AN APPROACH TO INTEGRATED ECOSYSTEM PLANNING -
AN EVALUATION OF THE MINNEWANKA AREA PLAN,
BANFF NATIONAL PARK

by

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ABSTRACT

The Lake Minnewanka area is one of Banff National Park's most scenic and highly visited regions. Impacts such as the loss of significant montane habitat (characteristic of the Lower Bow Valley ecosystem) and social implications like crowding led to the need to develop a strategy for managing the area. The author worked with a planning team from the Canadian Parks Service (CPS) in Banff National Park (BNP) to develop the Minnewanka Area Plan.

The primary purpose of the thesis is to evaluate the Minnewanka Area Plan to determine whether it effectively serves to maintain and enhance ecological integrity. A theoretical framework based on integrated ecosystem management was developed to evaluate the plan. Normative criteria from literature on recreational carrying capacity management and meaningful public participation were defined and applied to the plan.

Overall, the plan was rated as successful according to the normative criteria. All of the criteria for an effective approach to carrying capacity management were considered and the plan reflected a fair and efficient public participation process. Stakeholder input influenced plan decisions to a high degree and several partnerships were developed through the planning process.

Several inadequacies in the plan were identified through the evaluation. The adoption of an approach to ecosystem management called the Limits of Acceptable Change (LAC) was recommended as a guiding principle within the plan. The step-by-step LAC model was seen as overly complex in the context of the case study. Indicators and a monitoring program which are central to the LAC process were not defined as part of the plan.

The evaluation of the public participation process indicated that stakeholder participation was high early in the planning process and reflected a partnership relationship where stakeholders shared the power of decision-making. During completion of the draft and final plan, the process became one of public consultation where the level and frequency of participation was lowered.

Recommendations for improving the efficacy of the Minnewanka Area Plan are made within the thesis. A simpler approach to visitor and resource management which maintains the essential criteria of the LAC approach is suggested. Measures for maintaining a high level of public participation and improving the accountability of the CPS in decision-making are proposed. The normative criteria based on carrying capacity management and meaningful public participation processes are presented as a model for facilitating integrated ecosystem management in area planning within national parks.
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CHAPTER I. AN APPROACH TO INTEGRATED ECOSYSTEM PLANNING - AN EVALUATION OF THE MINNEWANKA AREA PLAN, BANFF NATIONAL PARK

1.1 INTRODUCTION

The Lake Minnewanka area is one of Banff National Park's most scenic and highly visited regions. Set within the Bow Valley near the Town of Banff, the area possesses a rich diversity of natural and cultural resources as well as extensive visitor facilities. The area's landscape is atypical in a national park because it has been influenced extensively by human activities in the last century including coal mining, dam-building and gravel extraction. These activities are no longer compatible with national park ideals.

The mandate of the Canadian Parks Service (CPS) is "to protect for all times those places which provide significant examples of Canada's natural and cultural heritage and to promote visitor understanding and appreciation of these places so they are left unimpaired for future generations," (Environment Canada, Canadian Parks Service, 1991, p.14). More recently, the amended National Parks Act of 1988 emphasized that the maintenance of ecological integrity through the protection of natural resources should be the first priority in land-use decisions and management plans (Environment Canada, Parks Service, pp. 28-40).

The concept of an ecosystem based approach to resource management has been emphasized in Canada's Green Plan and various CPS documents including the Western Region Strategic Plan and the Canadian Parks Service
Western Region Ecosystem Management Task Force Report. An ecosystem based approach advocates the integrated management of natural landscapes, ecological processes, physical and biotic components and human activities to maintain or enhance the integrity of an ecosystem (Canadian Parks Service, June, 1992, p.2). Past attempts to manage ecosystems on a single parameter basis in isolation of surrounding landscapes have not been very successful. Indeed, a review of resource management activities in Banff National Park (BNP) revealed that there have been no attempts to use an integrated ecosystem approach to formulate objectives or predict change (White et al., 1992).

The development of services and facilities in the Minnewanka area has generally occurred on a project-by-project basis in the past, without considering the larger ecosystem or visitor experience. There are several significant resource management concerns in the area including the loss of montane habitat and visitor impacts such as crowding. The Banff Management Plan, which provides a framework for the protection and management of heritage resources and sets guidelines for appropriate levels of development and visitor activities within Banff National Park, calls for an area plan in the Minnewanka district in response to these issues. Area plans represent the most specific level of land-use planning in national parks (Environment Canada, Canadian Parks Service, Nov., 1988).

The problem of determining a strategy for managing the Minnewanka area according to the CPS's goals of maintaining ecological integrity while welcoming "appropriate" visitor activities which do not impair ecological integrity, forms the basis of the thesis. The author worked with the CPS to
develop the Minnewanka Area Plan. The plan and the planning process represent the case study for the thesis.

1.2 PURPOSE AND OBJECTIVES

The purpose of the thesis is to analyse the Minnewanka Area Plan to answer the following essential question: Does the Minnewanka Area Plan effectively facilitate an integrated ecosystem-based approach to management which can work to maintain and enhance the ecological integrity of the planning area? The specific objectives of the thesis are: (i) to define normative criteria based on integrated ecosystem management concepts to evaluate the area plan, (ii) to make specific recommendations for improving the Minnewanka Area Plan and (iii) to present an ideal model for area planning in national parks or similar ecological, social and political environments.

1.3 APPROACH AND SCOPE OF THE THESIS

1.3.1 The Case Study -The Minnewanka Area Plan

The author worked with the CPS between May, 1992 and April, 1993 according to the terms of a thesis project contract to develop the Minnewanka Area Plan (Environment Canada, Canadian Parks Service, June, 1992). This project involved coordinating and working with an interdisciplinary planning team of CPS staff and developing and facilitating a public involvement process to create a plan for managing visitor activities and ecological resources in the Minnewanka area. Work was regularly reviewed by the Chief of Planning in BNP as well as a CPS steering committee. The
plan is summarized within the body of thesis and is available through the Canadian Parks Service in Banff National Park.

1.3.2 Theoretical Framework

The concept of integrated ecosystem management is explored within the thesis as the theoretical basis for achieving the CPS's goals and objectives. Related to this concept, specific literature regarding recreational carrying capacity management in wilderness settings and meaningful stakeholder participation are reviewed to define normative criteria for the evaluation of the plan. There are several reasons for selecting these bodies of literature.

The concept of recreational carrying capacity creates the notion that appropriate levels of visitor use can be determined for a particular area according to definable ecological and social limits (Williams and Gill, 1991; Shelby and Heberlein, 1984). The concept is appealing to managers who are often faced with the contradictory task of preserving natural systems while supporting visitor activities. There is however, no single recreational carrying capacity or appropriate number of visitors inherent to a given area as the relationship between visitor use and impact is not linear or predictable (Becker et al., 1984; Williams and Gill, 1991). The particular setting, the type and timing of activities as well as other factors influence recreational carrying capacity. Carrying capacity management models may, none-the-less, provide useful insight about defining acceptable conditions, monitoring the ecosystem and developing effective management strategies (Stankey et al., 1984 and 1985; Shelby and Heberlein, 1984; Graefe et al., 1985). The Minnewanka Area Plan's principle recommendation is to adopt a carrying capacity management approach called the Limits of Acceptable Change (Stankey et al., 1985). The
theory and approaches associated with recreational carrying capacity management are examined to evaluate this aspect of the Minnewanka Area Plan and develop criteria for an integrated ecosystem management approach.

Humans are an integral part of national park ecosystems. The determination of whether or not ecological integrity exists is largely dependent on judgement and social values. Meaningful social input is required within an integrated planning approach which considers human activities and values in addition to ecological systems. Relevant literature regarding meaningful stakeholder involvement is reviewed in the thesis to define normative criteria for the evaluation of the public participation process of the plan.

1.3.3 Evaluation of the Plan

The Minnewanka Area Plan and planning process are evaluated within the thesis according to the criteria derived from the literature on integrated ecosystem management. These criteria relate specifically to carrying capacity management and meaningful stakeholder involvement. The plan's strengths and weaknesses are revealed through the evaluation. Recommendations specific to management of the Minnewanka area are made as well as general recommendations which have implications for area planning in national parks and similar environments.
1.4 ORGANIZATION OF THE THESIS

The thesis is divided into six chapters. The introductory chapter defines the problem and purpose and provides an overview of the work. In the second chapter, the theoretical framework used to evaluate the plan is developed. Based on the larger concept of integrated ecosystem management, the theoretical framework explores and assesses specific literature on carrying capacity management in wildland recreation settings and meaningful stakeholder involvement. Normative criteria which present an ideal model for integrated ecosystem management and serve as a means of evaluating the Minnewanka Area Plan are defined within this chapter.

The third chapter provides a background to the Minnewanka area planning project including the social, ecological and political context of the plan, identification of planning issues and a description of the planning process. In the fourth chapter, a summary of the Minnewanka Area Plan is presented. The case study is evaluated according to the normative criteria defined for integrated ecosystem management in the fifth chapter. Conclusions from the evaluation of the Minnewanka Area Plan are found in the last chapter of the thesis and recommendations for area planning in national parks are identified. Areas for further research are also discussed in the last chapter.
CHAPTER II. THEORETICAL FRAMEWORK OF THE THESIS

The theoretical framework of the thesis defines and explores an ecosystem based approach to resource and visitor activities management. Specific literature regarding carrying capacity management and meaningful public participation processes is reviewed and assessed to define normative criteria for evaluating the Minnewanka Area Plan. It is felt that these bodies of literature provide meaningful insight about managing ecosystems according to desired social and ecological conditions and support the concept of integrated ecosystem management.

2.1 INTEGRATED ECOSYSTEM MANAGEMENT

2.1.1 A Definition of Integrated Ecosystem Management

Ecosystem-based management is the integrated management of natural landscapes, ecological processes, physical and biotic components and human activities to maintain or enhance the integrity of an ecosystem (Canadian Parks Service, May, 1992, p.2).

Ecosystems are complex and dynamic. An ecosystem is a human construct defining the relationships between a community of organisms and its environment. Fundamental to the system is the flow of energy through food chains and the cycling of nutrients. Lyle (1985), emphasized that humans are an integral part of ecosystems. Like other organisms, humans influence the dynamics (often the most significantly) of the natural systems which constitute their environments (Government of Canada, 1990).
Ecological integrity implies that ecosystem structure and function is unimpaired by human caused stresses and that native species are present at viable population levels. Such ecosystems are likely to persist. Due to the complexity of ecological systems and our incomplete understanding of them, it is impossible to know for certain when ecological integrity exists and when it has been lost (Environment Canada, Canadian Parks Service, June, 1992). Indicators which represent ecosystems at the species, population, community or landscape level may be monitored as a means of evaluating the health of ecosystems and predicting whether ecological integrity exists (White et al., 1992; Government of Canada, 1990; City of Vancouver, April, 1993).

An integrated ecosystem management approach in national parks requires that managers consider ecosystems holistically including the ecological and social parameters which influence the system (White et al., 1992; Government of Canada, 1990). Other organizations, agencies and stakeholders affecting the planning area should ideally be involved in determining proposed management strategies. An integrated approach is dynamic, requiring on-going monitoring and adaptive management as a means of achieving desired social and ecological conditions (Holling, 1978).

2.1.2 Why Adopt an Ecosystem-Based Approach to Management in National Parks and in the Minnewanka Area?

We must think, plan and act in terms of ecosystems. All creatures including humans, interact with and depend on each other. They all draw on the materials and energy of the physical environment to obtain food and recycle wastes. They all affect each other's behaviour. In the past, responses to environmental problems paid very little attention to these important inter-relationships. Today, the increasing number and complexity of environmental issues demand that we adopt a more integrated approach (Canada's Green Plan, Government of Canada, Dec., 1990, p.18, ).
Ecological resource management and rehabilitation efforts in Banff National Park have generally proceeded in response to symptoms of ecological disruption. For the most part, human actions or stresses are managed rather than ecosystems. The success of these efforts has been limited (White et al., 1992). Several reasons for considering an ecosystem-based approach to management are discussed below.

Historically, park and site boundaries have been ecologically arbitrary. They have worked against achieving ecosystem protection because they have excluded critical habitats. Parks are too small to provide adequate habitat for species that are wide-ranging, migratory, and/or have very specialized requirements. Yet, simply expanding park size will not ensure the evolutionary survival of species that require broadly distributed and interconnected genetically viable populations (Canadian Parks Service, June 1992). Parks simply cannot function effectively as ecosystems in isolation from surrounding landscapes. There is a need to coordinate management efforts in adjacent spheres which influence the ecosystems of the park (Canadian Parks Service, June, 1992, p.2).

The last century of intense human activity has substantially disturbed the Bow Valley ecosystem in which the Minnewanka area is contained. In the last decade, Canadian Parks Service ecological restoration activities have included the reintroduction of fire with a planned ignition program and fencing of the Trans Canada highway which dramatically reduced road kills. Since 1983, the CPS has closely monitored wolf recolonization of the valley after an absence of wolves for nearly 40 years. Despite the ambitious
restoration efforts by CPS, ecological conditions continue to deteriorate (White et al., 1993; Achuff et al., 1986; O'Leary, 1988). A review of ecological restoration activities demonstrated that objectives have focussed primarily on addressing single parameters. There have been no attempts to use an integrated ecosystem approach, particularly one which considers humans in the equation, to formulate objectives or predict change (White et al., 1992, p.17). The failure to use a more holistic approach to ecological restoration has resulted in several unexpected outcomes: prescribed fire is not regenerating many aspen stands, people are being attacked by habituated elk, and wolves have not repopulated large portions of key habitat.

Resource management activities have also been inhibited by a lack of funding. Only 4.7% of Banff National Park's 18.6 million dollar annual budget is available for resource management (White et al., 1992). Only recently have senior land managers within the park encouraged the application of modern technology (e.g. GIS, radio-telemetry) to conduct ecological research and monitoring (Personal communication, Hurd, 1992). While inter-agency cooperation has been good, it has not been based on good quantitative information or ecological linkages and trends (White et al., 1992). Finally, CPS managers have not adequately addressed the philosophical question of whether they should attempt to quantify and actively manage numerous ecosystem elements to achieve objectives, or whether they should continue to minimize the impacts of a few select "unnatural" elements, and passively observe other changes as they occur (White et al., 1992, p.18).

The current simplistic approach to management and ecological restoration in Banff National Park cannot continue, particularly considering
the potential impact of proposed mega developments near Canmore which could result in a tripling of the population in the Bow Valley in the next 20 years (Environment Canada, 1992). Indeed, there is a need for a more holistic management approach which integrates social and ecological phenomena and which may be monitored and adapted to achieve desired social and ecological conditions.

2.1.3 Principles for Developing an Integrated Ecosystem Approach

The following principles reflect information from Canada’s Green Plan, the report of the Ecosystem Management Task Force of the Western Region Canadian Parks Service and other literature on integrated resource management (Holling, 1978, Lyle, 1985, White et al., 1992). These principles serve as a basis for designing a planning approach for integrated ecosystem management in the Minnewanka area of Banff National Park.

1. Consider Ecological Boundaries

Ecological boundaries are influenced by physiographic parameters such as hydrology, topography, climate and species range while park boundaries have been influenced politically and through adjacent land-uses. As most national parks are not large enough to protect the ecological integrity of the resources they contain, areas beyond the national park boundaries which influence ecosystems in the park need to be considered in planning and management.

2. Multistakeholder Involvement

Participation in spheres of influence beyond the boundaries of national parks will enable the Canadian Parks Service to exchange information on issues which impact the integrity of parks/sites and related ecosystems. Integrated
programs of cooperative ecosystem-based management amongst park managers and their neighbours are crucial to protect park ecosystems, maintain regional biodiversity and ultimately sustain ecosystems (Canadian Parks Service, 1992, p.2). Other players which need to be involved in area management may include governments, private industry, adjacent land management agencies and local residents.

3. A Holistic, Ecosystem Perspective

Ecosystem-based management requires a broad, holistic perspective which considers a variety of integrated elements and activities constituting the ecosystem. These include ecological resources and processes, heritage resources and socio-economic activities within and around parks. It is critical that managers try to determine the causes of ecosystem perturbation rather than merely treating symptoms on a single issue basis.

4. Comprehensive Information for Decision-making

Sound information which reflects the specific goals and objectives associated with planning issues was seen as a necessary component for environmentally wise decision-making. Improved environmental science and state-of-the-art environmental reporting systems were advocated as positive means for gaining information in Canada's Green Plan (Government of Canada, 1990). The identification and monitoring of indicators representing an area's ecosystems has been promoted as a method for gaining specific information on the health of an ecosystem (Canadian Parks Service, June 1992; Government of Canada, 1990; Stankey et al., 1985). The CPS stated that they will err on the side of protection where there may not be enough information for decision-making (Canadian Parks Service, 1992).
5. Adaptive Management
Adaptive management is a process whereby management actions based on information and predictions are monitored and adjusted to meet the objectives (Holling, 1978; White et al., 1992). The concept accepts that the complexity of ecosystems cannot be fully understood in management efforts. Active adaptive management maximizes learning possibilities while minimizing the risk of making irreversible management decisions which may significantly impact ecosystems (Holling, 1978; Canadian Parks Service, June, 1992).

6. Environmental Stewardship
A significant aspect of integrated ecosystem management relates to the values and actions of individuals engaged in the landscape. Environmental stewardship involves the development of visitor attitudes and actions which work towards caring for resources and facilitating sustainable development (Government of Canada, 1990). It may be operationalized through policy, planning and day-to-day operations.

