedule for BorealBuzz II

Goals of interview:

To find out:

1. perceived knowledge level (and therefore need to prepare)
2. how strong "comfort in participating" is a factor in the dialogue that occurs (compared with knowledge level)
3. if learning is perceived to occur at meetings
4. how strongly views and opinions diverge or are similar with rest of group and Tembec; this relates to the democratic dialogue component of TL
5. how group discussions are perceived and valued
6. how points 1-5 corresponded to the meeting on Oct. 4
7. the usefulness of the website
8. the possibility of using a one-page review
9. any insights or thoughts about this research

General questions about meetings and dialogue:

1. How would you describe your knowledge level of most topics raised during SFMAC meetings? How do you think this compares with others on the committee?

2. What factors influence your willingness to prepare for a meeting the most?

    i.e. interest, time, influence, accessibility, understandability of materials, clear need, ability to provide better input

3. How would you describe your comfort level in talking during a meeting about the majority of topics raised?

4. What factors influence your comfort level in talking during a meeting most?

    i.e. knowledge, confidence, influence, comfort in group, creativity, interest, facilitation

5. Generally, to what extent are meetings a learning experience for you? What do you learn about the most? How about for other members of the group? For Tembec?

6. To what extent do you have views that are different from others present at meetings? How often does your view differ from Tembec's view?

7. How would you define a productive discussion? To what extent are group discussions productive during meetings? (hint: a productive discussion meaning the kind that happens on field trips where people have some back and forth with questions, beyond just giving input).

8. Would you like to see the level or type of discussion that occurs at meetings change in any way?

Questions specific to meeting on Oct 4:

9. How would you describe your knowledge level of topics raised at the meeting i.e. non-timber forest products, access roads? If you had previous knowledge, what was the source(s) of this knowledge? What role did the website have in improving your knowledge, if any?

10. How would you describe your comfort level in talking during the meeting? What role did the website have improving your comfort level, if any?

11. What did you learn at the meeting about non-timber forest products, and road access, if anything? (concepts, thoughts, understandings, insights)?

12. To what extent did the discussion that took place enhance the productivity of the meeting? What role did the website have, if any? Did you notice any differences this

meeting regarding the level of discussion, i.e. was it more productive? Did you notice any thing different about how the meeting was facilitated?

13. What could have improved the meeting, if anything?

14. If we had discussed non-timber forest products, what concerns would you likely have raised? Is it valuable to you to have a discussion about NTFPs at the next meeting?

Tools for preparation

15. What were the most useful aspects of the website for you? What were the least useful? Was the website better than last time, and if so what did you like better? Do you think the web site is a valuable tool for future meeting preparation?

16. Would a one-page preparation document to read before meetings, prepared by the facilitator or the secretary, be an adequate tool for preparation?

17. Would it be helpful for committee members to receive the minutes from the last meeting held on the topic to be discussed at the upcoming meeting as a refresher?

18. Do you feel that committee members are generally well prepared for meetings without background information on the topics to be discussed?

General

19. What new insight, thought or understanding has this research project led you to, if any?

20. Have you noticed any changes in group atmosphere at the meetings recently?

21. Do you have any other comments about the research?

APPENDIX 4 DATA COLLECTION DETAILED SUMMARIES

The following tables provide more detailed information about participant involvement in data collection and SFMAC meetings attended..

Table A4.1 Detailed Participant Data Collection Chart

Organization	Date(s) of CD/Website Review	Website Survey	Date(s) Interviewed	Attendance at May 25 meeting	Attendance at Oct 4 meeting
Bissett		II	Nov. 1, 2004	No	Yes
InterGroup Consulting			May 31 and Oct. 4, 2004	Yes	Yes
Lac du Bonnet	Oct. 4, 2004	II	Oct. 13, 2004	No	Yes
Laverendrye Trail Association	Sept. 13, 2004	I, II	June 8 and Oct. 12, 2004	Yes	Yes
Little Black River	June 3 and Sept. 13, 2004		June 3 and Nov. 22, 2004	Yes	No
Manigotagan			Oct. 8, 2004	No	Yes
Manitoba Conservation		II	Oct. 15, 2004	No	Yes
Manitoba Lodge and Outfitters Association	April 21 and Aug. 13, 2004	I, II	Nov. 22, 2004	No	Yes
Manitoba Metis Federation	Sept. 8, 2004	II	June 15, 2004	Yes	No
Manitoba Trappers Association	Sept. 13, 2004	II	June 8 and Oct. 18, 2004	Yes	Yes
Manitoba Trappers Association II	May 4, 2004	I		Yes	No
P and E Contracting (II)		I	June 3 and Nov. 16, 2004	Yes	No

Table A4.1 Detailed Participant Data Collection Chart Continued

Organization	Date(s) of CD/Website Review	Website Survey	Date(s) Interviewed	Attendance at May 25 meeting	Attendance at Oct 4 meeting
Paddle Manitoba		I, II	Oct. 28, 2004	No	Yes
Resource Conservation Manitoba		II	June 21 and Nov. 15, 2004	Yes	No
RM of Alexander	May 2 and Sept. 8, 2004	I, II	June 3 and Oct. 23, 2004	Yes	Yes
Shining Waters Heritage Region		I, II	June 17 and Oct. 7, 2004	Yes	Yes
South-East Forest Products		I, II	May 31 and Oct. 6, 2004	Yes	Yes
Tembec			May 31, June 15, July 15, and Oct. 11, 2004.	Yes	Yes
T.R.E.E. (Time to Respect Earth's Ecosystem)	June 18 and Aug. 12, 2004	I, II	Aug. 12, Oct.15, 2004	Yes	Yes
	Total Website Reviews	**Total Website Surveys**	**Total Interviews**	**Meeting Attendance**	**Meeting Attendance**
Total #	**13**	**22**	**30**	**13**	**14**

Table A4.2 SFMAC meetings attended

SFMAC meetings attended	Relevance to Research
February 4, 2004	Research project introduction
May 25, 2004	Link to Website 1: High Conservation Value Forests
June, 2004	Public meeting in Winnipeg on High Conservation Value Forests
October 4, 2004	Link to Website 2: Road access
November 30, 2004	Forest Stewardship Council Certification Audit
February 3, 2005	Link to Website 2 and Handout: Non-timber forest products.

APPENDIX 5 SFMAC TERMS OF REFERENCE

APRIL 19, 1999

TERMS OF REFERENCE
Tembec Industries Inc.
Sustainable Forest Management Advisory Committee (SFMAC)

SCOPE

The SFMAC will serve as one level of public involvement in Tembec's forest management activities on Forest Management Licence 01 (FML 01). Other levels of public consultation may include broad general public consultation, individual consultation with First Nation communities and individual consultation with affected forest users on a site specific basis.

The SFMAC will advise in the preparation of Annual Operating and Renewal Plans and the Ten Year Development Plans. They will also advise in the implementation of a Sustainable Forest Management System and an Ecosystem Based Management approach or any other relevant philosophy which may develop in the future.