2.2 CARRYING CAPACITY MANAGEMENT

2.2.1 A Definition of Carrying Capacity
The concept of carrying capacity emerged within population biology where the complex relationship between habitat and the population of a species was analysed to determine a maximum, stable population size for a specific area. As an ecological model, carrying capacity has its strongest empirical support in understanding domestic animal production in open
range grazing (Heady, 1975 in Becker et al., 1984). Carrying capacity is said to be reached when an ecosystem can no longer sustainably support the population under examination. Ultimately, carrying capacity is a number of individuals or groups expressed in relationship to time and area dimensions (Shelby and Heberlein, 1984).

2.2.2 Recreation Carrying Capacity

The notion of trying to determine an appropriate population size or level of use in a particular environment has had merit in other disciplines including recreation management in wilderness settings. The concept of a recreation carrying capacity suggests that an optimal level of visitor use can be determined for a specific area (Williams and Gill, 1991). Carrying capacity is defined as the level of use beyond which impacts exceed acceptable levels specified by evaluative standards (Shelby and Heberlein, 1984). It assumes a fixed and known relationship between use level and impacts (Williams and Gill, 1991). Recreational carrying capacity determinations have focused on a variety of different parameters.

Ecological Carrying Capacity examines how use levels affect the biophysical components of the ecosystem while de-emphasizing the social values associated with impacts (Shelby et al., 1984). Physical Carrying Capacity is based on the space available in a particular setting, an example being the maximum number of persons that could occupy a hot spring. It may be altered by developing strategies for a more efficient use of space (Shelby et al., 1984, Williams, 1986). Facility capacity involves man-made improvements intended to handle visitor needs such as parking lots, boat ramps, developed
campgrounds and rest rooms. It is dependent upon development parameters (Shelby et al., 1984).

Early approaches to estimating carrying capacity sought to define a maximum number of users beyond which predetermined physical levels of impact for an area (e.g. trampling, loss of vegetation, lack of space) could not be exceeded. While providing specific estimates of carrying capacity, numbers frequently failed to account for many of the important qualitative features such as the perception of crowding or noise and the impact of other visitor activities which are associated with individuals' recreation experiences (Williams and Gill, 1991).

2.2.3 Limitations of Carrying Capacity Determination

The promise of a determinable carrying capacity is appealing for public managers such as the CPS who are faced with the often contradictory mandate of preserving natural landscapes while maintaining public access (Becker et al., 1984, p. 478). There is however, no single recreational carrying capacity inherent to any given area (Becker et al., 1984; Williams and Gill, 1991).

The relationship between the level of use and impacts to the ecosystem and visitor experiences is not linear or predictable. The setting, the type and timing of activities, human values and management parameters all influence carrying capacity, which is a subjective determination. "Recreational carrying capacity standards may have more to do with coinciding lines of ideology held by the managers and researchers than by empirical data" (Burch, 1981 in Becker et al, 1984).
None-the-less, aspects of recreational carrying capacity approaches may provide managers with useful frameworks for defining acceptable limits, monitoring the ecosystem and developing management strategies so that desired social and ecological conditions are achieved for an area. These tools would be particularly useful for planning and facilitating integrated ecosystem management in the Minnewanka Area where a high level of use occurs within a significant and scarce ecoregion of BNP. An examination of the conceptual framework for carrying capacity determination and a review of pertinent approaches will be used to establish normative criteria for evaluating the Minnewanka Area Plan within the thesis.

2.2.4 Conceptual framework for Carrying Capacity Determination

A conceptual framework for carrying capacity determination appears in Figure 2.1. According to this model, the determination of carrying capacity requires both a descriptive component and an evaluative phase (Shelby and Heberlein, 1984). The descriptive phase is objective, involving an inventory of the existing state of the relative biophysical, social and management impact parameters of the ecosystem. Impact parameters describe how recreation use affects the ecosystem, while management parameters define factors which can be directly manipulated by managers (Kuss et al., 1990; Shelby and Heberlein, 1984).

The evaluative phase of carrying capacity determination requires the definition of an acceptable level of impact or point at which capacity is reached (i.e. the determination of "damage" to an ecosystem due to visitor impacts depends on what is meant by the term "damage"). Determination of an appropriate capacity is influenced by many factors but is ultimately based
Figure 2.1 Conceptual Framework for Carrying Capacity Determination
(source: Shelby and Heberlein, 1984)
on the values and judgement of managers and stakeholders involved in decision-making. It is this aspect which makes carrying capacity determination subjective and contentious in nature, thereby limiting any chance of determining a single "magic" number to represent carrying capacity (Becker et al., 1984).

2.2.5 Approaches to Determining Recreational Carrying Capacity in Wilderness Settings

2.2.5.1 Social Carrying Capacity Determination

Shelby and Heberlein noted that resource managers have tended to overemphasize the importance of biological capacity in the past while disregarding the social implications of carrying capacity management. Limits may be set on the basis of ecosystem impacts that are demonstrable but may be insignificant from the point of view of most visitors (Shelby and Heberlein, 1984). For example, the social impacts of garbage and worn-down campsites may affect social capacity more than ecological capacity. Managers' perceptions of what constitutes an impact may differ significantly (generally more conservative) from users' perceptions (Environment Canada, Parks Service, 1991).

Social carrying capacity is reached when the level of use exceeds acceptable conditions and visitor experiences are impacted (Shelby and Heberlein, 1984). Acceptable conditions are determined through a subjective evaluation which is dependant on values. Impact parameters include the number, type and location of encounters with other human groups, and the way these encounters affect the recreation experience.
The determination of social carrying capacity is dependant on a known relationship between use levels or other management parameters and experience parameters, agreement among relevant groups about the type of recreational experience to be provided and the acceptable levels of impact parameters (Shelby and Heberlein, 1984).

The definition of acceptable levels and types of use according to a social carrying capacity approach is seen as difficult because of the complex relationship between use and visitor experience. Several tactics for defining social carrying capacity were identified in the literature reviewed. Measures of visitor satisfaction or perceived crowding have been used although Shelby and Heberlein noted that this approach tended to confuse the descriptive and evaluative phases of carrying capacity determination (1984). The preferences of individuals under a specified set of conditions could be measured to define standard capacities. Appropriate conditions could also be determined through a participatory process involving stakeholders, managers and other interested parties (Becker et al., 1984). Becker et al. advocated that decision-making occur regionally and not through managers who were removed from the site (1984).

**Assessment of Social Carrying Capacity Determination/ Application to the Minnewanka Area Plan**

The social carrying capacity approach emphasizes the role of social values in assessing environmental impacts. Highly specific objectives about the type of experience to be provided and the level of acceptable experience impacts are essential to this approach and would be useful in the Minnewanka area planning exercise.
This approach reflects the need to involve stakeholders in decision-making as a means of attaining and assessing representative values and agreeing upon acceptable standards for management. Further, the point of emphasizing regionally based decision-making has merit. Because carrying capacity determination is ultimately subjective, adequate user involvement would enhance the representativeness of decision-making.

2.2.5.2 The Limits of Acceptable Change Approach (LAC)

The LAC approach was developed by wilderness recreation managers and academics as an alternative approach to trying to determine an empirical carrying capacity and in response to manager's needs for a logical, step-by-step approach to wilderness recreation management (Stankey et al., 1985; Williams and Gill, 1991; Krys, 1992). LAC is based on the premise that the relationship between visitor activities and impacts is not linear and that social and environmental change is a natural, inevitable consequence of recreational use. The approach focuses on achieving desired conditions rather than emphasizing how much use can be tolerated in an area (Stankey et al., 1985).

Although technical information and science remain an important part of the process, LAC determines acceptable change based on judgement which is defined explicitly through quantitative standards. A system of selecting and monitoring indicators is used to assess the existing state of ecosystems and the effect of management strategies. Strategies for managing change are determined, and procedures for monitoring and evaluating management performance are established. In summary, the process requires deciding what kind of social and ecological conditions are acceptable through a
representative process, then prescribing management actions to protect or achieve those conditions.

The LAC approach is based on four main actions (Adapted from Stankey et al., 1985):

1. the specification of acceptable and achievable ecological and social conditions, defined by a series of measurable parameters;

2. an analysis of the relationship between existing conditions and those judged acceptable;

3. identification of management actions necessary to achieve acceptable conditions;

4. a program for monitoring and evaluating the effectiveness of management.

This approach has been used primarily in wilderness settings including the Bob Marshall Wilderness area in Montana, Sequoia and Kings Canyon National Parks in the U.S. (Stankey et al., 1984). Early reports on its effectiveness have been favourable (Krys, 1992). LAC is currently being implemented in the Yoho Valley area of Yoho National Park in British Columbia as a pilot project for the Canadian Parks Service. LAC has not been traditionally applied to high use areas such as the Minnewanka region of Banff National Park.

Examples of possible indicators typical to this approach are identified in Figure 2.2. The nine-step approach which forms the LAC approach is presented in Figure 2.3.
Figure 2.2 Examples of Possible Indicators for Measuring Ecological and Social Impacts (Adapted from Williams and Gill, 1991, p.14)

<table>
<thead>
<tr>
<th>Physical Impacts</th>
<th>Biological Impacts</th>
<th>Social Impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>- soil compaction (e.g. bulk density)</td>
<td>- ground cover density</td>
<td>- number of visitors in area/day by mode of</td>
</tr>
<tr>
<td>- soil productivity (e.g. amount of litter and duff)</td>
<td>- percent loss of ground cover</td>
<td>transportation</td>
</tr>
<tr>
<td>- area of bare ground</td>
<td>- plant species composition</td>
<td></td>
</tr>
<tr>
<td>- visible erosion</td>
<td>- plant species diversity</td>
<td></td>
</tr>
<tr>
<td>- area of campsites</td>
<td>- percentage of introduced plant species</td>
<td></td>
</tr>
<tr>
<td>- area of developed facilities</td>
<td>- selected plant species vigour</td>
<td></td>
</tr>
<tr>
<td>- area of disturbed sites</td>
<td>- exposed tree roots</td>
<td>- number of encounters/day:</td>
</tr>
<tr>
<td>- number of visitor trails</td>
<td>- abundance of specific wildlife species</td>
<td>- with other groups</td>
</tr>
<tr>
<td></td>
<td>- wildlife reproduction success</td>
<td>- with other individuals</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- by mode of transportation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- by location of encounter</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- visitor perception of impact on the environment</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- visitor satisfaction</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- visitor perception of crowding</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- number of visitor complaints</td>
</tr>
</tbody>
</table>
Figure 2.3 Steps Involved in the Limits of Acceptable Change (LAC) Management Approach (source: Stankey et al. 1985)

1. Identification of Area Concerns and Issues
   • Identification of social and ecological issues through an analysis of the area, political, institutional and economic constraints and the input of affected parties

2. Definition and Description of Opportunity Classes
   • Definition of opportunity classes providing a qualitative description of the kinds of resource, social and managerial conditions acceptable within discreet areas of the planning region

3. Selection of Indicators of Resource and Social Conditions
   • Selection of indicators representing the social and ecological conditions relative to management objectives
   • Assessment of measures for indicators indicators

4. Inventory of Existing Resource and Social Conditions
   • Description of the state of existing resource and social conditions through measuring indicators

5. Specification of Standards for Indicators for Each Opportunity Class
   • Establishment of specific standards which define the acceptable and appropriate conditions for each indicator in each opportunity class through a rationale process that is subject to public and interdisciplinary input

6. Identification of Alternative Opportunity Class Allocations Reflecting Area Issues and Concerns and Existing Resource and Social Conditions
   • Development of options of different opportunity class allocations to achieve the desired conditions for the area
   • Should ideally involve public and interdisciplinary input

7. Identification of Management Actions for Each Alternative
   • Analysis of the existing and desired conditions to assess management options
   • Proposal and evaluation of management actions for each opportunity class configuration

8. Evaluation and Selection of a Preferred Alternative
   • Finalization of opportunity class allocations and a specific management program through further evaluation and assessment
   • Selection of preferred management alternatives through a consensus approach.

9. Implementation and Monitoring of Management Actions and Conditions
   • Implementation and monitoring of preferred management strategy
   • Regular monitoring of indicators to provide feedback on the state of the ecosystem and the effectiveness of management strategies
   • Adaptation of management efforts to achieve the desired social and ecological conditions for the area
Assessment of the LAC Process/ Application to the Minnewanka Area Plan

An LAC approach was actually adopted in the Minnewanka Area Plan as the principle recommendation guiding all management strategies. The approach’s essential steps of defining acceptable conditions, analysing the relationship between existing and desired conditions, defining management strategies to achieve desired conditions and monitoring and adapting management strategies present a useful framework for managing social and ecological systems holistically.

Defining specific, desired social and ecological conditions through a participatory process can provide a clear, agreed-upon vision for an area against which existing conditions may be measured (Stankey et al., 1985; Personal communication, Otton, 1992; Environment Canada, Canadian Parks Service, June, 1992).

The systematic selection and monitoring indicators is seen as a highly useful process for describing and assessing the state of the ecosystem and providing insight to develop effective management strategies (Government of Canada, 1990; Canadian Parks Service, April, 1990; Environment Canada, Canadian Parks Service, June, 1990; City of Vancouver, April 1993; City of Vancouver, May, 1992). Representative indicators may however, be difficult to determine due to the inherent complexity of ecosystems. Monitoring may be constrained due to time and cost limitations (Krys, 1992).

Comparing the existing state of an ecosystem with the desired conditions for the area and analysing reasons for discrepancies between these is an effective approach for determining the causes of ecosystem disorders.
Finally, on-going adaptive management is consistent with the principles of integrated ecosystem management identified earlier in this chapter, and provides a wise approach to management which avoids the risk of implementing irreversible actions.

The conceptual framework of the LAC approach therefore has application to planning in the Minnewanka area. The specific, nine-step planning approach is more complex and may be difficult for CPS staff to implement within existing management frameworks and budgets.

2.2.5.3 Recreation Opportunity Spectrum (ROS) Approach

ROS is essentially a land use zoning system which incorporates social carrying capacity considerations (Brown et al., 1978 in Williams and Gill, 1991). The basic assumption underlying ROS is that the provision of a diverse set or range of opportunities is a useful means of providing for visitor needs while meeting ecosystem management goals (Driver et al., 1987). This approach attempts to facilitate quality experiences for a wide segment of the public (Clark and Stankey, 1979).

Management zones are determined by assessing specific factors such as the sensitivity and significance of resources, the type of opportunities to be provided, area access, the likelihood of human contact and the types of management activities (Driver et al., 1987). It is within these management guidelines that carrying capacity strategies are incorporated into the process. Each zone brings with it its own peculiar carrying capacity management
requirements based on consistent social and ecological criteria (Williams and Gill, 1991; Driver et al., 1987).

The CPS land use zoning system is based upon the ROS approach. Five zones which each possess a different land-use and management strategy have been designated to achieve the mandate and goals of BNP. Like the ROS model, the CPS's zones range along a spectrum from pristine to developed conditions and include: Zone I- Special Preservation, Zone II- Wilderness, Zone III- Natural Environment, Zone IV- Outdoor Recreation, Zone V- Park Services. Although ecosystem sensitivity and significance is supposedly the most influential determinant of zoning, visitor needs and facilities, the existing level of development and adjacent land-uses have significantly influenced zoning within BNP.

Assessment of the ROS Approach / Application to the Minnewanka Area Plan

The ROS approach integrates social and ecological parameters within a zoning system which supports an integrated management approach. By nature, the approach demands the measurement of existing social and ecological conditions and an assessment of potential visitor impacts. Therefore, it facilitates the collection of valuable baseline information for future monitoring and the detection of change in the ecosystem. ROS focuses on managing a variety of parameters such as access, density and facilities rather than only the level of visitor use, reflecting the complexity of visitor impacts.

An inherent weakness in the ROS approach is that managing towards the mean by providing a spectrum of opportunities can miss the mark
entirely in terms of providing positive experiences or protecting ecological integrity. The level of impact defined as "damage" in one area may be quite different than that in the same area managed to provide different opportunities. Within this context, damage is dependant on the type of opportunities supported rather than an absolute measure (Clarke and Stankey, 1979). In general, recreationist's tolerance for impacts (social, ecological or managerial) are greater in zones which have been designated as modern or developed. This was true in the Minnewanka area which is a Zone IV "Outdoor Recreation" area permitting extensive visitor use, facilities and services. Visitor perceptions of the level of human impact was significantly less than that of CPS managers and stakeholders (Environment Canada, Canadian Parks Service, 1991; input from planning team and stakeholder workshops).

2.2.5.4 The Visitor Impact Management (VIM) Approach

The Visitor Impact Management (VIM) approach has been used primarily in backcountry recreational settings. It is highly similar to the LAC framework involving an eight-step sequence of tasks designed to facilitate the identification of problem conditions (or unacceptable impacts), the determination of potential causal factors affecting the occurrence and severity of unacceptable impacts, and the selection of potential management strategies for ameliorating the unacceptable conditions. The VIM model is represented in Figure 2.4.
4. Selection of Standards for Key Indicators
- Restatement of management objectives in terms of desired conditions for selected impact indicators
- Product: Quantitative statements of desired conditions
  - e.g. no more than 30% of vegetation lost at specified site

5. Comparison of Standards and Existing Conditions
- Field assessment of social and ecological impact indicators.
- Product: Determination of consistency or discrepancy with selected standards

Discrepancy

6. Identify Probable Causes of Impacts
- Examine use patterns and other potential factors affecting occurrence and severity of unacceptable impacts.
- Product: Description of causal factors for management attention

7. Identify Management Strategies
- Examine full range of direct and indirect management strategies dealing with probable causes of visitor impacts.
- Product: Matrix of alternative management strategies

8. Implementation
The VIM process builds upon the notion that effective management involves both scientific and judgmental considerations and that a systematic, logical process that incorporates the best available information and scientific understanding will lead to informed and defensible management decisions (Shelby and Heberlein, 1984; Becker et al., 1984; Graefe et al., 1985). The approach emphasizes that visitor impacts are complex, rarely being the direct result of user impact density and that establishing capacities and limits to use may do little to reduce the impact problems that they were intended to solve (Graefe et al., 1990 and Kuss et al., 1990 in Williams and Gill, 1991, p.13).

Assessment of VIM / Application to Minnewanka Area Plan

The approach of specifying objectives, monitoring indicators, comparing the existing conditions to the desired vision and assessing reasons for discrepancies was identified as a useful tactic in the LAC assessment. Although the VIM approach reflects the key principles of LAC, it appears to be a less complex process (i.e. it doesn’t involve the definition of opportunity classes) which may be implemented on an issue-by-issue basis. These factors allowed the VIM approach to be more easily integrated into existing management frameworks.

An example of VIM’s simplicity and effectiveness was expressed through its application at the Icewater Springs shelter site in Smoky Mountains National Park (Graefe et al., 1985). In this case study, it was realized that management goals and objectives for national park areas are often general, so input from managers and stakeholders facilitated the clarification of objectives and guided the process. The selection and monitoring of indicators was incorporated into the existing impact
assessment framework. A matrix was devised to assess the social, ecological and economic implications of proposed strategies and revealed a range of reasonable management options (Graefe et al. 1985, p. 438).

In summary, the VIM approach represents a similar but simpler process than LAC and has application to the Minnewanka area planning project.

2.3 NORMATIVE CRITERIA OF EFFECTIVE RECREATIONAL CARRYING CAPACITY MANAGEMENT APPROACHES FOR THE EVALUATION OF THE MINNEWANKA AREA PLAN

The following six normative criteria representing an effective recreational carrying capacity management approach were determined through the literature reviewed. The Minnewanka Area Plan will be evaluated according to these and additional criteria (see section 2.5 of the thesis) which together, represent an ideal planning approach based on the concept of integrated ecosystem management.

1. Specific objectives which describe the desired social and ecological conditions for the area

Clearly defined, specific objectives within the plan provide a basis by which management strategies and the results of monitoring may be evaluated. Objectives should ideally describe the type of visitor experiences to be provided as well as the ecosystem conditions and management strategies which are seen as acceptable in the area. Planning objectives should be determined through an open, representative process and be supported by stakeholders.
The plan may be evaluated by the definition and level of specificity of objectives and participants' support for the objectives.

2. **A measure of the existing social and ecological conditions in the area**
An accurate measure of the existing social and ecological conditions in the planning area is required to assess the relative health of the area in light of the desired ecosystem conditions. The existing state of the ecosystem may be measured by determining and monitoring specific indicators. Indicators should represent the social and ecological conditions in the area and relate to the objectives of the project.

The plan may be evaluated by the inclusion of precise measures of the social and ecological conditions in the planning area. This information should relate to the objectives identified in the plan.

3. **A comparison and analysis between existing and desired conditions**
A comparison and analysis between the existing and desired social and ecological conditions provides an effective approach for detecting specific problems within the planning area relative to the management objectives (Stankey et al., 1985). A clear understanding of planning issues is essential to devising effective management strategies.

The plan may be assessed by the provision of a comparison and analysis between the existing and desired conditions and a clear understanding of ecosystem problems associated with planning.
4. Formulation and assessment of management strategies specific to the planning problems

Management strategies proposed in the plan should specifically address the causal factors identified through the above analysis (3) and work towards achieving the desired conditions in the area. Management strategies are more likely to be implemented if they are supported within existing frameworks and plans (Williams and Gill, 1991).

The plan may be evaluated by the specificity with which proposed management strategies address the defined issues as well as their compatibility with existing management frameworks.

5. Plans for implementing and monitoring management strategies

Proposed management strategies should be capable of being implemented within the CPS's framework in BNP. The plan should include a detailed implementation strategy which defines who will implement the proposed actions and how implementation shall occur. It should also consider economic feasibility and describe how the plan's implementation will be monitored while identifying what will be monitored.

The plan may be assessed by the inclusion of an implementation strategy which fulfills the above criteria.

6. Provision for interdisciplinary input, meaningful stakeholder and public involvement at all levels in the process

The plan should reflect the meaningful input of interdisciplinary managers, stakeholders and interested members of the public. Such input is necessary for gaining comprehensive social and ecological information about the
existing and desired conditions of the area and developing acceptable strategies for attaining these conditions. Meaningful, representative input is necessary at all of stages in the planning process.

The provision of representative input was identified as a principle for integrated ecosystem management earlier in the thesis (see section 2.1.3). A more complete review and discussion of this aspect of the planning approach appears in the following section.

2.4 PUBLIC INVOLVEMENT AS A MEANS TOWARDS INTEGRATED ECOSYSTEM MANAGEMENT

Meaningful public involvement is necessary if decision-making in resource management is to adequately consider social values as part of ecological systems. Participation can facilitate the acquisition and sharing of comprehensive information about the social, ecological and economic conditions of the ecosystem and lead to better informed decisions while increasing the accountability of decision-makers (Brenneis and M'Gonigle, 1992; Duffy, 1991; CORE, 1992). Other benefits include joint learning, discovering new solutions, improving decision-making processes and mobilizing a more aware society (Government of Canada, 1990; Arnstein, 1969). Canada's Green Plan advocates the establishment of partnerships for decision-making and the management of ecosystems. The Canadian Parks Service's Western Region Strategic Plan further supports partnerships as a means of implementing the CPS's mandate and working towards sustainable development.
The purpose of this section of the thesis is to define criteria that reflect effective and meaningful public participation processes within the context of the case study. These normative criteria will be used to evaluate the Minnewanka Area Plan. Criteria were determined through a selective review and assessment of literature as it was not within the scope of the thesis to focus on public participation processes. Rather, meaningful stakeholder involvement is perceived as a necessary component in integrated ecosystem management.

2.4.1 Levels of Public Participation

There are many levels of public involvement which range from token contributions to levels where stakeholders are empowered and control decision-making. Arnstein defined typologies of public participation in her classic *Ladder of Public Participation* which is represented in Figure 2.5 (1969). Similar interpretations of levels of participation appeared in the literature reviewed (e.g. Parenteau, 1988; Sewell and Phillips, 1979; Brenneis and M'Gonigle, 1992). These models are based on the relationship between authorities ("powerholders") and stakeholders ("have nots") in decision-making. As participation becomes more meaningful, stakeholders are empowered from a level of non-participation to one which influences decision-making (Brenneis and M'Gonigle, 1992).
Manipulation (1) and therapy (2) at the lower rungs of Arnstein’s ladder are contrived, non-participatory processes where the powerholders try to educate stakeholders. Informing (3) and consultation (4) are token levels where stakeholders hear and have a voice but their input does nothing to influence decision-making. In the first four levels, there is no follow-through or power associated with stakeholder input (Arnstein, 1969).

Placation (5) is simply a higher level of tokenism where stakeholders advise but the powerholders continue to decide. It was noted that the majority of land-use decision-making processes have not exceeded this level of participation in the past (Arnstein, 1969; CORE, 1992).

True levels of public participation begin at level 6, where partnerships enable stakeholders to negotiate and engage in trade-offs and share in decision-making (Brenneis and M’Gonigle, 1992). Delegated Power (7) and citizen control (8) are levels where stakeholders maintain the majority of decision-making power or possess full managerial rights.
As inferred in this model, decisions made through shared decision-making processes and partnerships are likely more representative and effective. Such decisions in land use and resource issues are ultimately perceived as less contentious (Duffy, 1991; Gunton and Vertinsky, 1990). The British Columbia Commission on Resources and Environment (CORE), which acts as an independent body that has been mandated by the Province to advise Cabinet on land use and related resource and environmental management decisions, advocates a shared decision-making process. This concept could have application to decision-making in national parks and in planning in the Minnewanka area. A definition of shared decision-making follows (CORE, 1992, p.25):

Shared decision-making means that on a certain set of issues for a defined period of time, those with authority to make a decision and those who will be affected by that decision are empowered to jointly seek an outcome that accommodates rather than compromises the interests of all concerned.... The cornerstone of a shared decision-making process is a cooperative problem-solving approach.

Shared decision-making is based on reaching consensus within a group of decision-makers. All parties involved may not agree with every aspect, but taken as a whole, a decision based on consensus satisfies the major interests and concerns of each party to the extent that they can all support it.

2.5 NORMATIVE CRITERIA OF EFFECTIVE PUBLIC PARTICIPATION PROCESSES FOR THE EVALUATION OF THE MINNEWANKA AREA PLAN

The evaluative criteria which were determined through the literature reviewed are based on meaningful stakeholder involvement processes as well as the outcome of decisions and the attitudes of participants. The Minnewanka Area Plan will be evaluated according to these criteria in Chapter 5.0 of the thesis.
2.5.1 Components of Fair and Effective Processes

The following components are needed to facilitate fair and effective public participation processes (Duffy, 1991; Brenneis and M'Gonigle, 1992; Gunton and Vertinsky, 1990; Sewell and Phillips, 1979; Parenteau, 1988). This information has been adapted to reflect national park planning and the conditions of the Minnewanka area case study.

1. The provision of clear objectives and priorities of the planning and stakeholder involvement process

Information providing the objectives and priorities of the planning and the stakeholder involvement processes should be provided to all participants in a documented form before the process begins. The accountability and mandate of decision makers should be defined within this information.

The provision of clear objectives of the planning process helps participants to prepare for the process and discern whether their involvement is in fact, appropriate. It provides participants with an objective standard to guage performance by and serves to improve the efficiency of the process.

2. Representative involvement

The determination of who should participate in a land-use and resource decisions is often complex. The "public" consists of those who see themselves as significantly affected and who have a demonstrable interest in decisions (Brenneis and M'Gonigle, 1992; Gunton and Vertinsky, 1990; Parenteau, 1988). Like the evaluation of most aspects of public participation, an assessment of representative participation is subjective. The following questions may be
applied to the plan to determine whether stakeholder involvement is representative:

- Are all organizations and agencies who are involved in the planning area represented?
- Do participants feel that stakeholder involvement is representative?
- Is decision-making hindered by the lack of information or input associated with a particular aspect of the project?
- Are efforts being made to gain input at different spheres of influence for the area? (i.e. local, regional and national levels?)

3. Comprehensive involvement opportunities

The key to success in shared decision-making lies in structuring the process so that it involves the participants in the design and development of the process itself as well as in the negotiation of the substantive issues (CORE, 1992). Involvement should not be restricted to reacting to proposals or providing input which is not considered in decision-making. Participants need to be involved from the initial assessment of the problem and design of the planning approach through to the decision-making, implementation and monitoring of management strategies (CORE, 1992, p.25). Rarely are participants involved in the "planning of planning," yet insight about the needs, and attitudes of stakeholders is invaluable to the design of a successful participation process. A built-in process of on-going evaluation is desirable so that changes can be made in the planning process to meet the immediate needs of stakeholders and to better reflect issues as they evolve (Sewell and Phillips, 1979).

Different participation processes may be needed to involve the different publics associated with a planning issue. Smith (1982) identified that a
combination of an independent advisory board and public workshops was the most effective way to achieve comprehensive participation. Brenneis and M'Gonigle (1992) supported the on-going participation of an advisory board or team as well as input from a wider sphere of public participants.

Comprehensive involvement may be assessed by the inclusion of early and thorough participation of stakeholders in all stages of a decision-making process.

4. **Timely access to information**
Stakeholders need timely access to information used in the decision-making process. Information regarding policy, strategic guidelines, specific resources, economics, the organization and other plans and processes influence decisions made by the CPS in BNP. Relevant information should be made available to participants in advance of the decision-making process and should be provided in an easily accessible form such as a summary or background to the planning project. Information sharing helps to bring participants up to the same level of awareness as the principal decision-makers (the CPS), thereby improving the distribution of power and enhancing the efficiency of decision-making processes. Information-sharing builds trust between decision-makers (Duffy, 1991).

5. **Adequate resources to participate**
Resources which may be needed to participate in decision-making processes include time, money and expertise. In area planning in BNP, time may be more of a limiting resource to participation than finances. Distance may be a limiting factor for stakeholders who reside outside the area. These
constraints should be taken into account in designing decision-making processes. A variety of strategies such as one-on-one meetings or written feedback may be required to gain input from all stakeholders interested in participating.

6. **Written reasons for decisions**

Decision-makers should be obligated to provide stakeholders with a written statement summarizing how key decisions were reached and how the various concerns expressed by stakeholders were taken into account. Written records and responses enable stakeholders to gauge the performance of decision-makers and facilitates a more credible and legitimate planning process (Duffy, 1991; Brenneis and M'Gonigle, 1992). The provision of written justification for decisions, including criteria upon which decisions are made, provides a valuable source of information for all interested parties. Continuous communication builds trust between stakeholders and decision-makers.

Performance may be assessed by whether stakeholders were provided with written reasons for decisions.

7. **Appeal mechanisms/ conflict resolution**

Although a formal appeal process may not be necessary for area planning in national parks, the provision of a clearly defined process which stakeholders can consult if they disagree with decisions is desirable. The lack of any form of appeal mechanism can leave stakeholders powerless. Ideally, an appeal mechanism engages a third unbiased party (Duffy, 1991). In national parks
however, the CPS must legally make decisions according to its mandate and cannot divest this responsibility.

Performance may be measured by the provision of an independent body which can offer assistance in decision-making.

8. **Consistent objectives within the managing organization**
Discretion is often required in decision-making in national parks as land-use decisions are complex and are rarely a simple reflection of the national park mandate (Canadian Parks Service, June, 1992; Environment Canada, Canadian Parks Service, Nov., 1988). The basis for discretion should be clear and consistent so that the underlying rationale for decisions is apparent. These criteria are necessary for building trust with stakeholders.

Consistency is vested in clear objectives which may be referred to in decision-making.

9. **Communication of the results of plan implementation and monitoring**
The results of implementing and monitoring the Minnewanka Area Plan should be communicated to stakeholders on an on-going basis. This action ensures the continued involvement of stakeholders beyond the initial decision-making process. It may also facilitate learning and improve the effectiveness of future decisions and adaptive management efforts.

Performance may be assessed by whether the results of monitoring are communicated to participants on an on-going basis.
2.5.2 Evaluating the Outcomes of Decision-Making Processes and the Attitudes of Participants

Evaluative criteria for successful public participation processes are unique in each situation and dependent on the level of participation as well as conditions associated with the plan. The following measures taken from Sewell and Phillips (1979) are used to evaluate the outcomes of decision-making processes and the attitudes of participants. These criteria apply to consultation (or "placation" on Arnstein's ladder) and partnership levels of participation which reflect the desired levels of participation according to the Canadian Parks Service's goals (Government of Canada, 1990; Environment Canada, Canadian Parks Service, June, 1990). It is apparent that although the CPS advocates partnerships in implementing its mandate, the reality is that the CPS ultimately decides in decision-making processes.

Within the following evaluative framework, a process which has generated meaningful decisions which stakeholders support and have been determined through a comprehensive and positive experience, is generally judged as successful. Learning or growth within participants as well as a high degree of influence in decisions suggests greater levels of participation.

Measures for Evaluating the Outcomes of Decision-Making Processes and Stakeholder Attitudes (Adapted from Sewell and Phillips, 1979)

1. Frequency of contact between stakeholders and decision-makers measured quantitatively by numbers of meetings, calls, correspondence, workshops etc.

2. The degree to which public participants felt they had a voice in participation opportunities.

3. The degree to which public participants actually influenced the decision-making process.
4. The level of output of the consultation process.

5. The extent to which polarization of public opinion was prevented.

6. Acceptance of final decisions

7. Frequency of examples given which indicate changed self-perception of committee representatives (e.g. new leaders in groups, previously inarticulate members speaking out, etc.)
CHAPTER III. BACKGROUND TO THE MINNEWANKA AREA PLAN

The purpose of this chapter is to highlight the background which influenced decision-making in the Minnewanka Area Plan. Key policies and management directions are identified and important information regarding ecological, social and cultural resources is summarized. Further background information is available in *A Background to the Minnewanka Area Plan - draft* (Environment Canada, Canadian Parks Service, April, 1993) and the *Minnewanka Area Plan* (Environment Canada, Canadian Parks Service, April, 1993).

3.1 OVERVIEW

The Lake Minnewanka area is one of Banff National Park's best known and busiest locations. In the 1991 summer season (July and August), the area was visited by over 146,000 people undertaking a broad range of activities including sightseeing, hiking, camping, bicycling, scuba diving, horse riding, picnicking, boating, fishing and sunbathing (Environment Canada, Parks Service, 1991, p.1). The area also provides access to the backcountry at two major trailheads. In the winter, it is popular for sightseeing, cross-country skiing and skating. The level of use and range of activities are comparable to what may be found in many national or provincial parks.

The area contains a portion of the park's scarce Montane ecoregion, a highly significant habitat type important to many wildlife species characteristic of the Bow Valley. A number of environmentally important, rare and sensitive ecological resources and features occur in the area as well as
significant cultural sites including abandoned mines at Bankhead and Anthracite and submerged resources in Lake Minnewanka. The Minnewanka area has experienced extensive human influences in the last century as a result of coal mining, hydro electric development, gravel extraction, road construction and the creation of recreational facilities. The area's landscape is a testimony which reflects changes in resource use and management in the development of national park policy.