PURPOSE

The SFMAC is established, as per the Tembec Environment Act Licence for their forestry operations, to provide organized and regular public input and advice into Tembec's forest management planning and operations. The SFMAC is established to select issues, consider and recommend actions and policies to Tembec. It acts in an advisory capacity only and Tembec is not obligated to accept the recommendations, however, Tembec will formally respond to every issue raised with documented reasons for acceptance, modification or rejection. Tembec expects to hold open and meaningful consultation with the SFMAC during the preparation of annual and long term forest management plans and in any other relevant areas or emerging philosophies of forest management, including all of the aspects of the forest. The SFMAC is expected to share their knowledge of the forest and to provide advice to Tembec.

OBJECTIVES

1. To provide an opportunity for the sharing of interests, values and concerns of all Committee members as they pertain to forestry activities on the FML 01.

2. To provide a forum representing a broad cross section of interests to discuss and provide input to Tembec's forestry activities, environmental practices and public involvement initiatives.

3. To advise Tembec in the development of forestry plans that implement the principles of Ecosystem Based Management.

4. To identify individuals who may be impacted by proposed forestry activities to allow for further consultation by Tembec on a site specific basis.

5. To communicate Committee activities to interested individuals, groups, organizations or communities.

OPERATION OF THE SFMAC

Members of the SFMAC must be committed to participate in a fair and honest sharing of views and at all times demonstrate respect for all committee members and guests. The Committee will work towards reaching a consensus realizing that, with the divergent nature of the groups, compromise rather than consensus may be required. The Committee will remain flexible and adaptive as dictated by societal and scientific changes and discoveries.

- The SFMAC will be chaired by Tembec; however, the Committee may request an independent facilitator to chair identified sessions or meetings.

- Tembec will pay mileage, meal and accommodation (if required) expenses of members who are not covered by their employer.

- Individual SFMAC members will not be requested to represent any position advanced by the Committee or other individuals. However, they must be prepared to consider opinions and differing positions advanced by others.

- In the interest of continuity, a commitment by SFMAC members to attend all meetings is expected. An alternate should be identified for each member organization to ensure representation at meetings. Alternates will be encouraged to attend certain meetings/field trips that are deemed by the Chairman to be a prerequisite to committee function.

- The SFMAC will meet at least four times per year with the frequency of meetings decided by the SFMAC or at the request of the Chairman.

- Minutes of the meetings will be taken by a local person hired by Tembec and will be distributed within two weeks of each meeting to each member.

- Consensus will be strived for in the operation of the Committee. Any dissent will be recorded in the minutes. A Committee vote will be used if the Committee feels it is desirable and necessary.

- Information required by the Committee will be provided in a timely manner. Information made available by individuals or organizations must be forwarded to the Chairman for distribution. Information of a confidential nature should be presented as such, with any use by Tembec respecting this confidentiality. Information or opinions should be substantiated by acceptable references wherever possible.

- Some areas of discussion may require the assistance of outside experts or resource persons. As these areas become apparent, Tembec will arrange to have these individuals present at a subsequent meeting.

- Individuals wishing to make a formal presentation will be required to notify the Chair in advance that they wish to make a presentation to the SFMAC.

- SFMAC members will decide if open public meetings are required to solicit opinions or suggestions on forest management activities on the FML 01.

- Identified issues will be recorded and maintained on a continuously updated list and will not be removed until resolved. The status of resolved issues will be reported back to the Committee if applicable.

APPENDIX 6 SFMAC MEETING MINUTES

SUSTAINABLE FOREST MANAGEMENT ADVISORY COMMITTEE
MEETING MINUTES
6:00 p.m. Tuesday, May 25, 2004
MANITOU LODGE, PINE FALLS

PRESENT

1. Little Black River First Nation
2. Powerview Metis Federation
3. P & A Contracting
4. P & A Contracting
5. Facilitator
6. Resource Conservation Manitoba
7. South-East Forest Products
8. Manitoba Trappers Association
9. Tembec
10. Laverendrye Trail Association
11. Time to Respect Earth's Ecosystem
12. Manitoba Model Forest
13. R.M. of Alexander

SPECIAL GUESTS

Dr. John Sinclair	U of M
Carissa Wieler	U of M
Brian Kotak	Forest Ecosystem Advisor to Tembec

The meeting was called to order at 6:30 p.m. Denis De Pape introduced himself and then had everyone around the table introduce themselves to the group.

1. Review of the Agenda
   The agenda was reviewed and accepted as presented.

Input for High Conservation Value Forest Analysis

- Brian Kotak gave a PowerPoint presentation on Forest Stewardship Council Certification and an introduction to High Conservation Value Forest Analysis.
- Brian explained that a high profile environmental campaign is currently underway to promote the sustainability of the Canadian Boreal Forest. Brian handed out a letter from Forest Ethics, Greenpeace, NRDC and Rainforest Action Network directed at paper users, urging them to purchase paper from sustainable sources. Tembec received positive recognition in the letter due to its FSC-certified forests.

- Tembec conducted an analysis of high conservation value attributes in the FML and is now consulting with stakeholders, like the Sustainable Forest Management Advisory Committee for input.
- High conservation value attributes include biodiversity, habitat protection, parks and protected areas, large intact forests, and human, cultural and traditional needs.
- A field manual was developed by Brian Kotak for Tembec field workers to identify rare plants and to enter their locations into GPS units. An audiotape with frog sounds was also developed. The field manual was passed around.
- Several comments were made by committee members during the presentation. These included:
    - Concern that wolverines may be expanding their home range but that limiting factors such as low caribou populations will prevent further population growth. If wolverines are designated as a Species At Risk by COSEWIC, a management plan will be needed.
    - Concern that World Heritage Sites, as proposed by First Nations in Manitoba and Ontario does not necessarily mean the sites are protected from development.
    - Tubali Falls may not become a protected area as the government announced recently that new campgrounds would be going into the area. A large diversity of animals and plants are located in the Tubali Falls area.
    - Kaneeshoot Operating Area: This area is located in a large intact forest area and Tembec is seeking advice from committee members about how to best manage the area. The Kaneeshoot operating area is located north of the town of Bissett and west of South Atikaki Park.

The following members asked to receive a draft copy of the High Conservation Value report:

Resource Conservation Manitoba
Manitoba Trappers Association
Manitoba Model Forest
Little Black River First Nation
Laverendrye Trail Association **would like a copy for review as well as copies available in community libraries and school libraries once it is approved.

Input Solicitation:

- Denis asked participants to spend 5 minutes thinking of 2-3 things that are important to the member or to the member's organization in the context of high conservation value attributes.

- Denis then went around the room and each participant gave input. Table 1 summarizes this input, also indicating the number of times a comment was

repeated. Denis then asked people for management suggestions for three of the values listed during the round table. Table 20 summarizes the results.

Table A6.1 What Is Valued?