3.1.1 The Need for an Area Plan

The development of facilities, services and programs in the Minnewanka area has generally proceeded in a piecemeal fashion, without consideration of the overall visitor experience or the larger ecosystem (Environment Canada, Canadian Parks Service, June, 1992, Terms of Reference). Overcrowding is a concern at some times of the year and there are several outstanding resource management issues. Former extractive activities which are no longer compatible with national park ideals have impacted the area's landscape. There is a lack of visitor orientation, information and interpretation facilities in the area (Personal communications during planning team and stakeholder workshops, 1992).

The Banff National Park Management Plan, an overall strategy for managing ecosystems and human activities in the Park, provides a framework for further detailed planning. An area plan for the Lake Minnewanka Area is called for in the Banff Management Plan in recognition of the concerns expressed above (Environment Canada, Canadian Parks Service, Nov., 1988). Area plans are essentially a re-application of the park management planning process to specific parts of the park, providing a
comprehensive strategy for area protection, management, development and visitor use.

3.1.2 The Planning Area

The Minnewanka area is located in the region between the eastern boundary of Banff National Park north of the Trans Canada highway to the first turn-off along the highway for the Town of Banff. The planning area encompasses the Minnewanka Loop Road, Johnson Lake, Two Jack Lake and Lake Minnewanka to the eastern boundary of the Park at Ghost Lakes (see Figure 3.1). This area contains extensive day-use facilities, campgrounds (frontcountry and backcountry), an interpretive site at the Bankhead mine area and network of day-hiking trails. The boundaries of the planning area are not absolute but were designated to reflect the surrounding visitor opportunities and ecological influences (Environment Canada, Canadian Parks Service, June, 1992, Terms of Reference).

3.1.3 The Planning Process

The planning process involved extensive input and review from members of the Canadian Parks Service (CPS) in Banff National Park, public stakeholders and other organizations. The planning process began in May, 1992 and was completed in April, 1993. Implementation of the plan will take place over the next 4 years.

The planning project was established as a Master's thesis research contract. Under the supervision of the Chief of Planning in Banff National Park, the author served to coordinate and facilitate the entire planning process and write the area plan. An interdisciplinary planning team of eight
Figure 3.1 The Lake Minnewanka Planning Area
members from the Canadian Parks Service was involved in developing the plan. The team represented different areas of expertise including: natural and cultural resource management, visitor activities, heritage communications, scenic parkways and roads, landscape architecture and trails. Members provided information, ideas and feedback through a series of meetings, workshops and site visits.

Special interest groups, local businesses and other agencies with an active interest in the Minnewanka area also participated in the process at meetings, workshops and through written submissions. Participants worked to determine the issues to be addressed in the plan, a vision for the area and strategies for achieving the desired ecological and visitor conditions in the Minnewanka area. A steering committee from the CPS reviewed the plan at key stages in the decision-making process.

Following the completion of the draft plan, the process extended to the larger public for review at an Open House in Banff and through a regional mailing list of interested individuals and groups. Extensive public feedback was received and considered in the final Minnewanka Area Plan. A more detailed discussion of the planning team and public participation process occurs within the evaluation of the process in section 5.2 of the thesis.

3.2 POLICY GUIDELINES AND MANAGEMENT DIRECTIVES

Planning within the Minnewanka area is influenced by Federal directives such as the National Parks Policy, strategic management guidelines at the regional level and management plans within the park.
National park policy expresses a dual mandate of protecting those places which are significant examples of Canada's natural and cultural heritage and encouraging public understanding, appreciation and enjoyment of this natural heritage so it is left unimpaired for future generations (Environment Canada, Parks Service, 1979). National Park policy is currently under revision with proposed policies emphasizing that the protection of ecological and historic integrity will be a priority while "appropriate" visitor activities will be welcomed. "Appropriate" activities are those which relate to the heritage themes and character of the setting and do not disturb the cultural or ecological integrity of heritage resources (Environment Canada, Parks Service, 1991). This represents a transition from the dual mandate towards a stronger commitment to protect ecological integrity.

Proposed policies are further supported in CPS's Western Region Strategic Plan (Environment Canada, Parks Service, June 1990) and Canada's Green Plan (Government of Canada, 1990). Directives within these plans promote an ecosystem-based approach to management in national parks which integrates the social and ecological aspects of ecosystems and works towards sustainable management. Effective public participation is associated with an integrated approach and is advocated at the local, regional and national level. The establishment of partnerships with other organizations, agencies, private businesses and individuals is supported as a means of improving resources and promoting cooperative management arrangements.

Meaningful basic and applied scientific research into the social, ecological and cultural parameters of ecosystems is espoused within the above
plans to enhance environmentally wise decision-making. The regular monitoring of indicators is proposed as a means of evaluating the health of park ecosystems and guiding management strategies (Government of Canada, 1990; Environment Canada, Parks Service, June, 1990).

The development and enhancement of communications programs which foster awareness, understanding and an appreciation of heritage resources, CPS activities and broader conservation concerns was strongly supported in the strategic directives which influence planning in BNP. Effective communication strategies are seen as a powerful tool for developing a stewardship in national parks that is shared by members of the public and works towards protecting ecological integrity. The Government supports this phenomenon through the promotion of "environmental citizenship" within Canada's Green Plan (Government of Canada, 1990).

CPS's Strategic Plan further identifies that the profile of cultural heritage will be raised within national parks so that our heritage is recognized and managed as an important component of park ecosystems (Environment Canada, Park Service, June, 1990).

The Banff National Park Management Plan represents a more specific level of planning providing guidelines for the management of resources, visitor activities and services in BNP including the Minnewanka area (Environment Canada, Canadian Park Service, 1988). The plan was developed in 1988 through a comprehensive process involving public input and Ministerial approval and will be revised within the next few years. As many of the more recent strategic directives identified above are weakly supported
in the plan, it was necessary to consider the direction of the Banff
Management Plan within a more holistic perspective, ultimately geared
towards an ecosystem-based approach to decision-making and management.
Management guidelines from the plan specific to the Minnewanka area are
identified below.

All potential environmental and social impacts are to be ascertained
and avoided to the extent possible through the federal Environmental
Assessment and Review Process (EARP). Plan proposals will be screened
during the planning process and plan initiatives may be subject to the EARP
during implementation. Several members of the planning team who are
responsible for EARP reviews in the park provided some input regarding the
potential impacts of proposals during the planning process.

The rehabilitation of man-disturbed sites is a priority for planning.
The most visible disturbed sites have been caused by CPS gravel extraction
activities and landfilling at Cascade Pit and the Minnewanka Pit. TransAlta
Utilities (TAU) has agreed to rehabilitate former borrow pits caused by their
activities in the Minnewanka area as part of the recent operational license

"Private sector initiatives will be supported to the extent that the
fundamental mandate of national parks is not compromised" (Environment
Canada, Canadian Parks Service, 1988). Several private enterprises operate
within the planning area. A tour boat concession and motor boat rental
operation is based out of the Minnewanka day use area, the mostly highly
visited and strategic site within the planning area. The lease for operation of
this enterprise will be up for renewal in 1995. Local transit companies conduct bus tours in the area and smaller fish-guiding and interpretive businesses operate in the Minnewanka area. It was necessary to involve members from these enterprises in the planning process and consider their role in the context of the proposed vision for the area.

The Banff Management Plan also identifies that minimal development of further day use sites will occur within BNP while substandard day use facilities will be upgraded. The Minnewanka area possesses a high level of facility development, however many of these facilities were perceived as inadequate (Environment Canada, Canadian Parks Service, 1988; Input from planning team and stakeholder workshops, 1992). Problems associated with parking, general site congestion and the mix of recreational demands placed on the area are to be addressed within the area plan (Environment Canada, Canadian Parks Services, 1988).

According to the Park Management Plan, fisheries and water quality management should be addressed in the area planning. The creation and operation of the Minnewanka reservoir has significantly impacted the natural hydrology and habitats of the Minnewanka area. The recent license renewal agreement for TransAlta Utilities' (TAU) 50-year operating license addresses impacts to aquatic resources and identifies strategies for determining and mitigating the effects of reservoir operation on biological productivity on Lake Minnewanka as well as the rehabilitation of lower Cascade Creek (diversion channel).
3.3 HISTORY AND CULTURAL RESOURCES

The Minnewanka area contains numerous archaeological resources from the historic and prehistoric period. A site within the planning area contains some of the earliest finds of prehistoric man in the Canadian Rockies dating from 12,000 years before present (McIntyre and Reeves, 1975). Lake Minnewanka signified "lake of the water spirit" or "lake of the evil water spirit," and was important to local indigenous people (Clark, 1979). The area was traversed separately by Hudson Bay Company Governor George Simpson, missionary Robert Rundle and the Palliser expedition between 1841 and 1858 (Personal communication, Ian Clarke, 1992).

3.3.1 Dam Building Activities

A roadway and cottages were developed at Lake Minnewanka around 1887. A small wooden dam was built on Devil's Creek at Lake Minnewanka in 1895 raising the natural level of the lake approximately 1.2 metres (TransAlta Utilities Oct., 1992, p. 3). In 1912, Calgary Water Power built a second dam below the first raising the water level 64 metres and increasing the area of the lake by 227 hectares (TransAlta Utilities, Oct., 1992, p.3). The Department of the Interior reserved the right to develop the water power potential resulting from this storage project. Calgary Power's interest was confined to regulating the flow of water during winter months to serve the existing power plant on the Bow River at Seebee (TransAlta Utilities, Oct., 1992, p.3). A map depicting the historic changes in the level of Lake Minnewanka is shown in Figure 3.2.
Submerged features of Lake Minnewanka. (D. Kappler, Canadian Parks Service)

Figure 3.2 Historic Lake Level Changes, Lake Minnewanka
Between 1906 and 1923, electricity for Banff was supplied by coal fired steam generation from the mine at Bankhead. Due to closure of the mine in the early 1920's, the federal government exercised its' right to develop the power potential of the 1912 storage at Lake Minnewanka. The first Cascade Power Plant was commissioned in 1924 (TransAlta Utilities, Oct. 1992, pp.3-4).

The construction of a large explosives plant in Calgary at the start of World War II required a new supply of electrical energy. In 1940 Calgary Power purchased the Federal Government's plant but it was never used (Personal communication, Ian Clarke, 1992; TransAlta Utilities, Oct., 1992, pp. 3-4). Under the impetus of the War Measures Act, a third dam constituting the Cascade Power Project was completed in 1942 raising the level of Lake Minnewanka 19.8 metres and increasing the flooded area by 593 hectares. The size of the lake was increased by 57.5% making it the largest and deepest lake in Banff National Park (TransAlta Utilities, Oct. 1992, p.5). The resort and houses at Lake Minnewanka were destroyed, moved or dismantled and the foundations were submerged. Today, the unique submerged cultural resources are attractive to scuba-divers (Personal communication, Greg Slatter, July 1992).

The natural hydrology of the lake was significantly impacted as a result of hydro electric development. Fluctuating water levels have damaged the littoral zone which is the most productive zone of the lake (Achuff et al., 1986, p.15). Impacts to former riverine habitats along the Cascade and Bow River channels below the dam have resulted from the extreme fluctuations in flow and water levels (Canadian Parks Service, Banff National Park, January 25, 1992).
The Cascade hydro electric project is operated by Trans Alta Utilities (TAU) and generates an average of 55 000 Mwh/year. The project supplies the area with a portion of its electrical requirements by feeding into the utility company's southern Alberta grid (TransAlta Utilities, Oct. 1992).

3.3.2 Coal Mining Activities

Extensive coal mining occurred in the Minnewanka region between 1886 and 1945. Mining in the Cascade basin lead to the establishment of towns at Bankhead and Anthracite.

The oldest mine operated by the Canadian Anthracite Company, produced 30,000 tonnes of coal between 1886 and 1904. The Bankhead mine operated from 1903 to 1922 and produced almost 2.9 million tonnes of coal. Two small mines located near Anthracite were also operated privately between 1926 and 1953 producing about 30,000 tonnes of coal (TransAlta Utilities , Oct.,1992).

3.3.3 Other Influences

More recent human impacts on the landscape are evident at approximately ten former borrow pits, gravel extraction and landfill sites in the area which have been caused by the activities of the CPS and TAU. Many formerly disturbed sites have been partially or fully rehabilitated.
3.4 BIOPHYSICAL RESOURCE ANALYSIS

3.4.1 Montane Ecoregion

The Minnewanka area is contained mainly within the Montane ecoregion which characterizes the lowest elevations (4429 - 5249 feet) of Banff National Park and the Bow River corridor (Holland and Coen, 1982). The Montane is highly significant, providing important habitat to many wildlife species in BNP, however it is extremely scarce representing only about 2% of the park's area (Achuff et al., 1986, p.36). Approximately 880 hectares montane habitat has been lost as a result of flooding associated with the hydro generation project (Beswick, 1992, p.22). Further montane has been lost as a result of development in the Bow Valley. Ecosites defining the relationship between physiographic parameters including landform, vegetation and soil in the Minnewanka area are identified in Figure 3.3 and Table 3.1. The significance of sensitive ecosites and wildlife habitat was influenced area planning.

Generally, the planning area is of high to very high importance to deer (mule and white-tailed), elk, moose, wolf, coyote and small mammals. It is of medium to high importance to bird populations who use the area's wetlands and three montane lakes as staging sites (Banff National Park Heritage Resource Conservation, 1992, Achuff et al., 1986). The area provides an important winter range for deer and elk.

Ungulate (cloven-hooved animals) migration routes cross Minnewanka loop road at many sites. Bighorn sheep are common along Minnewanka Loop Road and are attracted to natural mineral licks and road
Table 3.1 Description of Ecosites in the Minnewanka Area

<table>
<thead>
<tr>
<th>Ecosite</th>
<th>Ecoregion</th>
<th>Landform</th>
<th>Soils</th>
<th>Vegetation</th>
<th>Wildlife</th>
<th>Management Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT1</td>
<td>Montane</td>
<td>Terraces of calcareous, coarse glacial/fluvial material on broad valley floors</td>
<td>Eutric Brunisol</td>
<td>Lodgepole pine / juniper / bearberry</td>
<td>Deer, elk, wolf, coyote, cougar</td>
<td>Extensive readily available gravel and sand; droughty soils cause revegetation problems</td>
</tr>
<tr>
<td>FR1</td>
<td>Montane</td>
<td>Fans and aprons of coarse, calcareous fluvial material on lower slopes and valley floors</td>
<td>Eutric Brunisol</td>
<td>Lodgepole pine / buffaloberry / showy aster</td>
<td>Deer, elk, wolf, coyote, cougar, small mammals</td>
<td>Locally occurring high water table</td>
</tr>
<tr>
<td>HD1</td>
<td>Montane</td>
<td>Fans and aprons of coarse, calcareous fluvial materials on lower slopes and valley floors</td>
<td>Orthic and cumulic Regosols</td>
<td>Aspen / hairy wild rye-peavine</td>
<td>Deer, elk, wolf, coyote, cougar, small mammals</td>
<td>Locally occurring high water table</td>
</tr>
<tr>
<td>HD2</td>
<td>Montane</td>
<td>Fans and aprons of coarse, calcareous fluvial materials on lower slopes and valley floors</td>
<td>Orthic and cumulic Regosols</td>
<td>White spruce / shrubby cinquefoil / bearberry</td>
<td>Deer, elk, wolf, coyote, cougar, small mammals</td>
<td>Locally occurring high water table</td>
</tr>
<tr>
<td>NY1</td>
<td>Montane</td>
<td>Blankets and veneers of calcareous, medium textured till over inclined bedrock on steep grades (35-70%)</td>
<td>Orthic and Eutric Brunisol&gt; Orthic Regosols</td>
<td>Douglas fir / hairy wild rye and Lodgepole pine / buffaloberry / showy aster</td>
<td>Deer, bighorn sheep, wolf, coyote, cougar</td>
<td>Steep, locally eroding slopes, coarse fragments</td>
</tr>
<tr>
<td>PT1</td>
<td>Montane</td>
<td>Rridged or hummocky moraine or morainal blankets overlying ridged or hummocky bedrock on valley floor benchlands</td>
<td>Eutric Brunisols, Gray Luvisols</td>
<td>Lodgepole pine / buffaloberry / showy aster and Lodgepole pine / buffaloberry / twinflower</td>
<td>Deer, elk, coyote, cougar, wolf, small mammals</td>
<td></td>
</tr>
<tr>
<td>PT3</td>
<td>Montane</td>
<td>Discontinuous morainal veneers overlying ridged bedrock and exposed bedrock ridges</td>
<td>Eutric Brunisol&gt; Gray Luvisol</td>
<td>Lodgepole pine / juniper / bearberry</td>
<td>Deer elk, cougar, wolf, coyote, small mammals</td>
<td>Moderate to steep colluviating slopes</td>
</tr>
<tr>
<td>PT5</td>
<td>Montane</td>
<td>Rridged moraine consisting of calcareous, medium textured till; horizontal fen</td>
<td>Dry 60: Eutric Brunisol, Gray Luvisol Wet 40: Gleysol, Mesisol</td>
<td>Dry: Lodgepole pine / buffaloberry / showy aster Wet: Black spruce - Lodgepole pine / willow / sedge and spruce / Labrador tea / brown moss</td>
<td>Coyote, cougar, lynx, wolf</td>
<td></td>
</tr>
</tbody>
</table>
Figure 3.4 Ecosites in the Minnewanka Area

(Holland and Coen, 1982; Holroyd and VanTighem, 1983)
(TransAlta Utilities, Oct., 1992)
salt near the Minnewanka dam (Achuff et al., 1986). Sheep are regularly approached by humans which has lead to habituation.

Unique aeolian (wind transported) formations associated with rare plant species occur at the east end of the planning area near the Ghost Lakes (Achuff et al., 1986). These resources are impacted by All-Terrain-Vehicles (ATV) which enter the park illegally from adjacent provincial recreation lands managed under Alberta Forestry, Lands and Wildlife. The CPS’s presence at the eastern boundary of BNP near the Ghost Lakes area is minimal.

A simplified, integrated model representing key indicators of the Bow Valley montane ecosystem was recently presented in the park by White et al. (1992). The model which is based on relationships between humans, wolves, elk and trembling aspen has application to planning in the Minnewanka area.

Aspen is typical in south facing valley bottom areas of the montane. As an early successional species, it is in reasonable scarce in BNP possibly due to the historic suppression of fires and ungulate overgrazing. Prescribed burn efforts which began in the early 1980’s have not been overly successful in regenerating aspen primarily because elk overgraze new shoots. This has generally been the case in prescribed burns sites near Lake Minnewanka.

Elk populations are presently high in BNP and elk are common in the Minnewanka area during the winter and rutting season in the fall. A depressed mortality rate associated with protective fencing and animal underpass tunnels that accompanied the Trans Canada Highway twinning
project in the 1980's as well as a lack of predators are likely associated with high numbers of elk. Many elk in the park have become habituated to the point where humans are occasionally attacked.

Wolf recolonization is occurring in Banff National Park after local populations were nearly decimated during former predator control programs. These programs ceased approximately 40 years ago. Elk are the primary prey of wolves although predation is dependant on local ungulate populations. There is some evidence to suggest wolf predation, in conjunction with other mortality factors, is depressing elk numbers in some areas of the montane. Recent evidence of wolf activity has been observed within the planning area near Johnson Lake and the upper Cascade River.

High human use is concentrated along roads and trails in the valley bottoms and often corresponds to the regions of high and very high elk habitat suitability. Wolves have consistently avoided high human use areas. It was hypothesized that the town of Banff and peripheral land uses are blocking wolf movements down valley towards Canmore where BNP's largest elk herds are found (White et al., 1992).

The application of this information in the Minnewanka area suggests that high human use in important montane habitat is disturbing the ecosystem. Wolf recolonization should be promoted in planning efforts and human interference should be avoided near areas of potentially important wolf habitat. Aspen regeneration could potentially be enhanced by controlling elk grazing through the promotion of wolf predation (White et
al., 1992). Human incidences with elk should be avoided or controlled to deter elk habituation.

3.4.2 Fisheries/ Aquatic Resources

The Lake Minnewanka area contains three of BNP's infrequent montane lakes. These are Lake Minnewanka, Johnson and Two Jack lakes. The Ghost Lakes are contiguous with Lake Minnewanka and are located at the eastern boundary of the park. There is a need to protect aquatic and wetland habitats and more fully understand the implications of human activities.

Lake Minnewanka is the largest oligotrophic lake in Banff National Park and is primarily inhabited by several species of trout (Personal communication, Tom Hurd, 1992; Pengelly, 1988; Achuff et al. 1986, p.15). Other species have been stocked in the past although few if any of these have survived (Pengelly, 1988). Stocking was discontinued in 1972. Although the fishery is presently thought to be viable, the effects of reservoir operation on biological productivity and species composition has not been examined since shortly after reservoir creation (Currier, 1954). It is hypothesized that the fall spawn of trout and whitefish may desiccate during winter drawdown of the lake (Hurd, 1991; Pengelly, 1988).

Two Jack Lake was formed by the diversion of the outflow of Lake Minnewanka which replaced a previously isolated lake. The lake is characterized by a similar species composition as Lake Minnewanka.
Johnson Lake is ground water recharge site that was dammed originally to supply water for residents at Anthracite (Personal communication, Bob Smith, March, 1993). Today the lake is a popular recreation site used extensively by locals. In 1986, the dam at the west end of the lake collapsed temporarily draining much of the lake. The dam was replaced following intense public pressure (Environment Canada, Canadian Parks Service, November, 1988, p.83). The lake, associated wetlands and spawning creek are highly productive and important to a number of species. (Holroyd and Van Tighem, 1983; Achuff et al., 1986, p.16). The lake is characterized by a high-use fishery comprised mainly of brook trout.

3.5 PARK ZONING

The park zoning system presents five land-use strategies for managing specific resources and visitor activities in a manner which reflects the goals of the CPS. The Minnewanka area is designated primarily as a Zone IV - Recreation area where a relatively high level of visitor facilities and services are permitted. Some Zone III - Natural Environment sites which may facilitate low density activities and minimal facilities occur adjacent to developed visitor areas. The outlying area comprises a Zone II - Wilderness designation. Zoning is described below.

Zone IV areas can accommodate a broad range of education, outdoor opportunities and related facilities in ways that respect the natural landscape and that are safe and convenient. Motorized access will be permitted and will be separated from non-motorized access.

Zone III, Natural Environment areas are maintained as natural environments which can sustain with a minimum of impairment, a selected range of low density outdoor activities with a minimum of related facilities. Non-motorized access will be preferred. Access by public transit will be permitted. Controlled access by private vehicles
will only be permitted where it has traditionally been allowed in the past.

Zone II - Wilderness are extensive areas which are good representations of each of the natural history themes of the park and which will be maintained in a wilderness state. Only certain activities requiring limited primitive visitor facilities appropriate to a wilderness experience will be allowed. Limits will be placed on numbers of users. No motorized access will be permitted. Management actions will ensure that visitors are dispersed (Environment Canada, Canadian Parks Service, 1988, pp. 23 - 24).

3.6 VISITOR PROFILE

In 1991, the majority of visitors in the Lake Minnewanka area were from Canada (70%) with a smaller but significant number of visitors from the U.S. (18%). Approximately 45% of all Canadian visitors were from Calgary and Edmonton. Visitors from the local area accounted for 19% of the Canadian visitors and were primarily on day trips from home. The greatest number of visitors were between the ages of 31-45 and were mainly families with children (30%) and couples (36%) The area can expect to see a growing number of seniors in coming years.

Over 80% of visitors were day users, however most of these were on trips that lasted for more than one day. First time visitors participated predominantly in sightseeing as the most popular primary activity. Almost one half of the area's visitors were there for the first time. One tenth of the total number of visitors did not leave their car and drove around the area. Less than 2% of visitors surveyed were part of bus tour groups (Environment Canada, Canadian Parks Service, April, 1991, pp.1-16).
3.6.1 Visitor Perceptions

In general, the area was perceived as providing outstanding scenery and opportunities to view wildlife. Visitors surveyed were comfortable with the level of development or man-made intrusions found in the area, although some indicated dissatisfaction and thought the area was too commercial. Most indicated that expansion of facilities would take away from their enjoyment. Parking and congestion were not seen as a problem (Environment Canada, Canadian Parks Service, April 1991, p.25).

3.7 PLANNING ISSUES

A summary of issues to be addressed in the plan appears in Table 3.2. Planning issues were identified during the planning process through the input of the planning team and stakeholders as well as through background information.

Table 3.2 A Summary of Planning Issues

<table>
<thead>
<tr>
<th>1. Visitor Management</th>
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<tbody>
<tr>
<td>• Appropriate visitor activities which the area can facilitate without significantly impacting ecological integrity</td>
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<tr>
<th>2. Minnewanka Day-Use Area</th>
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<tr>
<td>• Problems associated with congestion, confusion, the condition of facilities and the management of specific user groups at Minnewanka day use area</td>
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<tr>
<th>3. Resource Management:</th>
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<tbody>
<tr>
<td>a. Integrated Ecosystem Management</td>
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<tr>
<td>• Assessing the existing reductionist approach to resource management in light of more integrated approaches</td>
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<tr>
<td>b. Rehabilitation of Disturbed Sites</td>
</tr>
<tr>
<td>• Rehabilitation of former borrow pits, gravel extraction and landfill sites</td>
</tr>
<tr>
<td>c. Fisheries / Aquatic Resource Management</td>
</tr>
<tr>
<td>• The implications of the Cascade hydro project on local aquatic resources</td>
</tr>
<tr>
<td>• The management of aquatic resources including fisheries.</td>
</tr>
<tr>
<td>d. Management of the Montane Ecoregion</td>
</tr>
<tr>
<td>• The management of human impacts in montane ecosystems including sheep habituation, wolf recolonization, compaction and erosion, sensitive area preservation</td>
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<th>4. Camping</th>
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<tr>
<td>• Substandard facilities and services in frontcountry campgrounds</td>
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<tr>
<td>• The impacts created by numerous backcountry campgrounds on montane habitat</td>
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<th>5. Regional Integration</th>
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<tr>
<td>• Illegal all-terrain vehicle use which adversely impacts rare and sensitive resources at the Park's eastern boundary at Ghost Lakes</td>
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<th>6. Communications</th>
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<tbody>
<tr>
<td>• The lack of orientation, information and interpretive facilities throughout the Minnewanka area</td>
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<tr>
<td>• The need to communicate with associated user groups, agencies and organizations</td>
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<tr>
<th>7. Cultural Resource Management</th>
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<tr>
<td>• The management and interpretation of significant cultural resources in the area</td>
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<th>8. Trail Systems</th>
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<td>• The management of multiple users and an appropriate trail network based on the existing established and informal trail connections in the area</td>
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<th>9. Winter Use</th>
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<tr>
<td>• Management of winter activities and access</td>
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<tr>
<td>• Consideration of wolf recolonization in association with winter activities in important habitat areas</td>
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<tr>
<th>10. Minnewanka Loop Road</th>
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<tbody>
<tr>
<td>• Management of Minnewanka Loop Road as a scenic parkway which links sites together in the area</td>
</tr>
<tr>
<td>• Narrow conditions of the loop road</td>
</tr>
<tr>
<td>• Use of salt for winter road maintenance</td>
</tr>
</tbody>
</table>
CHAPTER IV. SUMMARY OF THE MINNEWANKA AREA PLAN

The purpose of this chapter is to summarize the Minnewanka Area Plan which was developed through the planning process. The proposed vision for the area, general management directives and specific proposals from the plan are highlighted. The complete plan provides a comprehensive explanation of the proposed strategies and the implementation process and may be consulted for further information (Environment Canada, Canadian Parks Service, April, 1993).

4.1 A VISION FOR THE FUTURE IN THE MINNEWANKA AREA

The vision was determined through the input and feedback of the planning team and stakeholder groups. The vision represents the desired social and ecological conditions for the Minnewanka area in the next fifteen years. It serves as a mandate to guide the development and implementation of management strategies. The complete vision is presented below (Canadian Parks Service, 1993).

Context

"Fifteen years from now, Banff National Park, along with the other Mountain Parks, will be widely recognized as a World Heritage Site and one of the largest vestiges of protected natural environments and untouched wilderness in southern Canada. There will be a great deal of public support for the role the park plays in maintaining these values, along with the unique role the park has played in Canada’s cultural heritage. The primary motivations for visiting the park will be to understand, be inspired by, and experience the park's natural setting, cultural heritage and wilderness values," (Environment Canada, Canadian Parks Service, April, 1992, pp. 10-11).
The Minnewanka Area
The Minnewanka area will support this vision through the opportunities provided, the messages communicated, and the resource management strategies implemented. The area's landscape will serve as a testimony of changing resource uses and management philosophies and will represent a "Valley of Change" within Banff National Park. The area will be a model for the application of ecosystem management principles in a high use area.

A series of integrated opportunities will be afforded at a variety of natural, cultural and recreational sites. The main users will continue to be "general touring" visitors who participate in a wide variety of recreational activities such as sightseeing, day-hiking and boating and who require sufficient facilities for accessibility, safety and comfort. Efforts will be made to provide quality park experiences which are consistent with the national park mandate as opposed to meeting additional demand.

Ecosystem Management
The Minnewanka area will be a model for innovative ecosystem management. An integrated approach, which reflects the interconnectedness of natural and human systems, will be applied in resource management. Members from different disciplines and organizations will be working with the Canadian Parks Service to help manage the area's resources sustainably. Key indicators of natural and social systems will be monitored so that changes occurring within ecosystems can be identified and appropriate management actions can be taken. Cultural heritage resources will be monitored and protected.

There will be an increase in Montane habitat in the area as a result of reclamation efforts at formerly disturbed sites. An improved understanding of the local aquatic ecosystems will be gained from research and will guide the operation of the hydro electric project to better protect fish populations and habitat.

Partnerships
Many players such as TransAlta Utilities, local tour operators and special interest groups and organizations will be involved in managing the area cooperatively with the Canadian Parks Service. Management strategies will be consistent with the goals of the Canadian Parks Service.

Minnewanka Loop Drive
The winding, scenic loop road will be managed as a scenic parkway and will continue to provide access to many opportunities in the area. Visitors entering the area will have a clear indication of the opportunities available to them along the parkway. Narrow sections of Minnewanka Loop Drive will have been widened. Pull-outs and viewpoints will have been enhanced to lead visitors from one point to the next, reinforcing the area's scenic qualities.
Orientation and interpretation facilities will be present at important sites along the road. Innovative, environmentally sensitive transportation alternatives will be promoted in the area. The parking capacity of facilities will not be increased.

**A System of Linked Experiences**
Sites will be linked together physically and thematically along the loop drive and trail systems. Visitors will be able to travel between many sites such as Two Jack Main and Lower Bankhead or Cascade Ponds and Johnson Lake on the well-defined pathway system. Some trails will provide opportunities for mountain bikes and horses while others will be for hikers only.

The "Valley of Change" theme, which reflects human influences such as coal mining as well as changing park resource management policies, will be communicated throughout the area to enhance the visitor's understanding of the local landscape and to connect different sites together.

**Minnewanka Day-Use Area**
The Minnewanka day-use area will provide quality opportunities for visitors to relax, explore and learn about the area. High quality visitor services and access to water-based activities will continue to be provided. The management of motorized boats will be improved to ensure that aquatic ecosystems are protected and conflicts with other water users are minimized. The boat tour operation will continue to provide an opportunity for visitors to appreciate the area's scenic lake resources within a national park setting. The Canadian Parks Service and the boat tour operation will be working together to monitor and manage resources and visitor activities at this site.

Problems with visitor congestion and conflicts between different users will have been resolved through site enhancements as well as improved information and interpretive services.

**Camping**
Camping facilities will be enhanced to better serve specific users but they will not be increased in capacity. Campgrounds in the Minnewanka area will have improved services including facilities for groups and disabled visitors. Campgrounds will be well-linked to trails and integrated with other opportunities in the area. Visitor awareness of camping opportunities will have been improved through marketing and communications strategies. The number of backcountry campgrounds along the Lake Minnewanka shoreline will be reduced to enhance wildlife habitat and respond to use levels.

**Seasonal Use**
The greatest visitation will occur during the summer, however winter activities will continue to be popular particularly for local recreationists. Opportunities will be provided for cross-country skiing up the Cascade Valley.
Winter activities around Johnson Lake will be discouraged to promote wolf recolonization. Winter road plowing will be adapted to reduce costs and provide access only to popular recreational areas.

4.2 GENERAL MANAGEMENT DIRECTION

4.2.1 The Limits of Acceptable Change (LAC) Approach to Ecosystem and Visitor Management

Limits of Acceptable Change is a management approach developed by wilderness area managers as a more realistic alternative to the elusive carrying capacity concept which attempts to define appropriate levels of visitor use for an area. The LAC approach is an integrated model for managing natural resources and human activities according to acceptable levels of change. It is based on:

• the determination of specific management objectives for social and ecological conditions in the area,

• selection and monitoring of indicators representative of the area's social and ecological systems,

• the development and implementation of management strategies for achieving objectives based on results of monitoring,

• ongoing monitoring of indicators and adaptive management.

The LAC approach will be developed and implemented by managers in the Minnewanka area to detect changes in ecosystem integrity and visitor experiences and manage ecosystems sustainably. The Minnewanka Area Plan recommends the adoption of this approach in all aspects of management within the plan.
4.2.2 Establishing Partnerships

Cooperative arrangements will be sought with key groups and organizations who have an interest in the Minnewanka area, in order to gain input and assistance in managing the area's natural and cultural resources and visitor activities. The Canadian Parks Service will take a lead role in cooperative activities. Key stakeholders will be involved in decision-making on an on-going basis through the establishment of an Operational Management Committee. Discussions with representatives from the regional scuba diving committee will continue to determine a strategy to manage the issues (parking congestion, cultural resource protection, inadequate facilities) associated with this activity.

Partnerships developed in the planning process are illustrated in TransAlta Utility's (TAU) participation in the on-site media program and the Banff Light Horse Association's interest in cooperative trail management.

4.2.3 Level of Facility Development

While efforts will be made to improve the overall visitor experience in the area and better meet ecosystem and visitor management objectives, the level of development or capacity of facilities will not be expanded. Parking facilities will not be increased while alternative transportation strategies such as courtesy vans and organized bus tours will be promoted. Indicators will be monitored to assess potential problems associated with the level of facility development.
4.3 KEY MANAGEMENT PROPOSALS

The following actions highlight the most critical plan proposals:

4.3.1 Visitor Information and Interpretation - "The Valley of Change"

- Link visitor experiences and tell the Minnewanka story using a common theme - "The Valley of Change." This theme encompasses the area’s rich history, ecology and evolving national park philosophies.

- Substantially enhance on-site orientation, information and interpretation media throughout the area as indicated in Figure 4.1.

- Use targeted education programs to address resource management concerns (e.g. sheep feeding) and conflicts among different user groups (e.g. divers and boaters).

- Communicate with potential visitors and important user groups (e.g. scuba divers, fishermen) before they arrive through measures such as meetings, workshops, private and park publications.

4.3.2 Ecosystem Management

- Manage the area through an integrated ecosystem-based approach, using the Limits of Acceptable Change process to establish an active research, monitoring and adaptive management program. Development of the program and selection of indicators will occur during the first year of
implementation. Monitoring will begin in the second year of plan implementation and continue on an ongoing basis.