Value	Why	Times Repeated
Bird River Highway Corridor	Inform cottagers of future harvesting activities	1
Survey marker – township line Range 15/16	Unusual rock cairn, curious	1
Continuance of fir industry	Managing cut lands with fir bearers in mind- holistic instead of indicator species	1
Specific sites of historic and cultural interest such as old mines, rock paintings, rock piles	Historic and cultural value; promotion, interpretation and education; interpretive signage for old mining sites no longer identified	111
Large landscape forest unharvested and minimal management in terms of fire protection, refugia, and other disturbance; focus on Atikaki and adjacent areas	Ecological value of large landscape forests.	11
Caribou in Owl Lake and Black Creek areas need to be protected calving sites, traffic at Black Lake, access to Flinstone Lake	Calving sites at Owl Lake and Black Creek; public traffic at Black Creek a concern; public access to Flinstone Lake; Beaver Creek: does harvesting occur where caribou are located?	11
Aboriginal use of the forest- cultural, sacred, economic-		1
Protect wild rice harvesting areas in Whiteshell area	Streams getting dammed up, water rising, rice is going; need to protect the wild rice harvesting areas.	1
Low impact recreational activities	ATV routes and trail bike routes are not considered low impact.	1
River corridors on the Manigotogan and Rice River need to be protected. Maintain Tubali Falls as an ecological reserve.		1
Access to timber.		1

Table A6.1 What Is Valued? Continued

Value	Why	Times Repeated
Diverse public use- (hunting, gathering, tenting) emphasis on areas outside of the usual ones.		1111
Sustainable job opportunities – logging, trapping, mining, natural forest products.		111
Protected areas in the Black River traditional area.	Currently on the backburner.	1
Protect cottages and canoeing along the translicense trails and lakes.		1
More forestry jobs by having more diversified forest products – poplar, birch, and tamarack.		1
Protect ecology of Black Lake by keeping cottages off lakeshore and motors off lake – keeping cottages of lake	It is a caribou calving ground; need to find out if calving is happening there and when.	1
Sites that attract tourists		1
Ability to remove over-mature timber; allow for selective harvesting in buffers.		1
Value added processing for underutilized species.	In some black spruce areas, tamarack density is high (40%).	1
Maintain access to forest for the public.		1
Protect high quality fishing areas of the Manitogan-Happy Lake chain (no more access).		1
Protect high quality fisheries in Flinstone, Gem and Tooth lakes.	They are getting too much pressure; remote lakes now have ATV trails. Management suggestion is to remove boat caches.	1
Protect local sturgeon		1
Maintain age structure in fish populations		1
Tighter regulations in all lakes		1

Table A6.2 Management Strategies

Values	Management Strategies
Caribou – Beaver Creek (Tembec operating in Northern part), Black Lake/Flintstone Lake (calving and summering grounds)	-Joint meeting with Caribou Committee Beaver Creek -moratorium until understand caribou resource in area -develop a plan to ensure caribou habitat is protected or maintained in the area -review Trail Lake harvesting, transmission line, and local road development experience for caribou behavior; -survey to verify caribou behavior and portion landscape being used -evaluate how Beaver Creek landscape compares to Trail Lake -small scale adaptive management to learn to allow learning about how Beaver Creek caribou would respond to harvesting (moratorium would come first) **Black Lake and Flintstone Lake** -do not allow out board motors on lake during critical caribou calving and rearing times -no watercraft on lake during May long weekend on Black Lake -remove all permanent boat caches (include commercial) during that critical time (May, June timeframe) on Flintstone Lake -shut down Flintstone Lake until July 1st -prohibit access to islands on both lakes during critical times -develop education program to explain the restriction -develop a strategy for summer use area, review GPS data and on the ground surveys

Table A6.2 Management Strategies Continued

Values	Management Strategies
Large unharvested areas – Kaneeshoot operating area	-use relevant information available from East-side planning process -explore alternative use and harvesting approaches for the area -encourage government to take an innovative approach -carefully examine potential implications regarding caribou -want to ensure Atikaki will continue to be protected – need this as an ecological reference -consider applying natural disturbance harvesting and comparing to the Atikaki area as a reference -let fire burn in Atikaki to get true natural area -only winter harvest using winter roads where possible; next best, retire roads -rotating intact area by keeping sufficient area roadless -bring local knowledge into planning for this area -involve local younger generation in planning
Tourism, diverse public use and access – Agenda item for next meeting	**Access** -Norstar Trail- drive trail through forest with interpretive signs -put circle tours on back logging road showing natural features of the forest. -provide signage for people so do not have to get out of car -further discussion on this topic will occur at a future meeting.

NRI Project Web Based Forest Tour Update: Carissa Wieler
University of Manitoba

Carissa asked members how many had received and viewed the CD-ROM and website she developed on the topic of High Conservation Value Attributes. Ten attendees had viewed the site including Brian and Vince. Carissa then asked for feedback about the web-tour.

Among the feedback given was:

- information provided on each general topic page can be misleadingly simple; a more in-depth look reveals much more information than originally expected.
- there are some visibility issues with maps that have small icons
- there were computer access and use issues for some people
- appreciation for website was expressed by some

Carissa handed out extra copies of the CD for those who did not have one. The discussion then turned to a future version of the tour. She outlined a potential tour that involved sustainable forest management information as brainstormed by the group at the February meeting and also issue-specific information relevant to the committee. The website is www.borealbuzz.com. Anyone wishing to contact Carissa may do so at _____ or .

East Side Planning Initiative Update: Time to Respect Earth's Ecosystem

Peter presented on the current status of the east-side planning process as well as the status of the pending report.

Concern was raised that Little Black River had not been fully involved in the East Side planning process; this could be the result of a communication breakdown.

Buffer Project Update: Vince Keenan

Vince provided a brief update on the buffer project saying that he had received a contact name for the Bird River subdivision and Vince will call at earliest convenience.

Future Agenda Items:

- Ways to bring in more community involvement to this committee
- Management options for tourism, public use and access (continued from today's session)
- Expanding the role of the SFMAC to give recommendations on issues beyond forestry yet affecting committee members such as mining exploration
- Have a joint meeting with the Caribou Committee
- Determine at September meeting if a tour is wanted in October

Next Meeting:

- Next meeting will likely be early September

SUSTAINABLE FOREST MANAGEMENT ADVISORY COMMITTEE
MEETING MINUTES
6:00 p.m. Monday, October 4, 2004
MANITOU LODGE, PINE FALLS

PRESENT

RM Lac du Bonnet
Facilitator
South-East Forest Products
Paddle Manitoba
Manitoba Trappers Association
Manitoba Conservation
Tembec
Laverendrye Trail Association
Time to Respect Earth's Ecosystem
Manigotagan
Manitoba Lodge and Outfitters Association
Manitoba Model Forest
Minute taker
Manigotagan
Town of Bissett
R.M. of Alexander

SPECIAL GUESTS

Ben Anane-Asamoah	Guest of Peter Miller
Carolyn Garlich	Guest of Peter Miller
Marcel Rigard	Bird River

The meeting was called to order at 6:40 p.m. Denis De Pape introduced himself and then had everyone around the table introduce themselves to the group.

1. Review of the Agenda

The agenda was reviewed. The following item was added to the agenda- limiting motors on Black Lake and Flintstone Lake. The minutes from the previous meeting were also reviewed.

2. Staffing changes

a. Mike Martel, previously the Chief Forester in Pine Falls is now the Senior VP of Forest Resources for Tembec and is in charge of all forest operations for Tembec around the world. He is proposing that his position is not replaced, that he will spend 1-2 days a month here and that a majority of responsibilities relating to

government operations and planning be assumed by Vince Keenan.

b. Carissa taking on the secretary role for the time being as Jackie tends to her mother.

3. Update on Highway 315 Buffer Enhancement Consultation

Vince outlined the Tembec consultation process in Bird River. Some of the highlights included Parks Day presentations and discussions, a meeting with unofficial representatives from the cottage subdivision at Bird River, meetings with the wildlife outfitter, a newsletter sent to 500 people in the region.