• Identify the Devil's Gap/Ghost Lakes, Johnson Lake wetlands and lower Cascade River channel as "Sensitive Areas" and manage them to protect ecological integrity. Prohibit any facility development in these areas, manage visitor activities away from these sites and educate visitors of the sensitivity of resources. A joint agreement with Alberta Forestry Lands and Wildlife will be established to manage visitor impacts in the Ghost Lakes area.

• Discontinue gravel extraction activities in the area and rehabilitate formerly disturbed sites. The continued rehabilitation of Minnewanka Pit will be a priority followed by the rehabilitation of Cascade Pit. This site may be required for the storage of abrasives in the future. Visual impacts of Cascade Pit from Minnewanka Loop Drive will be mitigated. Stream rehabilitation will be involved in the rehabilitation of both areas. Other sites will be rehabilitated by TAU as part of the hydro license renewal agreement. Rehabilitation will be ongoing and will require regular and continuous monitoring.

• Promote wolf recolonization in the Johnson Lake area by discouraging visitor activities during the winter and discontinuing the track setting of ski trails. Wolf activity will be monitored in association with initiatives to reduce human interference and adaptive management will occur.
• Develop area-specific fisheries management actions as part of an overall aquatic resources plan for Banff National Park. Work with TransAlta Utilities to examine the feasibility of restoring aquatic habitat along the lower Cascade River channel and minimizing the effects of hydroelectric operations on Lake Minnewanka.

• Increase visitor understanding and appreciation of the area's aquatic and terrestrial ecosystems through the implementation of proposed communications strategies.

4.3.3 Cultural Resource Management

• Raise the profile of the area's rich history, historic and archaeological resources by providing new on-site interpretive media at Anthracite, Lake Minnewanka (submerged resources), the diver pullout, Upper Bankhead, Palliser lookout and the 1923 powerhouse. The communications program will be developed and implemented in partnership with TAU.

• Improve the protection of submerged resources at Lake Minnewanka through diver education and management strategies which will be determined with representative members of the diving community.

4.3.4 Visitor Facilities and Management

• Manage the Minnewanka loop road as a scenic and educational "parkway" by providing orientation, information and interpretive media as identified in Figure 4.1.
• Widen narrow sections of the loop road between Upper Bankhead and the Lake Minnewanka day use area to improve the safety of the road.

• Enhance opportunities for sightseers to pull off the road at points of interest (e.g. upon entering the area, the viewpoint above Cascade Ponds, the TransAlta penstock bridge and along the Lake Minnewanka causeway).

• Formalize the proposed pedestrian, bicycling and equestrian trail system shown in Figure 4.2. These trails use existing alignments except for proposed connections between the Cascade trail and the Lake Minnewanka day-use area and Two Jack Main and Lakeside campgrounds. Provide adequate on-site trail orientation so that visitors are aware of connections between different sites.

• Provide a visitor orientation and interpretation node at the Johnson Lake parking area, while improving the aesthetics of the parking lot.

• Close the Two Jack Lake shoreline to vehicles, and rehabilitate the disturbed shoreline area.

• Close and rehabilitate LM 20 backcountry campsite on the shore of Lake Minnewanka to increase montane habitat. This closure reflects an over-abundance of backcountry camping opportunities along the Lakeshore.

• Rehabilitate the disturbed shoreline at the "diver pull-out" at the east end of the Lake Minnewanka dam. Install stairs to facilitate diving access.
4.3.5 Minnewanka Day Use Area

- Contain parking within the existing parking lots and address peak overflow situations by promoting alternative means of public transit including bus tours and shuttle buses.

- Improve orientation for vehicles and pedestrians entering the day use area.

- Improve visitor information and interpretive media especially for boaters and divers at the area by the public boat ramp.

- Redevelop existing substandard boat tour and government dock facilities. Incorporate a public viewing area with interpretive media into new docks.

- Develop an attractive public gathering area between the food concession and the boat docks on existing asphalt roadway as illustrated in Figure 4.3. Limit vehicular access to service only.

- Formalize a single lakeshore trail from the public boat ramp to the picnic area along the existing braided and eroded trail. Rehabilitate disturbed areas.

- As part of the site improvement process, develop a long-range design strategy for addressing congestion and visitor impacts through a marina design consultant. This should be consistent with the vision for the area and the management direction of the CPS.
FIGURE 4.1  COMMUNICATIONS AND VISITOR FACILITIES

- Major sites for information and interpretation
- Secondary sites for information and interpretation
- Indicator signs to be improved / added
Fig. 4.2 Proposed Trail System

Key:
- Hiking Only Trail
- Hiking and Bicycling Trail
- Multiple Use Trail (Hiking, Bicycling, Horseback Riding)
- Cross-Country Ski Trail
* Trail Orientation
CONCEPTUAL DESIGN FOR SITE IMPROVEMENTS - Minnewanka Day-Use Area
CHAPTER V. AN EVALUATION OF THE MINNEWANKA AREA PLAN

5.1 EVALUATION ACCORDING TO NORMATIVE CRITERIA FOR EFFECTIVE CARRYING CAPACITY MANAGEMENT

An evaluation of the Minnewanka Area Plan based on the normative criteria for effective carrying capacity management identified in Chapter 2.0 is presented below and illustrated in Tables 5.1.1 - 5.1.12. Although the evaluation is based on objective criteria which were determined through the literature reviewed, measures of performance of the plan and planning process reflect the opinion of the author.

1. Specific objectives which describe the desired social and ecological conditions for the area

Objectives are identified at three levels of specificity within the Minnewanka Area Plan. The proposed Vision for the Future of the Minnewanka Area (section 2.1 of the plan) presents a comprehensive normative view of the planning area in 15 years. The General Area Management Goals and Objectives (section 2.3 of the plan) indicate CPS's management direction for the area. Finally, specific objectives within each section of the plan provide guidance for each aspect of area management (e.g. Objectives in Aquatic Ecosystem Protection and Management, section 3.1.2 of the plan).

The vision was the culmination of several workshop sessions with the planning team, steering committee and stakeholder groups (see Chapter 4.0 of the thesis). In many ways, the vision is the crux of the plan because it
presents a picture of how things *ought* to be in the planning area in the future. The vision serves as a general measure by which management strategies may be compared. "There will be an increase in Montane habitat as a result of reclamation efforts at formerly disturbed sites," exemplifies this aspect of the vision (section 2.1 of the plan).

Although the vision is intended to be achievable, it is broad enough to be relatively uninhibited by the influences of existing management frameworks, economics and directives that could hinder the generation of original ideas or solutions for change. The Minnewanka area vision is comprehensive and provides a normative but general view of all aspects of the planning area.

*General Area Management Goals and Objectives* define the overall objectives of the area plan which relate to three areas: maintaining and enhancing ecological integrity, enhancing visitor experiences and awareness, and involving others through partnerships (see section 2.2 of the plan).

Area management goals and objectives are fairly broad in nature, reflecting the direction of pre-determined policies and strategic plans including the national park mandate, the *Banff Park Management Plan* (Environment Canada, 1988) the *Western Region Strategic Plan* (Environment Canada, June, 1990) and the *BNP, Tourism, Recreation and Communications (TRAC) Plan- draft* (Environment Canada, April, 1992). These objectives ensure consistency in planning within the Western Region national parks. General Area Goals and Objectives extract important directives from the vision and place them into action-oriented statements
within the plan. The objective, "To manage activities through an integrated ecosystem approach," for example, operationalizes the goal of maintaining and enhancing ecological integrity (see section 2.2 of the plan).

Specific objectives are defined for each section of the plan including: Terrestrial Ecosystem Management and Protection, Aquatic Ecosystem Management and Protection, Sensitive Areas Management, Communications and Visitor Facilities, Visitor Activities Management (six visitor activities defined) and Cultural Resource Management.

These objectives represent the greatest degree of specificity within the plan. Sections such as Aquatic Ecosystem Management and Protection (3.1.2 in the plan) and Communications and Visitor Facilities (3.2.1 in the plan) are highly specific and effective in guiding the determination and evaluation of management strategies. Objectives such as, "To maintain and enhance the integrity of the area's Montane ecosystems," within Terrestrial Ecosystem Protection and Management (3.1.1 in the plan) are less clear and expand only marginally on the General Area Goals and Objectives. Several stakeholders commented on this lack of specificity (e.g. Bow Valley Naturalists submission, March, 1993).

Overall, the objectives for the desired social and ecological conditions of the planning area are comprehensive and highly adequate.
2. A Measure of the Existing Social and Ecological Conditions in the area

A measure of the existing ecosystem conditions was determined through background information, input from the planning team, stakeholders and specialists as well as through on-site assessments. The *Background to the Minnewanka Area Plan* (Environment Canada, Canadian Parks Service, April, 1993) presents descriptive information on the history, ecological resources and visitor activities of the planning area. Further information describing the existing ecological and social conditions relative to specific objectives is found within each section of the Minnewanka Area Plan (Environment Canada, Canadian Parks Service, April, 1993). This information is summarized within Tables 5.1.1 - 5.1.12 of the thesis.

The background information representing existing ecosystem conditions was seen as satisfactory. BNP possesses accessible and accurate biophysical data which is now available on a Geographic Information System (GIS). Park data tended to be at a large scale (i.e. 1:50,000) which was useful for determining general ecosystem characteristics, however the expertise of members of the planning team, resource personnel and stakeholders was a more effective source of information for the site-specific scale of area planning.

Specific ecosystem data such as "880 hectares of montane habitat has been lost due to damming and flooding," is expressed in Tables 5.1.1 in addition to vague information like "Trails around Johnson Lake subject to high use. Damage to trails and vegetation," (Table 5.1.2). Highly specific
information is necessary to guide the determination of effective management strategies.

Although the plan prescribed the adoption of the LAC approach to ecosystem management involving the selection and measurement of indicators, these were not identified within the area plan. The selection and measurement of indicators would enhance information on existing ecosystem conditions and improve the likelihood of implementing the LAC approach.

Information regarding visitor activities was based mainly on the Lake Minnewanka Survey Report which provided recent visitor profiles from a survey of 150,000 persons over July and August, 1991. Data pertaining to social values appears to be inadequate in portions of the plan. For example, there was little information which represented visitors' or managers' values regarding the appropriateness of water-based activities such as power boating on Lake Minnewanka (Section 3.2.2 of the plan). Some information regarding visitor's perceptions of the level of development appeared in the Lake Minnewanka Visitor Survey, however it did not represent the opinions of all stakeholders involved in the planning process.

In conclusion, the measure of existing ecological and social conditions in the area was adequately presented in the plan within the background information, however, more specific social data regarding values as well as measures of area specific indicators of ecosystem health would improve this information.
3. A Comparison and Analysis Between Existing and Desired Conditions

A comparison and analysis between the existing and desired conditions is critical in determining the causes of planning issues and guiding the design of effective management strategies. This analysis was not explicit within the plan although the rationale behind many of the planning issues was discussed within the background of each section (see for example, "Disturbed Sites/Rehabilitation," section 3.1 of the Minnewanka Area Plan). A comparison and analysis of the existing and desired conditions is represented in Tables 5.1.1 - 5.1.12. Analyses which were not explained or were poorly understood are distinguished.

Within Terrestrial Ecosystem Protection and Management (Table 5.1.1), two issues are noted as poorly understood. Damage such as compaction and erosion to trails in areas around Lake Minnewanka and Johnson Lake (existing condition) is associated with intense visitor use. There is little indication of what effect factors like the type or timing of activities might have on site-specific qualities of these areas. There is no expression of the desired trail conditions at these sites. Similarly, reasons for differences between the existing method of ecosystem management, based on managing single parameters such as fire or elk, and the desired, integrated approach appear to be poorly understood in the area plan.

Discrepancies between the existing and desired social and ecological conditions within the Communications and Visitor Facilities section of the plan (Table 5.1.4) were reasonably well understood. Although stakeholders and the public supported a greater personal CPS presence in the Minnewanka
area, reasons for the lack of this were not well explained within the plan (see Table 5.1.4). Even though CPS budgets are strained making non-personal means of communication and visitor management preferable, the area continues to receive a substantial portion of the total visitors within BNP. Aspects such as the impact of recent Warden cutbacks in the Minnewanka district were not discussed within the Minnewanka Area Plan.

The analyses between existing and desired conditions for Visitor Activities Management (Table 5.1.5 - 5.1.12) generally revealed a good understanding of planning issues. The lack of social data regarding visitor needs and perceptions of acceptable activities and facilities however, inhibited an adequate understanding by the planning team of the problems associated with the management of water-based activities (Table 5.1.10) and camping (Table 5.1.11).

Although a comparison between existing and desired social and ecological conditions is facilitated by the format of the plan (i.e. the background section describes existing conditions followed by the objectives which describe desired conditions), the analysis and understanding of a significant number of planning problems is relatively weak. In approximately 17% of the analyses represented in Tables 5.1.1 - 5.1.12, the discrepancies between the existing and desired conditions were not well explained or understood.
4. Formulation and Assessment of Management Strategies Specific to the Planning Issues

The management strategies proposed in the Minnewanka Area Plan are identified in Tables 5.1.1 - 5.1.12. The effectiveness of these was rated subjectively by the author according to the specificity by which management strategies addressed the defined planning issues. Overall, the proposed management strategies were rated as 59% - very effective, 25% - effective and 16% - ineffective. Ineffective strategies typically reflected a poor understanding of the causes for discrepancies between existing and desired conditions as previously discussed. For example, the proposed management strategy for addressing damaged trails around Lake Minnewanka was to rehabilitate or harden trails (See Table 5.1.1). This solution addresses symptoms rather than the causes of damage, thereby accommodating the use which is disturbing the ecosystem.

A significant number of proposed management strategies recommend the selection and monitoring of indicators to guide management actions (see Table 5.1.3 and 5.1.7, for example). These strategies were rated as ineffective because indicators were not specified within the plan which reduced the likelihood of their implementation.

Although most of the proposed strategies for Terrestrial Ecosystem Management (Table 5.1.1) were rated as effective, the plan proposal of "adopting an integrated ecosystem approach to management which will require a high degree of interaction between various park managers as well as partnerships with other organizations and specialists," lacked specificity and was rated as ineffective (see section 3.1.1 of the Minnewanka Area Plan). As
this action relates directly to the fundamental objectives of the plan, it should clearly articulate how integrated ecosystem management is to be implemented.

Proposed strategies for Aquatic Ecosystem Protection and Management (Table 5.1.2) were rated as highly effective to effective. Proposed resource projects such as determining the feasibility and implications of rehabilitating the Lower Cascade river habitat to a pre-dammed condition, were specified including the roles of partners involved such as TransAlta Utilities. Defined strategies were compatible with existing management plans which enhanced the probability of their implementation (Williams and Gill, 1991, p.60).

The proposed communications strategies were evaluated as effective and highly comprehensive. Communication programs are a useful tool for managing change. They may serve to raise visitor awareness, generate local community support, and influence visitor behavior in a desired manner (Government of Canada, 1990; Environment Canada, CPS, April, 1992; City of Vancouver, 1992). Proposed strategies were directed at specific target audiences associated with the Minnewanka area within and beyond its boundaries. Strategies such as meetings, publications and personal services programs were proposed in addition to on-site media installations. Most strategies were highly specific although staff training and the provision of area publications were rated as ineffective.

Strategies for Visitor Activities Management (Section 3.2.2) were generally effective. Proposed strategies for the management of water-based activities were less effective and likely influenced by the lack of social
information which was discussed in the previous analysis. Strategies for attaining missing information should be clearly identified as a first step to resolving these issues. Cultural Resource Management (Table 5.1.12) strategies were highly effective because they were clearly integrated with other management plans and processes.

Overall 84% of the proposed management strategies were rated as effective and highly effective. Ineffective strategies (16%) were associated with a lack of specificity or a poor understanding of the planning problem. Many of these were related to recommendations for monitoring indicators that weren't specified.

5. Plans for implementing and monitoring management strategies

A detailed implementation strategy appears in Section 4.0 of the Minnewanka Area Plan (April, 1993). The strategy identifies all of the actions associated with the implementation of proposed management strategies to ultimately achieve the plan objectives. All players involved in implementation are clearly identified.

Although the budgetary constraints and the economic realities of implementing the plan were discussed with the planning team during the planning process, costs associated with project implementation are not identified within the area plan. This issue may be interpreted in two ways. The lack of identifying costs associated with implementation makes the plan less realistic, thereby reducing the feasibility of its implementation. On the other hand, the lack of specifying costs ensures that important strategies are
not discounted for economic reasons. It was not within the scope of the area plan to provide detailed cost estimates, however proposals should be realistic and reflect current economic constraints. Proposals for on-site media installations and site enhancements would be more credible if they considered budgeted resources. Some of the public feedback indicated that the proposed on-site communications program was unrealistic because it did not consider cost. Several stakeholders did, however, express interest in contributing resources to this program (Personal communication, Otton, 1993).

Establishment of the LAC program, including the selection of indicators, is defined during the first year of plan implementation with monitoring proposed during the second year. As previously discussed, the lack of specifying indicators or a means for determining them within the plan, weakened the reality of implementing the LAC management approach.

In summary, implementation of the area plan is seen as feasible because a well thought-out, detailed strategy for adopting the plan recommendations is presented identifying key players and defined tasks. The feasibility of monitoring would be improved by specifying indicators within the plan and defining a monitoring program within existing management frameworks.