Tembec will make the following recommendations in the 2005 Annual Operating Plan:

- Buffers and areas of avoidance:
  - 50m no harvest buffer along river at Anson Lake (normal buffer is 100m, however goal is to reduce spruce budworm damage)
  - Hill Road- 50m buffer on both sides of road
  - Avoidance of outfitter wildlife bait sites
- Harvest and regeneration:
  - Winter harvest between Bird River and highway, beyond buffer
  - Cut both softwoods and hardwoods right to road
  - Retention cut (small cuts with residual clumps left); 20m will be left to regenerate to aspen to create a visual screen; forest renewal for the remaining area
  - No operations within 3km of Bird River cottage subdivision from May long weekend to September long weekend
  - No timber hauling from Friday noon to Monday noon (to reduce noise)
  - Fuel wood cut area for the community
- Other considerations:
  - Signage along the road to explain harvesting
  - Additional ATV/ski trails will be re-established following harvest and renewal activities
  - No storage of equipment or landings on PTH 315 right of way

Currently there is a couple who has expressed concern about harvest operations in the area. Having met with Tembec and Manitoba Conservation a number of times, the couple continues to express concern and would like see all harvest activity in the area stopped.

Suggestions from SFMAC on approaching the issue:

- Signage:
  - Possibility of a two-sign system- first sign with large wording, second sign with more detailed information; there may be issues with highway policy; appropriate place for sign would be near Nopiming Park sign.

    - Useful to have signage that delivers the message this is not a clearcut, retention cut not easily understood; "spruce budworm control project"
    - place signage at existing buffer cuts;
    - a signage subcommittee: Vince, Marcel, Stan, Stuart.
- Consult with Registered Trapping License holder to protect trails;
- Protect trapping and recreation trails, north of bridge from 2405;
- Manitoba Conservation to consider sponsoring a meeting on project with those interested; Tembec would be present; Stan to check with Peter to gain further clarity about consultation group idea;
- Explain enhancement of forest to couple; let situation ride.

4. Public Access

The SFMAC consulted on the following three questions regarding public access by doing a round table, followed by a discussion.

Table A6.3 Public Access Concerns

1&2. Biggest concern tied to forest management activities and what could be done to address your concern?
It is important to limit road access because: - Road construction opens area to wildlife, fish, vegetation, rare plants; limiting access is most effective way to prevent over harvest (3X); - Travel on access roads during hot dry months is a fire hazard - Use of access roads can damage them so they are no longer usable. - Road access leads to fire hazard, garbage. As soon as finished, close roads, leave nature to regenerate; - It is unsafe to travel on access roads once they are not maintained by the forest company. **It is important to have limited or some road access because:** - Total and complete closure after road no longer needed; - Access is important because people value what they know; implement stratified land use zones with varying degrees of access; - Hunters generally respect roads and area; keep roads open when needed for access to berries, firewood or hunting; - Some burnt or harvested areas could be opened for pickers; - Accessibility for hunting, trapping and mushroom picking is ok, need to limit access for safety reasons, remove roads so trucks can not enter. **How to limit road access and related issues:** - To prevent poaching and still allow hunting, use gates with keys or put roads back to original state (2X); - Lock up roads and find system to allow local use for livelihood i.e. trappers.

Table A6.3 Public Access Concerns Continued

1&2. Biggest concern tied to forest management activities and what could be done to address your concern?
- The use of gates creates a private hunting ground where most respect the gate and a few do not resulting in increased hunting access for those few. - Roads not required for trapping need to be ripped up and put back to - productive forests; - Possibility of a waiver system; - Responsibility for maintaining the road: it is too costly for the forest company; once the company leaves, road liability turns to government; open roads become an attractive nuisance - Inability to distinguish between recreational and livelihood use of trails-livelihood person restricted access due to negative behavior of recreationalist; **Road management planning issues:** - Use better initial planning and more input from stakeholders during road management (this includes other industries); minimize impacts on other businesses (i.e. outfitters, trappers, lodge operators, and others making a living);condition imposed by Tembec can be negative on other stakeholders; - Need to get beyond the economics and spend more to take advantage of natural features so road can be closed; - Density cap may be too high, try to avoid reaching that density; rather than a single standard for road density, and apply a roving zoning system with higher density in operating areas and much lower density in other regions. **Future meeting topic: density management as a general tool.** - Ensure safety on open logging roads due to narrow roads; - Keep roads to higher ground.

A6.3 Public Access Concerns Continued

3. Suggestions for access for people with physical limitations (this includes elderly, people with families, handicapped)
- Create places trails designed for easier access- i.e. Pine Creek trail- wheel chair access and not too long; - Cell towers as access for people to call for help; - Make trails on foot; - Have parking lots for elderly (who pick blueberries on access roads); - A non-profit group such as Nesda (north eastern sustainable development association) could maintain the trail, ensuring safety and signage; - Use short 2km walking loops- toughest situation is where vehicle access is wanted; - Need a range of opportunities, suspect there are market opportunities for backcountry - Protect tree root systems from damage by using wooden walk ways; - Board walking trails – improves access, small loop with boardwalk, larger look that is less developed; - Remove restrictions for no motors for people with physical limitation – permit; make sure they have some way of calling out for help in case get into trouble; - Consider designative certain areas for physically challenged people (similar to handicapped parking); - Simple, not elaborate. People enjoy walking in areas that have been harvested because of blueberry abundance (i.e. North Star Trail); - Majority of people enjoy nature and act responsibly; - Physical limitations- Pine Point Rapids a good trial; good parking; - The more distance opened the more problems created; - Trails covered with woodchips and signs are good; Tembec could show people that they are helping the forest; concern- people may not educated enough and may get lost; - Limit trails so can put more resources into certain ones, including promotion; - System with a small loop accessible to everyone, larger loop with reduced accessibility; - Make short trails that are accessible all year round (i.e. 0.5km); use litter boxes along the trail.

Future meeting topics:

- road density management
- limited road access systems

5. Alternative forest products

Due to time constraints, tabled until next meeting.

6. FSC Audit:

The audit is scheduled Nov 29 – Dec 3; the audit will be conducted by SmartWood (US); 4 auditors; lead auditor is also the director of SmartWood; ecologist Tom Clark; Social scientist/FN – Tawny Lem; Mark Flemming.

Participation in Audit:

- Have an SFMAC meeting when audit being conducted between Nov. 29 and Dec. 3. First portion could be a regular meeting with a discussion topic; second portion consultation with auditors (Tembec would leave).
- Field assessments: Dave Howerter; Stu Jansson; Walter Tokar, Peter Miller expressed interest in the field assessment.
- Individuals can contact FSC.
- FSC will also be contacting a variety of stakeholders for consultation.

October 19- Timber/Trapper workshop at the Chicken Chef Powerview starts at 9:30am, mainly trappers, open forum, planning related.

7. 2005 Annual Operating Plan

- Vince explained that there would normally be a 10-year operating plan. Due to the east side planning process, Tembec has been asked to develop annual plan for approval only until the process is finished.
- Two handouts- FML procurement plan and Mill procurement plan were distributed.
- There is an increase in mobile chipping, where logs are converted into chips, to feed the thermal mechanical pulp mill, which requires 100% chips.
- The thermo-mechanical pulp mill uses both pine and spruce; the plan is to increase the amount of pine harvested (goal is 40% pine and 60% spruce).
- Total amount of harvesting is increasing to 204,000 cubic meters, from a historical 175,000 cubic meters. This harvest level is still well below the annual allowable cut of 265,000 cubic meters.
- Open houses will likely occur in November; locations have not been determined
- Annual plan will be available for review on October 15 for a 2 week window.

Concerns raised by SFMAC:

- Rainy Lake: concern about access in area of an investment lodge on Caribou Lake; assured of bridge removal and strategic road tear-up.
- When will road decommissioning take place at Rainy Lake? Planting will occur through to 2006; summer of 2006 bridge will be removed. Concern about leaving road open for mining claims.
- A smaller scale map of the annual plan will be included in the meeting notes.

- Kaneeshoot: start early on planning process, initiate a road management plan for the area next year; a year to do the plan; start construction in 2006.
- High Conservation Value Forest consultation: the plan was sent out for peer review, 25 copies were sent to different groups. Next stage is a monitoring plan to continue monitoring values over time.

7. **Next meeting:**

Vince will have detailed maps within a week; people can call for more detail on each management plan.

Tuesday Nov 30 is a possible date for the next meeting.

Topics: Alternate forest products; Session with Auditors

APPENDIX 7 WEBSITE DEVELOPMENT: DESIGN, CONTENT AND PROCESS

This section first outlines website design and content for both sites. This is followed by an analysis of the process used. The websites are named "BorealBuzz I" and "BorealBuzz II".

BorealBuzz I Design and Content. The first website, BorealBuzz I, was structured into topical sections corresponding to the High Conservation Value Forests document prepared by Tembec. Each topic contained a main page and separate pages for maps, photos, text and web-links. The website was structurally quite complex. It also included online user tracking and survey features. Features of the website are listed in Table A8.1. The following pages provide images from BorealBuzz I (Figures A8.1, A8.2, A8.3).