6. Provision for interdisciplinary input and meaningful public involvement at all levels of the planning process

Interdisciplinary input was facilitated throughout the planning process. The on-going involvement of the eight-member planning team with
different areas of expertise ensured comprehensive input and feedback. Approximately ten planning team meetings were held throughout the planning process in addition to regular correspondence where information and feedback on drafts of the plan was provided. Specialists within the park and from the CPS regional office were called upon to provide background information and feedback on proposed strategies. Examples of this were the special planning team workshops on integrated ecosystem management and communications involving resource management, media specialists and stakeholders. A detailed evaluation of public participation in the planning process is presented in the following section (5.2) of the thesis.
Table 5.1.1 Evaluation of Terrestrial Ecosystem Management Strategies

<table>
<thead>
<tr>
<th>Existing Conditions</th>
<th>Desired Conditions</th>
<th>Analysis of Existing and Desired Conditions</th>
<th>Proposed Management Strategies</th>
<th>Effectiveness Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>880 ha. montane habitat lost due to damming and flooding</td>
<td>Maintain and enhance ecological integrity of montane ecosystems</td>
<td>Damming activities formerly acceptable in BNP. Abandonment option currently not feasible</td>
<td>Maintain current level of facilities unless indicators identify problems</td>
<td>+ Public support</td>
</tr>
<tr>
<td>Ltd. success with wolf recolonization. Wolves sited near Johnson Lake, Cascade Valley</td>
<td>Recolonization by wolves in BNP</td>
<td>High presence of humans may deter wolves (currently not well understood)</td>
<td>Decrease human activities around Johnson Lake during the winter by not facilitating skiing or car access; monitor initiatives and adapt mgt.</td>
<td>+ Not fully supported</td>
</tr>
<tr>
<td>Habitation of bighorn sheep. Natural and artificial salt lick near causeway bridge</td>
<td>Maintenance of wild populations in area's ecosystems</td>
<td>Visitors approaching and feeding sheep, and the use of road salt associated with sheep habituation</td>
<td>Implement communications strategies geared to address target audiences and current management messages (sheep habituation)</td>
<td>&lt;/+ CPS presence seen as more effective</td>
</tr>
<tr>
<td>Ten disturbed sites: gravel and borrow pits, landfill sites. Cascade Pit and Minnewanka landfill impact streams</td>
<td>Rehabilitation of formerly disturbed sites; enhancement of montane</td>
<td>Extractive activities historically acceptable; no longer compatible with CPS mandate</td>
<td>Rehabilitate all disturbed sites. Minn. and Cascade pits priorities, TAU to rehabilitate their borrow pits; Monitor ongoing rehabilitation</td>
<td>+/&gt;</td>
</tr>
<tr>
<td>Riparian habitat of Cascade Creek significantly disturbed by gravel pit, damming and diversion</td>
<td>Valley impacted by formerly acceptable activities. Rehabilitation of Cascade Creek has not been assessed</td>
<td>Infers intense visitor use is the cause of trail impacts; issue is poorly understood</td>
<td>Rehabilitation of Cascade Creek to be assessed; TAU and CPS to work jointly</td>
<td>&gt; Highly specified</td>
</tr>
<tr>
<td>Compacted and eroded trails at Minnewanka day use area; Trails around Johnson Lake subject to high use. Damage to trails and vegetation</td>
<td>Visitor awareness and appreciation of Minnewanka area ecosystems; environmental citizenship</td>
<td>Lack of CPS in area. Limited staffing and resource budgets, lack of media</td>
<td>Implement Plan communications program, includes on-site media and strategies for communicating with target audiences through meetings, publications</td>
<td>&gt;</td>
</tr>
</tbody>
</table>

Table continued...
Table 5.1.1 Evaluation of Terrestrial Ecosystem Management Strategies, cont'd.

<table>
<thead>
<tr>
<th>Existing Conditions</th>
<th>Desired Conditions</th>
<th>Analysis of Existing and Desired Conditions</th>
<th>Proposed Management Strategies</th>
<th>Effectiveness Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ecosystem management based on management of single parameters</td>
<td>Integrated ecosystem management approach.</td>
<td>Existing management reflects CPS structure (reductionist), dwindling budgets and comparatively low technology; Current changes towards integrated management structure, improved research and technology (not well explained)</td>
<td>Adopt an integrated ecosystem management approach.; Select and monitor indicators including humans, wolves, elk and aspen. (from model of montane);</td>
<td>&lt; Indicators and monitor not specified; implementation unlikely</td>
</tr>
<tr>
<td>Local and regional input in decision-making; local involvement, minimal partnerships</td>
<td>Partnerships with organizations, agencies, individuals to enhance resources and improve park management according to CPS mandate (CPS lead role)</td>
<td>CPS has mainly managed in isolation of others; public input has been supported in past (not well explained)</td>
<td>Establish partnerships with interested agencies, organizations and stakeholders (specified); Develop partnerships established during planning process</td>
<td>&gt; Some partnerships established</td>
</tr>
</tbody>
</table>

Effectiveness Rating: > Highly Effective + Effective < Ineffective
Table 5.1.2 Evaluation of Aquatic Ecosystem Protection and Management Strategies

<table>
<thead>
<tr>
<th>Existing Conditions</th>
<th>Desired Conditions</th>
<th>Analysis of Existing and Desired Conditions</th>
<th>Proposed Management Strategies</th>
<th>Effectiveness Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variations in fish age/class abundance from year to year</td>
<td>Protection of natural aquatic ecosystems; viable native fish populations</td>
<td>Fall spawn may desiccate during winter dam drawdown of lake</td>
<td>Partnerships established with TAU during license renewal; TAU to help assess and manage impacts from water fluctuations on Lake Minn., rehabilitate lower Cascade River channel</td>
<td>&gt; partnerships established during planning process</td>
</tr>
<tr>
<td>Catch limits have been reduced and bait limits imposed to reflect census data</td>
<td>Sport fishing managed to protect naturally reproducing native fish stocks</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Littoral zone impacted</td>
<td>Rehabilitation of aquatic habitats, historic habitats and species assemblages</td>
<td>Fluctuating water levels impact littoral vegetation</td>
<td>Establish an integrated management program as part of BNP Fisheries Management Program and TAU efforts; identify and monitor indicators</td>
<td>+/+ Integrated with existing mgt.</td>
</tr>
<tr>
<td>Aquatic resource management based only on fisheries in the past</td>
<td>Integrated ecosystems management approach</td>
<td>Resource management reflects CPS structure and budget; organizational changes enhance interaction between departments</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TAU has agreed to participated in aquatic resource management of the area</td>
<td>Partnerships with key stakeholders</td>
<td></td>
<td>Establish partnerships with Trout Unlimited and Banff Fishing Unlimited</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Visitor awareness and appreciation of aquatic resources and management</td>
<td>Lack of visitor information and interpretation; lack of CPS presence hinders visitor awareness</td>
<td>Implement communications program; messages specific to aquatic resources and users</td>
<td>&gt;</td>
</tr>
</tbody>
</table>

Rating Key:  > Highly Effective  + Effective  < Ineffective
### Table 5.1.3 Evaluation of Sensitive Areas Management Strategies

<table>
<thead>
<tr>
<th>Existing Conditions</th>
<th>Desired Conditions</th>
<th>Analysis of Existing and Desired Conditions</th>
<th>Proposed Management Strategies</th>
<th>Effectiveness Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current zoning doesn't reflect management of special areas</td>
<td>Ecological integrity of sensitive areas protected</td>
<td>Ghost area impacted by diversion of Ghost River, illegal ATV use which is permitted on adjacent Prov. lands</td>
<td>Prohibit facility development in sensitive areas</td>
<td>+</td>
</tr>
</tbody>
</table>
| Devil's Gap/ Ghost Lakes area:  
  - aeolian (wind transported) deposits  
  - rare plants  
  - cultural sites  
  - illegal ATV use | Visitor appreciation of sensitive areas; awareness of appropriate management Environmental citizenship | Potential visitor impacts from adjacent trail use, mountain bicycle access | Work with Alta. Forestry Lands and Wildlife to develop management strategy to protect Ghost resources | + |
| Johnson Lake wetlands  
  - productive, diverse habitats  
  - rare amphibians poss.  
  - bird staging areas, ltd. in BNP | | | Prohibit bicycle and horse access to trails around Johnson Lake.  
 Direct area info. and interpretation at protection of sensitive resources | + |
| Lower Cascade River channel  
  - former riparian habitat  
  - marginal fish habitat  
  - travertine (limestone precipitate) formation, rare, sensitive | Dam diversion has impacted habitat, changed landscape. Gravel extraction has impacted stream | | Assess feasibility of rehabilitation of riparian habitats and flow with TAU as part of license renewal agreement | > |

**Rating Key:**  
- > Highly Effective  
- + Effective  
- < Ineffective  

**Prov. not contacted in planning process**

**Integrates in TAU license renewal agreement**

**Indicators not identified**

Implement communications program to enhance visitor appreciation and management
### Table 5.1.4 Evaluation of Communications and Visitor Facilities Management Strategies

<table>
<thead>
<tr>
<th>Existing Conditions</th>
<th>Desired Conditions</th>
<th>Analysis of Existing and Desired Conditions</th>
<th>Proposed Management Strategies</th>
<th>Effectiveness Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visitors not satisfied with info. related services and facilities</td>
<td>Adequate visitor orientation; visitor awareness and appreciation of resources and opportunities</td>
<td>Lack of info. and orientation media and services</td>
<td>On-Site Media&lt;br&gt;Install info., orientation and interpretive media throughout area according to plan; identifies media, messages, target audiences at each site.</td>
<td>&gt; Need to further assess extent of media and site improvements.</td>
</tr>
<tr>
<td>Visitors perceived level of facility development appropriate; further development not supported</td>
<td>Communication of area themes and management messages to specific target groups</td>
<td>Visitor and manager’s perceptions of appropriate level of facility development differed; managers more conservative (issue poorly understood)</td>
<td>Sites linked together through area theme, “Valley of Change.” Facility improvements and rehabilitation associated with media</td>
<td>&gt; Ongoing stakeholder involvement positive</td>
</tr>
<tr>
<td>150,000 visitors July, Aug., 1991, mostly Cdn.</td>
<td>Environmental stewardship</td>
<td>Environmental stewardship</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mainly “General Touring” visitor groups involved in sightseeing, moderately active; six other user groups identified</td>
<td>Communications strategies and media cost effective, efficient and integrated into landscape</td>
<td>Environmental stewardship</td>
<td>Establish an Operational Management Committee involving key stakeholders in decision-making and communication of area messages</td>
<td>&gt; Ongoing stakeholder involvement positive</td>
</tr>
<tr>
<td>Info. centres main info. source for area, some use guidebooks</td>
<td>Partnerships to improve communications and increase resources</td>
<td>Environmental stewardship</td>
<td>Communicate area specific messages through local and regional info. centres</td>
<td>+</td>
</tr>
<tr>
<td>CPS staff visibility important but inadequate</td>
<td></td>
<td>Environmental stewardship</td>
<td>Continue and improve BNP personal services programs.; target to area specific users</td>
<td>&gt;</td>
</tr>
<tr>
<td>Guided programs. not high priority</td>
<td></td>
<td>Environmental stewardship</td>
<td>Support personal services programs by others (specified); to contain CPS messages</td>
<td>+/ &gt; Need info. on “how”</td>
</tr>
</tbody>
</table>

Continued........
### Table 5.1.4 Evaluation of Communications and Visitor Facilities Management Strategies, cont'd

<table>
<thead>
<tr>
<th>Existing Conditions</th>
<th>Desired Conditions</th>
<th>Analysis of Existing and Desired Conditions</th>
<th>Proposed Management Strategies</th>
<th>Effectiveness Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Establish partnerships (specified) to communicate area messages and increase resources for communications program; TAU partnership established</td>
<td>&gt;</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Promote production of publications by partners (e.g., scuba divers)</td>
<td>&gt;</td>
</tr>
</tbody>
</table>
|                     |                    |                                             | Communicate area specific messages to Minnewanka staff | <  
|                     |                    |                                             | "How" not specified |                    |
|                     |                    |                                             | Communicate special mgmt. messages (winter parking restrictions) to residents through info. centres, Warden office and public meetings | >                    |
|                     |                    |                                             | Compile list of area specific publications | <  
|                     |                    |                                             | Lacked specificity |                    |
|                     |                    |                                             | Hold meetings between CPS and outdoor adventure groups | <  
|                     |                    |                                             | Lacked specificity |                    |

**Rating Key:**
- > Highly Effective
- + Effective
- < Ineffective
Table 5.2.5 Visitor Activities Management - General

<table>
<thead>
<tr>
<th>Existing Conditions</th>
<th>Desired Conditions</th>
<th>Analysis of Existing and Desired Conditions</th>
<th>Proposed Management Strategies</th>
<th>Effectiveness Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preferred visitor experiences (from Visitor Survey):</td>
<td>To support activities which are consistent with the vision and do not cause unacceptable environmental impacts</td>
<td>Visitors did not perceive congestion, managers did</td>
<td>Implement comprehensive communications program, rehabilitate and improve substandard facilities</td>
<td>&gt;</td>
</tr>
<tr>
<td>- 40% want to &quot;get away and relax with others&quot;</td>
<td></td>
<td>Lack of visitor information may lead to visitor impacts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peak weekend traffic at Minn. day-use area: 2000-3700 vehicles/day</td>
<td>Visitor activities and facilities which encourage first hand experience of natural and cultural resources and enhance visitor appreciation; no conflicts between users or activities</td>
<td>High use levels associated with impacts (poorly understood)</td>
<td>Identify indicators, monitor ecosystems and manage adaptively</td>
<td>&lt;</td>
</tr>
<tr>
<td>Congestion, confusion perceived by managers and stakeholders at Minnewanka day use area</td>
<td>Ecological integrity</td>
<td></td>
<td>Indicators and monitoring not specified</td>
<td></td>
</tr>
<tr>
<td>Compaction, erosion, wildlife habituation evident at Minnewanka day use area</td>
<td>Ecological integrity</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Rating Key:
- > Highly effective
- + Effective
- < Ineffective

<Indicators and monitoring not specified>
Table 5.1.6 Evaluation of Visitor Activities Management Strategies - Scenic Touring

<table>
<thead>
<tr>
<th>Existing Conditions</th>
<th>Desired Conditions</th>
<th>Analysis of Existing and Desired Conditions</th>
<th>Proposed Management Strategies</th>
<th>Effectiveness Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>80% visitors participated in sightseeing; most visitors tour area in own car</td>
<td>Scenic touring provided without compromising ecological integrity</td>
<td>Forecast population increases may result in an additional 150,000 persons/summer; increased cars may impact ecosystem and experience</td>
<td>Parking facility capacity will not be expanded. Monitor parking levels</td>
<td>&gt;  Proactive</td>
</tr>
<tr>
<td>Loop road narrow, hazardous</td>
<td>Traffic levels and parking facilities not to exceed &quot;acceptable&quot; levels</td>
<td>Do not clearly understand &quot;acceptable&quot; levels of traffic, parking but public input supported no facility expansion</td>
<td>Promote and support alternative public transit modes (shuttle buses, bus tours, etc.)</td>
<td>&lt;  Idea good; but does not specify &quot;how&quot;</td>
</tr>
<tr>
<td>Orientation and interpretation inadequate along loop road</td>
<td>A coordinated &quot;parkway&quot; experience</td>
<td>Lack of safe stopping opportunities impacts scenic touring experience; narrow road conditions hazardous for tour buses, cyclists</td>
<td>Widen loop road in narrow sections according to existing plans</td>
<td>+  Integrated in existing plans</td>
</tr>
<tr>
<td>Rating Key:</td>
<td>&gt; Highly Effective</td>
<td>+ Effective</td>
<td>Install on-site media and improve pull-outs according to communications plan</td>
<td>&gt;</td>
</tr>
</tbody>
</table>
Table 5.1.7 Evaluation of Visitor Activities Management Strategies - Dayhiking, Bicycling, Horse Riding

<table>
<thead>
<tr>
<th>Existing Conditions</th>
<th>Desired Conditions</th>
<th>Analysis of Existing and Desired Conditions</th>
<th>Proposed Management Strategies</th>
<th>Effectiveness Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>42% visitors use trails for dayhiking</td>
<td>Support trail activities which do not significantly impact ecological integrity</td>
<td>Lack of trail orientation and poor condition of some trails impedes success of trail network</td>
<td>Formalize the proposed trail network; based on existing trails with addition of two short trail links; Provide comprehensive orientation to all trails</td>
<td>&gt; specific trails and media identified</td>
</tr>
<tr>
<td>Extensive network of trails, lack of orientation to trails</td>
<td>Well connected system of sites and opportunities with adequate orientation</td>
<td></td>
<td></td>
<td>+</td>
</tr>
<tr>
<td>Lake Minnewanka shoreline trail most popular trail - compaction, erosion visible</td>
<td>Rehabilitation of impacted areas; avoidance of future trail impacts</td>
<td>Poor understanding of influence of high use levels</td>
<td>Rehabilitate Lake Minn. shoreline trail as part of site improvements; no plans for improvements to Johnson Lake trails</td>
<td>+ supported by public feedback</td>
</tr>
<tr>
<td>Johnson Lake trail popular compaction, erosion visible</td>
<td>User awareness of appropriate trail etiquette. No conflicts between different activities and users</td>
<td>Cycling detracts from hiking experience; trail not suitable for bicycling (winding, narrow, sensitive lakeshore)</td>
<td>Restrict Johnson lakeshore trail use to hiking only</td>
<td>+</td>
</tr>
<tr>
<td>User conflicts (hikers, bicyclists) on Johnson Lake trail</td>
<td>Trails managed as part of integrated approach</td>
<td></td>
<td></td>
<td>+</td>
</tr>
<tr>
<td>Community stables linked to trail network, horse use of trails significant</td>
<td>Support a variety of trail activities. Partnerships with trail organizations to enhance resources and communicate messages</td>
<td>Local trail riders high awareness of trails and etiquette</td>
<td>Establish and enhance partnerships with trails organizations (identified)</td>
<td>&lt;</td>
</tr>
</tbody>
</table>