Figure A7.1 BorealBuzz 1 Introduction Page

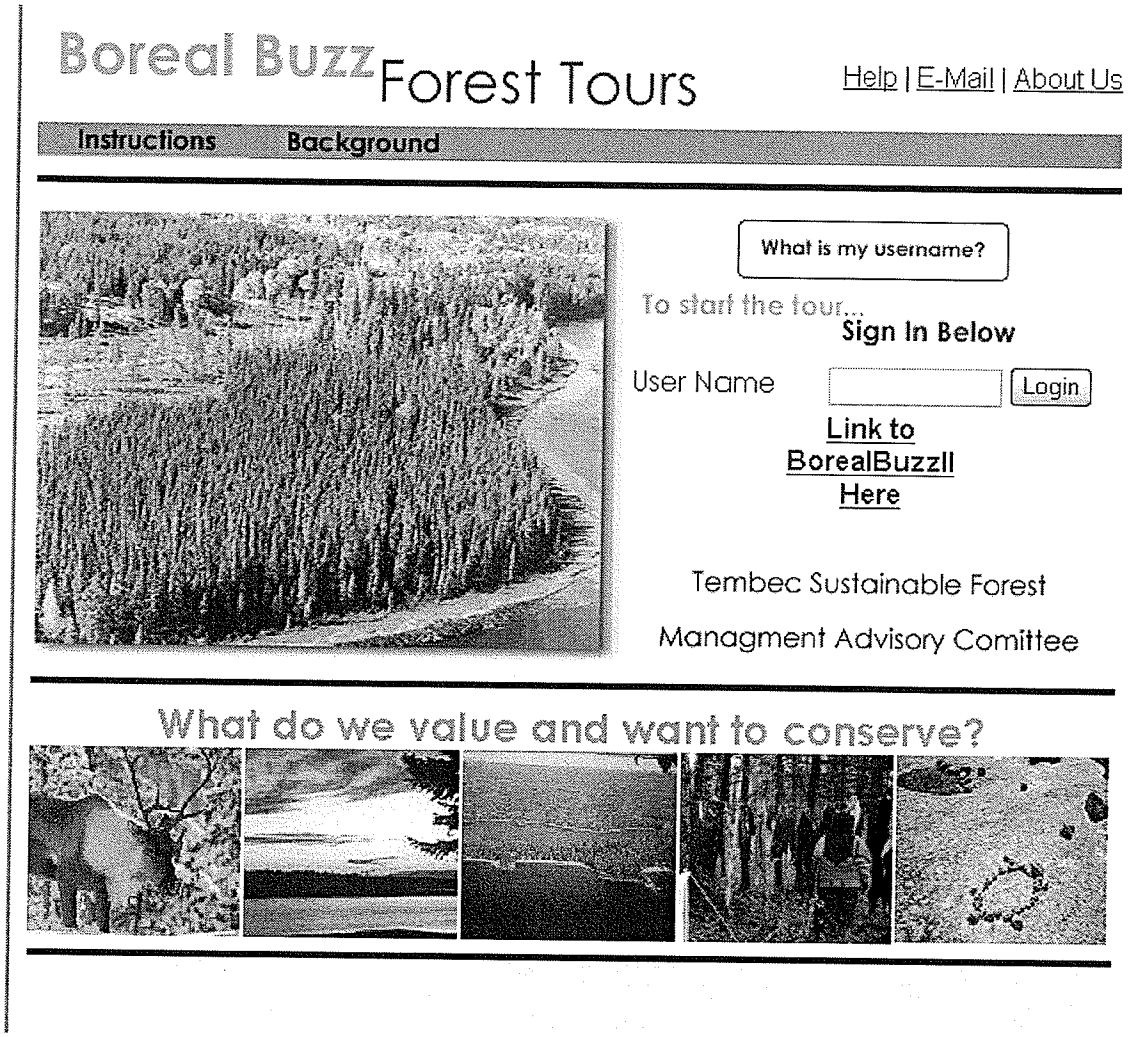


Figure A7.2 BorealBuzz 1 Start Tour Page

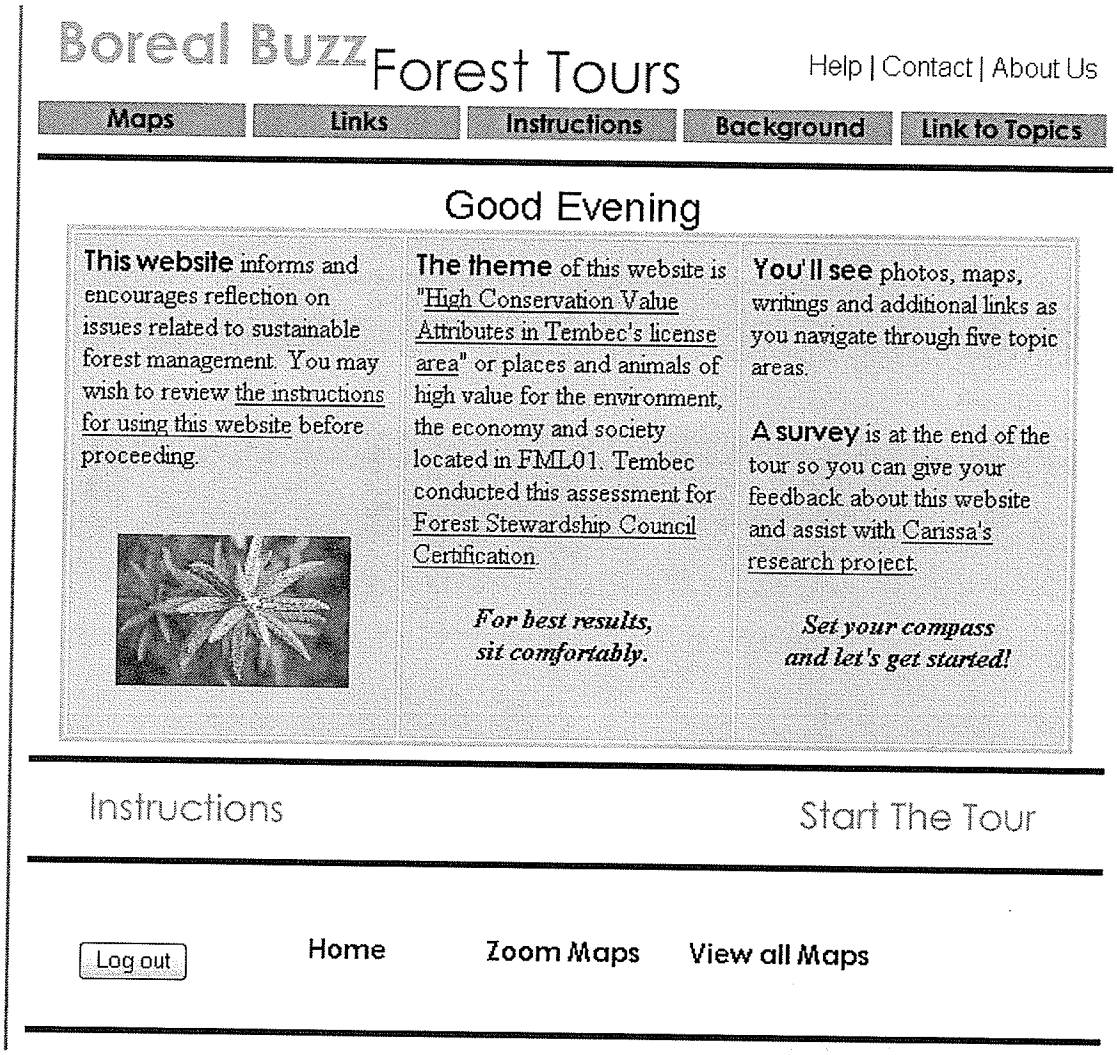


Figure A7.3 BorealBuzz 1 Topic Page

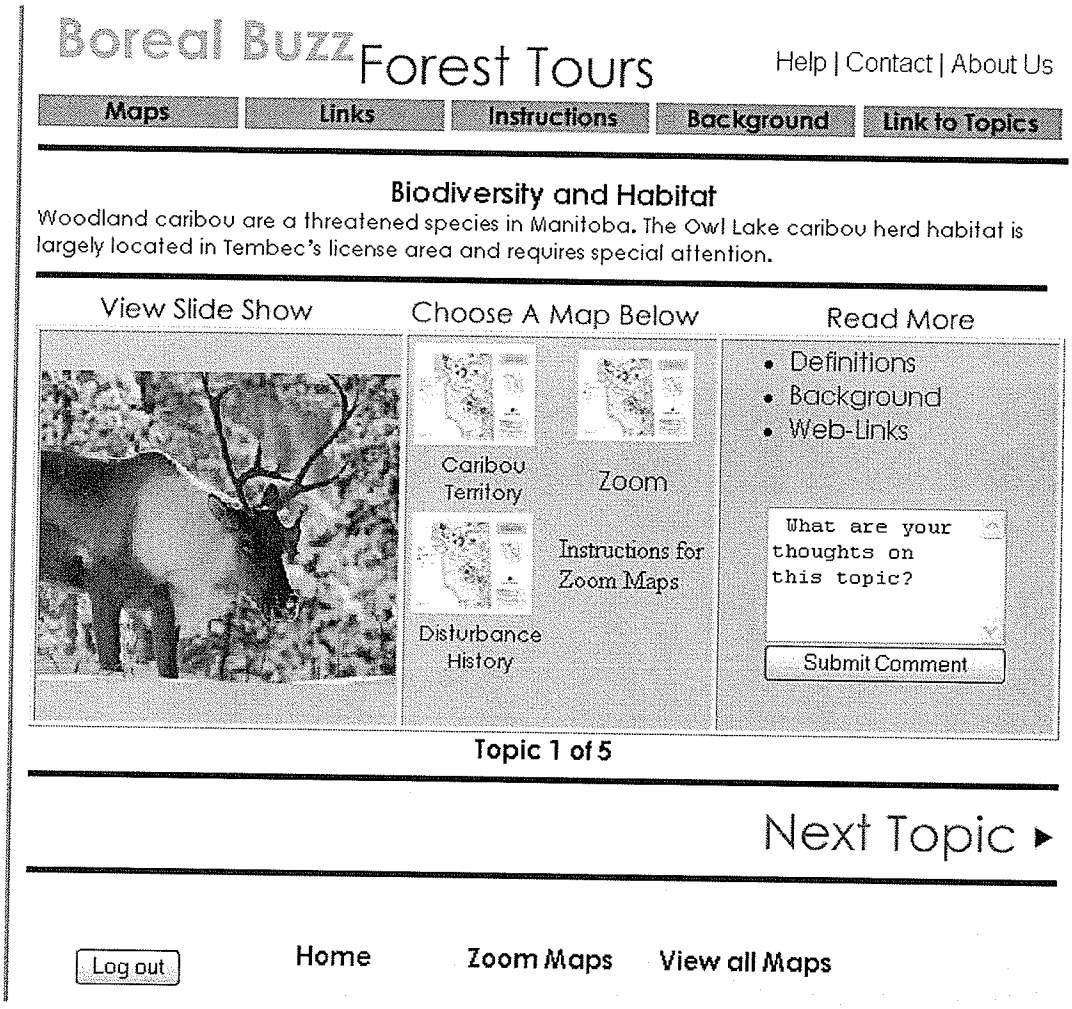


Table A7.1 Sections and Features of BorealBuzz 1

Log-In Page	• Participant log-in • About, Help and Instructions links • Photos of region (corresponding to topics) • Once logged in, webpage changes to Introduction Page
Introduction Page	• Website purpose statement • Instructions, About pages links (about this website, about Forest Stewardship Council, and about this research project) • Arrow at bottom for "Next Step"
Template Links	• Template links appear on all pages except the log-in page • Include Maps, Links, Instructions, Background, Link to Topics
Tour Sections	• Each section has main page corresponding to a tour theme) with the following links: slide show, maps, read more (definitions, text, links), comments box (space to write comments)
Tour Themes	• Biodiversity and Habitat • Parks and Protected Areas • Large, Intact Forests • Human Needs • Culture and Heritage
View Comments	• Compilation of comments written in boxes on section pages
On-Line Survey	• Research survey
Other Electronic Features	
Tracking	• Website log-ins, per participant • External website link selections tracked • Survey data stored

BorealBuzz II Design and Content. The second website, BorealBuzz II, used a more integrated approach by combining photos, maps and text on single, longer pages. This led to fewer photos (though more could be seen in an extensive photo gallery), and fewer maps. This structure was easier to navigate and fewer photos made it faster to download. Features of BorealBuzz II are shown on Table A7.2. The first topic, logging roads, was separated into three sections: impacts of roads, road management and road access issues. The first section highlighted potential benefits and costs of logging roads,

using scientific information, Tembec reports and non-governmental resources. The second section was on road management and included Government of Manitoba and Tembec road management documents. The third section was on road access and included historical information, an overview of issues, and potential future options. The second major topic, after logging roads, was non-timber forest products. It included research information and summaries of what other jurisdictions are doing. There were a number of other minor sections. The following images are of pages from the website (Figures A8.4, A8.5, and A8.6).

Figure A7.4 BorealBuzz II Sign In

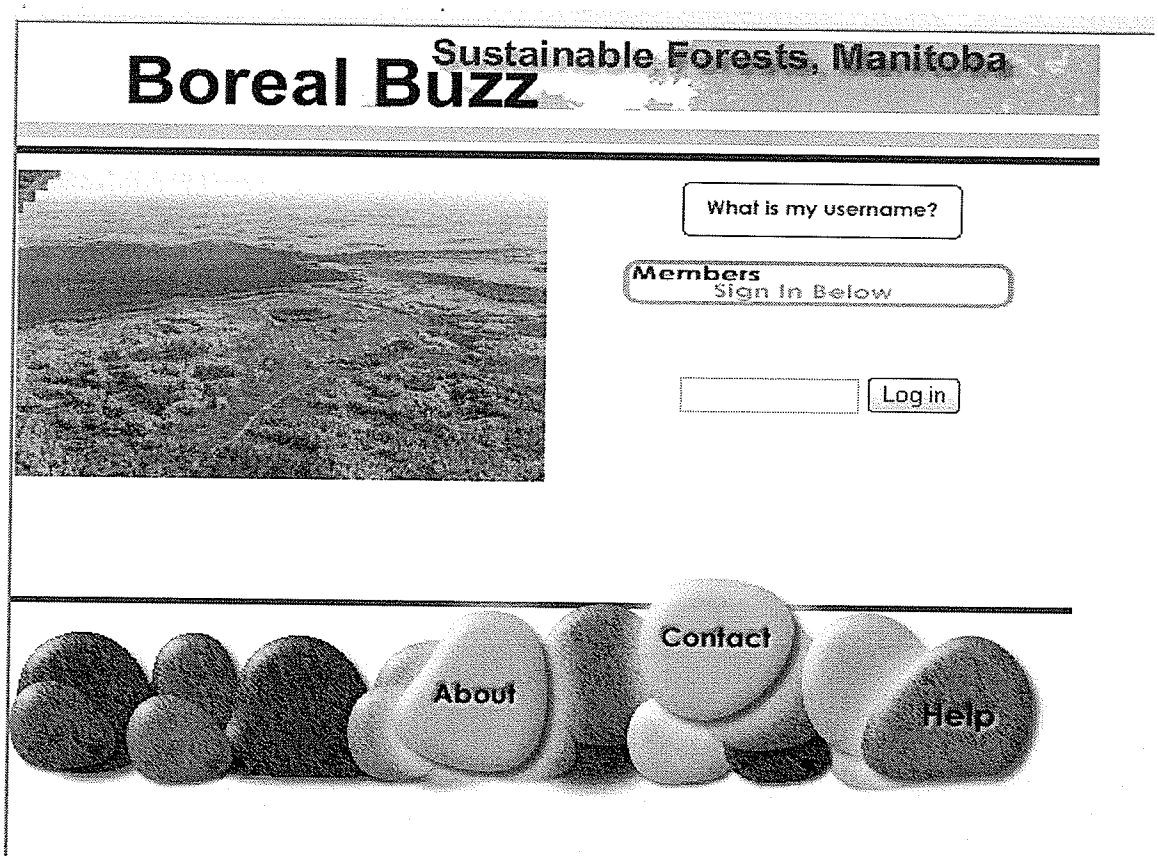


Figure A7.5 BorealBuzz II Topic Page

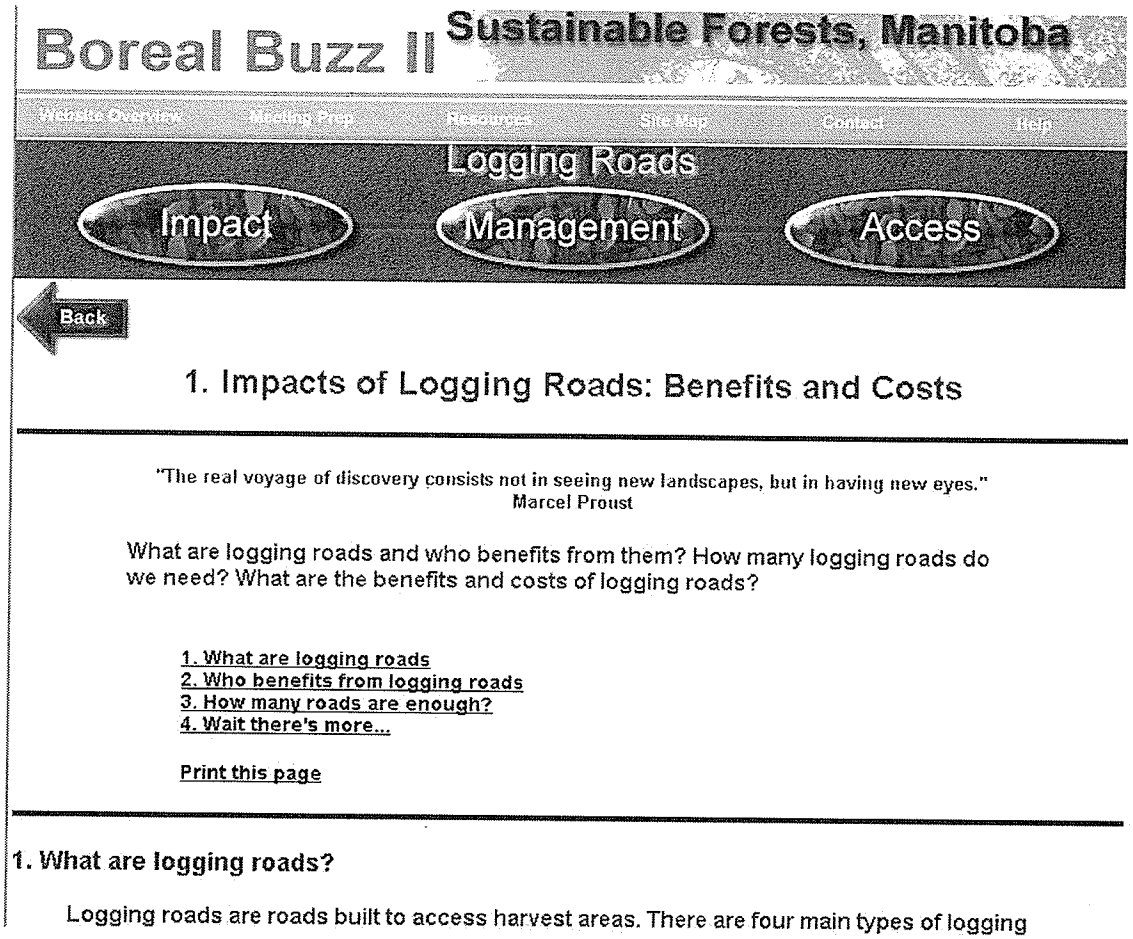


Figure A7.6 BorealBuzz II Photo Gallery

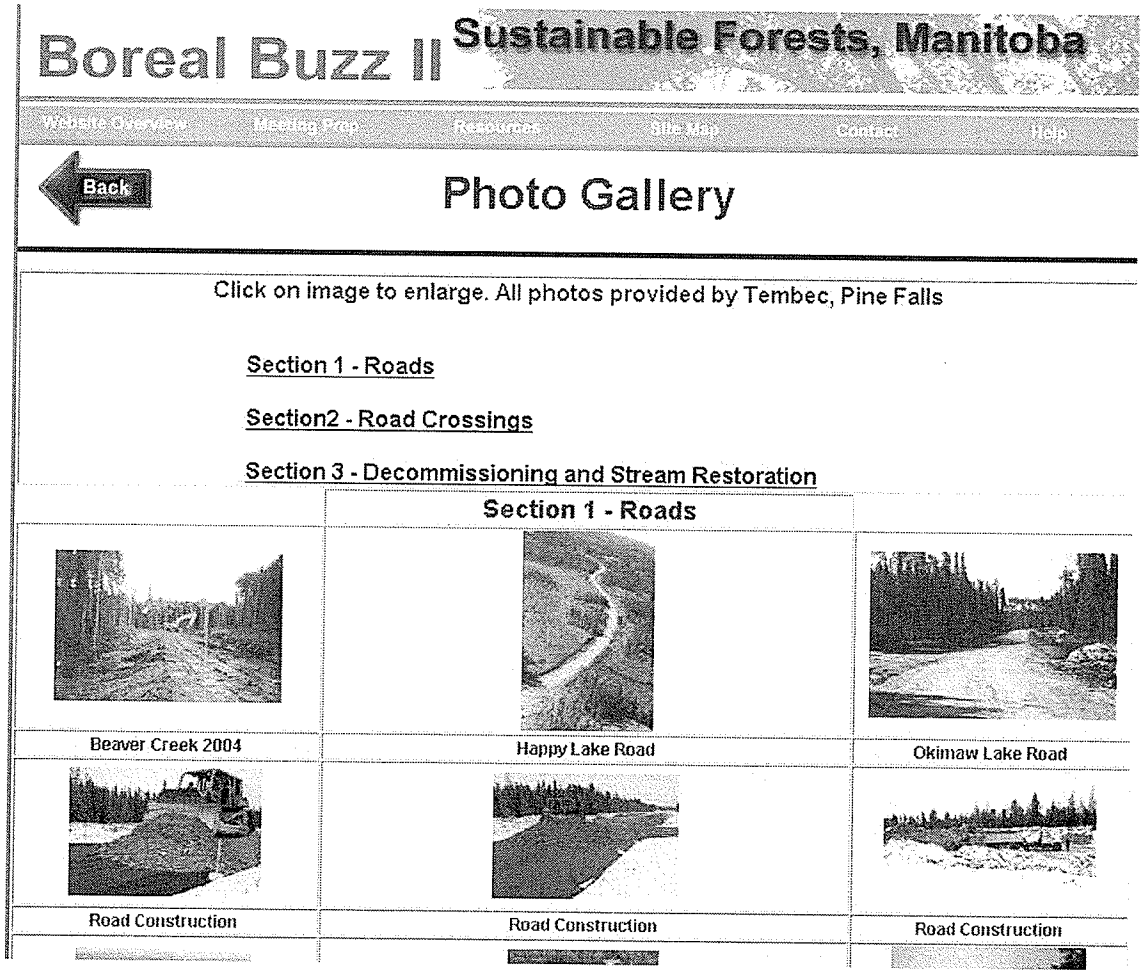


Table A7.2 Sections and Features of BorealBuzz II

Log-in page	• Participants log in using full name • Also contains links to Contact, Help and About pages specifically written for browsers who may not have a log-in name.
Introduction Page	• Introduction/purpose • Meeting agenda/minutes • List of links to pages on website with summaries • Audio clip tour of website
Roads	• Impacts of roads, road management, road access • Each section contained text, photos, maps, links
Non-Timber Forest Products	• a summary of non-timber forest products • links to other NTFP activities in NA
Sustainable Forest Management	• A resource page of Internet links to reports and websites arranged by sector • A listing of SFMAC member websites
Photo Gallery	• Photos of roads, gates, and decommissioning, with zoom function
Maps	• Collection on maps to do with road access
Quotes "What you said"	• A list of quotes regarding road access from a handful of members
Discussion Board	• Members have ability to post comments about topic
Help	• Common Help questions answered
Site Map	• Links to all main pages on website
Numerous Document Pages	• Additional documents associated with specific sections.
Other Electronic Features	
User tracking	• Number of times logged on, per participant • Date and time logged on • Length of time logged on • Electronic survey
Communication tracking	• Online calendar to track website design progress with ability to insert comments online

APPENDIX 8 WEBSITE DEVELOPMENT PROCESS

The following table provides an outline of how suggestions from SFMAC participants were used to improve the website.

Table A8.1 Adaptive Design Process

Critiques/Suggestions for BorealBuzz I	Features of BorealBuzz II that address these concerns	Corresponding feedback on BorealBuzz II website
Image quality low on some photos.	Improved image quality with ability to zoom.	Overall positive feedback on photos. Long download time for some.
Improve map quality and clarity.	Map clarity improved however zoom function removed.	Map quality improved. Still took a long time to download.
Organization of website difficult to follow.	Navigation of website improved through use of a more integrated approach.	Half of users found the website easier to navigate; half found difficult to navigate.
Different types of information needed: more on Tembec's long range planning; more on aboriginal people.	Inclusion of some information about Tembec's management plan.	Scientific information, interviews and quotes all received favorable feedback.
Colors used difficult to see.	Different color system; maintained some of the lighter color.	No negative or positive comments on colors.
Comments section not useful.	Removed comments section. Added a discussion board.	Discussion board not used.
Purpose of website not clear at beginning.	Clear purpose statement on first page of website.	Purpose clearer. Better tone better on second website.
Ensure a sense of relevancy with the text.	Website content was tied back to meeting objectives.	Respondents indicated website more relevant.
Include an interactive quiz.	Quiz developed and later removed.	Quiz not effective.
Use audio for navigation.	A 3-minute navigational audio clip was added.	Audio clip not effective.
Additional information about photographs needed.	Images placed within larger context; not all information was attainable.	More information needed on photos.

The following table shows that a majority of members who attended SFMAC meetings also viewed the website.

Table A8.2 Meeting Attendees and Website Surveys

	May 25 meeting	**October 4 meeting**
Meeting Attendees (SFMAC members only)	12	14
SFMAC meeting attendees who viewed website and/or returned a survey	12[1,2]	11[3]
Meeting attendees who did not see website	0	3
	BorealBuzz1	**BorealBuzz11**
SFMAC members who viewed website and/or CDRom	15	15
SFMAC members who participated in research	20[4]	

[1] 2 members viewed website after May 25 meeting
[2] 2 members viewed website but did not complete survey
[3] 1 member viewed website but did not complete survey
[4] 5 members participated in interviews who had not viewed either website