Effectiveness Rating:  
> Highly Effective  + Effective  < Ineffective
Table 5.1.8 Evaluation of Visitor Activities Management Strategies - Picnicking

<table>
<thead>
<tr>
<th>Existing Conditions</th>
<th>Desired Conditions</th>
<th>Analysis of Existing and Desired Conditions</th>
<th>Proposed Management Strategies</th>
<th>Effectiveness Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Picnicking high importance in visitor survey; Water access sites meet popular</td>
<td>Increased awareness of variety of picnicking sites</td>
<td>Rationale of why some sites used more not discussed, although car access important (poorly explained)</td>
<td>Implement communications program to increase visitor awareness of picnicking opportunities</td>
<td>&gt;</td>
</tr>
<tr>
<td>Facilities generally perceived as adequate</td>
<td>Better distribution of use</td>
<td></td>
<td>Provide drinking water at all established sites according to TRAC Plan</td>
<td>&gt;</td>
</tr>
<tr>
<td>Provision of drinking water inadequate at some sites</td>
<td>Adequate facilities</td>
<td></td>
<td>Provide disabled access to lakeshore and washrooms at Johnson Lake, integrated with BNP's Disabled Access Plan</td>
<td>&gt;</td>
</tr>
<tr>
<td>1.8% visitors require disabled access</td>
<td>Adequate disabled access; disabled access at Johnson Lake</td>
<td>In-process plans to provide disabled access at Minn. day use area; not identified for Johnson Lake (budget?)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Effectiveness Rating:  
- > Highly Effective  
- + Effective  
- < Ineffective
Table 5.2.9 Evaluation of Visitor Activities Management Strategies- Winter Activities

<table>
<thead>
<tr>
<th>Existing Conditions</th>
<th>Desired Conditions</th>
<th>Analysis of Existing and Desired Conditions</th>
<th>Proposed Management Strategies</th>
<th>Effectiveness Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>X-country ski trails at Johnson Lake, consistently poor snow conditions; Area may be important wolf habitat</td>
<td>Provision of variety of safe winter opportunities that do not impair ecosystems</td>
<td>Ski trails relatively popular (short, diverse)</td>
<td>Decrease winter activities around Johnson Lake; Do not track set trails or plow road; Monitor wolf activity, adapt mgt. strategies</td>
<td>+ / &gt; High level of uncertainty</td>
</tr>
<tr>
<td>Cascade ski trail popular facility, better conditions; Access poorly marked, marginal snow, steep terrain; Unfacilitated access at Cascade trailhead frequently used, presents parking complications</td>
<td>Safe, convenient and well identified access to Cascade trail without further development</td>
<td>Access at Cascade trailhead (undesignated) more direct; access at Upper Bankhead is poorly marked in winter, requires full climb and may have poor snow cover; site provides shelter and washrooms</td>
<td>Rehabilitate Cascade road access as part of Minnewanka Pit rehabilitation to deter further parking; Improve orientation signs to Upper Bankhead, track set different route options to improve conditions</td>
<td>+ Represents a trade-off</td>
</tr>
<tr>
<td>Skating may be hazardous on Two Jack Lake and Minnewanka; CPS does not assume responsibility</td>
<td>Visitor awareness and safety associated with winter activities</td>
<td>Lack of information regarding hazards and conditions of skating</td>
<td>Implement communications program including on-site winter hazard info.</td>
<td>&gt;</td>
</tr>
<tr>
<td>Entire loop road plowed, maintenance budget constraints</td>
<td>Reduce winter maintenance costs</td>
<td></td>
<td>Decrease extent of plowing as determined by Scenic Corridors dept.</td>
<td>&gt;</td>
</tr>
<tr>
<td>Salt used for road maintenance; sheep habitation exists</td>
<td>Manage sheep habitation to maintain wild populations</td>
<td>Road salt likely exacerbates sheep habitation</td>
<td>Assess and decrease road salt use according to Scenic Corridor's analysis</td>
<td>&gt;</td>
</tr>
</tbody>
</table>

Effectiveness Rating: > Highly Effective  + Effective  < Ineffective
<table>
<thead>
<tr>
<th>Existing Conditions</th>
<th>Desired Conditions</th>
<th>Analysis of Existing and Desired Conditions</th>
<th>Proposed Management Strategies</th>
<th>Effectiveness Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small percentage of visitors participated in water based activities</td>
<td>Facilitation of &quot;acceptable&quot; water-based activities that do not impair ecological integrity</td>
<td>Most area visitors &quot;General Touring&quot; involved in sightseeing, significant numbers take boat tour</td>
<td>Identify and monitor indicators as part of Aquatic Resource Mgmt. Plan and LAC approach</td>
<td>&lt;</td>
</tr>
<tr>
<td>Lake Minnewanka most popular site - 2 marinas - interpretive boat tours - scuba diving - boating, fishing</td>
<td>Visitor experiences which enhance appreciation and understanding of park resources</td>
<td>Visitor perception &quot;acceptable&quot; facilities and activities differs from managers, stakeholders; (poor understanding); Lake Minnewanka historically resort development</td>
<td>Implement proposed site improvements at Minnewanka day use area including dock upgrading, improved information and interpretation, rehabilitation; Marina specialist to determine long-term solution</td>
<td>+</td>
</tr>
<tr>
<td>Scuba diving intense; divers park cars along dam causeway creates congestion</td>
<td>Facilities and activities which foster positive experiences, not congested, confusing areas</td>
<td>Desirable depth, clarity and submerged resources influence diving popularity; diver certification site; implications diving poorly understood</td>
<td>Continue discussions with diving representatives to determine mgt strategy</td>
<td>&gt;</td>
</tr>
<tr>
<td>Infrequent conflicts between divers and boaters</td>
<td>Avoidance of conflicts between different users and activities</td>
<td>Conflicts may be associated with lack of awareness, education</td>
<td>Implement communications program, actions specific to management of water-based activities</td>
<td>&gt;</td>
</tr>
<tr>
<td>Parking lot at Two Jack Lake impacts the shoreline; boat rack illegitimately stored on-site (local rowers)</td>
<td>Rehabilitation of disturbed sites</td>
<td>Result of former concession operation; private installations prohibited</td>
<td>Rehabilitate shoreline, implement site and information improvements</td>
<td>&gt;</td>
</tr>
</tbody>
</table>

Table continued......
Table 5.2.10 Visitor Activities Management - Water-Based Activities, cont'd

<table>
<thead>
<tr>
<th>Existing Conditions</th>
<th>Desired Conditions</th>
<th>Analysis of Existing and Desired Conditions</th>
<th>Proposed Management Strategies</th>
<th>Effectiveness Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intense use of Johnson Lake (swimming, fishing); facilities seen as adequate</td>
<td>Ecological integrity, places for specific user groups (i.e., locals)</td>
<td>Implement site improvements (information and interpretation)</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Assess fuelling facilities at Minn. marina; ensure they are up to environmental standards</td>
<td>&lt;</td>
<td>not identified in plan</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Establish partnerships with specific water based groups; Operation Management Committee to involve boat concessionaire, divers</td>
<td>&gt;</td>
<td>established during plan process</td>
</tr>
<tr>
<td>Effectiveness Rating:</td>
<td>&gt; Highly Effective</td>
<td>+ Effective</td>
<td>&lt; Ineffective</td>
<td></td>
</tr>
</tbody>
</table>
Table 5.1.11 Evaluation of Visitor Activities Management Strategies - Camping

<table>
<thead>
<tr>
<th>Existing Conditions</th>
<th>Desired Conditions</th>
<th>Analysis of Existing and Desired Conditions</th>
<th>Proposed Management Strategies</th>
<th>Effectiveness Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>15% total area visitors used two frontcountry campgrounds</td>
<td>Provision of adequate frontcountry and backcountry camping opportunities which do not significantly impact ecosystems</td>
<td>Facilities and services basic, may be inadequate, farther location from townsite, not adjacent to water; poor user awareness; Camper's perceptions and values poorly understood</td>
<td>Conduct a simple visitor survey to determine values and needs to guide campground enhancement (TRAC Plan initiative)</td>
<td>&gt; Integrated action</td>
</tr>
<tr>
<td>Two Jack Main campground typically 33% unoccupied</td>
<td>Efficient use of existing facilities, alleviate pressure off of overly full campgrounds</td>
<td>Rehabilitation satisfactory</td>
<td>Implement marketing program to raise camper's awareness of Two Jack facility (TRAC Plan action)</td>
<td>&gt;</td>
</tr>
<tr>
<td>Lakeside campground typically full, temporarily closed for rehabilitation</td>
<td>Full rehabilitation of Lakeside, prevention of future impacts</td>
<td>Over-abundance of backcountry facilities, sites at far end of lake less use; Montane rehabilitation critical</td>
<td>Rehabilitate one backcountry site which is less used and close to other facilities; Monitor initiative to guide further rehabilitation</td>
<td>&gt;</td>
</tr>
<tr>
<td>Six backcountry campgrounds along Lake Minn., all situated on prime montane habitat</td>
<td>Rehabilitation of montane habitat</td>
<td>CPS does not support further facility development, impacts of boat camping poorly understood; need for user education</td>
<td>Implement communications pgm. to educate boaters, hikers and increase awareness of facilities</td>
<td>&gt;</td>
</tr>
<tr>
<td>Lack of information and facilities associated with boat camping</td>
<td>Visitor awareness of opportunities and etiquette; no new facilities</td>
<td>Minnewanka area not planned holistically in past;</td>
<td>Formalize proposed trail network and orientation media to establish connections to area opportunities</td>
<td>&gt;</td>
</tr>
<tr>
<td>Lack of marked connections between campgrounds and other sites in area; informal trail network exists</td>
<td>Frontcountry campgrounds integrated with Minnewanka area opportunities, linked by trails</td>
<td></td>
<td>Monitor indicators of above initiatives (LAC pgm)</td>
<td>+ Identifies indicators</td>
</tr>
</tbody>
</table>

Effectiveness Rating:  > Highly Effective  + Effective  < Ineffective
Table 5.2.12 Cultural Resource Management

<table>
<thead>
<tr>
<th>Existing Conditions</th>
<th>Desired Conditions</th>
<th>Analysis of Existing and Desired Conditions</th>
<th>Proposed Management Strategies</th>
<th>Effectiveness Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minnewanka area rich in cultural resources, (sites identified); Area heritage important in context of BNP</td>
<td>Increased understanding and appreciation of cultural heritage in BNP (Strategic Plan goal)</td>
<td>Significance of resources not realized; Cultural resources low priority in past</td>
<td>Implement recommendations of BNP Cultural Resource Management Plan (in-process)</td>
<td>&gt; Integrated action</td>
</tr>
<tr>
<td>Most sites are not secured or interpreted</td>
<td>Protection of significant cultural resources</td>
<td>Lack of visitor awareness associated with visitor impacts, lack of appreciation</td>
<td>Implement communications program actions associated with cultural resources (on-site media, meetings with stakeholders etc.)</td>
<td>&gt;</td>
</tr>
<tr>
<td>Bankhead mining site secured and interpreted; visitor satisfaction is high</td>
<td>Access to Upper Bankhead, church foundation poorly identified</td>
<td>Impact to submerged resources identified with diver vandalism, down rigging fishing, dock and boat lines attached to resources</td>
<td>Improve and mark connections to Upper Bankhead and church site, partners to assist</td>
<td>&gt; Integrated action</td>
</tr>
<tr>
<td>Impacts to submerged resources at Lake Minnewanka identified, site not managed</td>
<td>Impact to submerged resources identified with diver vandalism, down rigging fishing, dock and boat lines attached to resources</td>
<td></td>
<td>Implement recommendations of Ntl. Underwater Archaeologist for management underwater resources resources</td>
<td>&gt; Integrated action</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Continue discussions with diving representatives to determine management strategies</td>
<td>&gt;</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Identify and monitor indicators for cultural resources as part of LAC approach</td>
<td>&lt;</td>
</tr>
</tbody>
</table>

Effectiveness Rating:  
- > Highly Effective  
- + Effective  
- < Ineffective
5.2 EVALUATION OF THE PUBLIC PARTICIPATION PROCESS

5.2.1 Summary of the Minnewanka Area Plan Public Process

The planning process entailed comparatively extensive public participation involving two different publics and levels of participation. Stakeholders who held a demonstrable interest in the Minnewanka area became involved early in the planning process through correspondence, meetings and workshops. Individuals and groups with a broader public interest were invited to participate once the draft plan was completed through a public open house and written submissions. The public participation process occurred in addition to on-going planning team meetings and reviews by the steering committee.

A list of stakeholders who participated in the process is shown in Table 5.2. Members included local interest groups such as the Friends of Banff Park, other agencies including TransAlta Utilities (TAU) and local enterprises like Minnewanka Boat Tours. Stakeholders were identified through input provided by the CPS planning team and steering committee, reviewing relative background information and by contacting potentially interested groups and through. One-on-one meetings were arranged with several stakeholders early in the planning process.

Little discussion regarding the type or level of proposed participation occurred with the planning team. The CPS's terms of reference for developing the area plan stated that the "project planner is expected to coordinate consultations with affected stakeholders and interest groups to define issues, potential solutions, and input into the vision of the area." The
Table 5.2 List of Stakeholders Who Participated in the Minnewanka Area Planning Process

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Contact Person(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trans Alta Utilities, Calgary</td>
<td>Al Tischer</td>
</tr>
<tr>
<td></td>
<td>Cherry Holland</td>
</tr>
<tr>
<td></td>
<td>Ross Martin</td>
</tr>
<tr>
<td>Minnewanka Tours, Banff</td>
<td>Ian Mackie</td>
</tr>
<tr>
<td>Town of Banff</td>
<td>Doug Leighton</td>
</tr>
<tr>
<td>Bow Valley Naturalists, Banff</td>
<td>Bob Smith</td>
</tr>
<tr>
<td></td>
<td>Gerry Wilkie</td>
</tr>
<tr>
<td></td>
<td>Peter Duck</td>
</tr>
<tr>
<td>Trout Unlimited, Banff</td>
<td>Doug Machuck</td>
</tr>
<tr>
<td>Banff Fishing Unlimited, Banff</td>
<td>Jeff Perodeau</td>
</tr>
<tr>
<td>Brewster Tours, Banff</td>
<td>Bill Nokes</td>
</tr>
<tr>
<td>Friends of Banff Park, Banff</td>
<td>Lorena Dmytriev</td>
</tr>
<tr>
<td></td>
<td>Mary Harding</td>
</tr>
<tr>
<td>Scuba Metric, Calgary</td>
<td>Bob Lereau</td>
</tr>
<tr>
<td>The Dive Shop, Calgary</td>
<td>Vern Wutzke</td>
</tr>
<tr>
<td>Banff Light Horse Association</td>
<td>Emil Yurasek</td>
</tr>
<tr>
<td></td>
<td>Ruth Quinn</td>
</tr>
<tr>
<td>Bicycling Representative</td>
<td>Kevin Hartwig</td>
</tr>
<tr>
<td>Park n' Pedal, Banff</td>
<td></td>
</tr>
</tbody>
</table>
planning team suggested that a workshop would provide an efficient, informal milieu to plan with stakeholders. The terms of reference indicated that broader public input would be sought following completion of the draft area plan through an open house (Terms of Reference, Lake Minnewanka Area Plan, Thesis Project, 1992).

The first stakeholder workshop took place during the second month of the planning process (July). Stakeholders were sent a package which included background information about the area (biophysical, social, policy), the general objectives of the plan, the timeline for the project and a proposed agenda for the workshop. The workshop was well attended with all but two of the stakeholders contacted present (12 stakeholders present). The objectives of the plan and important background information were introduced. Relevant plans and information were available. Stakeholders were invited to provide input that would be used in the formulation of the draft plan, which they would in turn be able to provide feedback on. Planning issues were discussed through a round-table process and a vision for the area was developed at the workshop.

An important outcome of the first workshop was that TAU expressed interest in becoming a partner with the CPS to develop interpretive media in the Minnewanka area. Significant stakeholder interest in participating resulted in the scheduling of a second planning workshop.

Stakeholders were provided with minutes from the first meeting and a suggested agenda before the second workshop, which was held a month later (August). During the second workshop, small working groups generated
planning options which addressed the issues raised in the first workshop. Members of the planning team participated in each working group. Teams presented their options, which were followed by discussion and evaluation.

A specific workshop was held in September for developing an on-site communications program. The CPS invited several interested stakeholders such as TAU and CPS media specialists. A special workshop on integrated ecosystem management was also held around this time although no stakeholders were invited to participate.

The first draft of the area plan was completed at the end of November, 1992 and was presented to the steering committee and the planning team. Two subsequent drafts were written between December and February based on the feedback of the planning team and steering committee. The third draft was sent to stakeholders with an invitation to attend the public open house scheduled for late February. Stakeholders were given three weeks to provide feedback on the draft plan.

The public open house was held in Banff in February, 1993. The event was advertised in local newspapers and through a regional mailing list where interest groups received a summary of the draft plan. A display highlighting the principle concepts and strategies of the draft plan was presented at the open house with members of the planning team available to discuss the plan with individuals. Comment forms were available with feedback being due within two weeks. Approximately 100 persons attended the open house.
A notice which misinterpreted information from the Draft Area Plan was sent out by one of the stakeholders to most diving organizations in the province. The notice indicated that water access was being eliminated at one of the areas used for diving and parking was being eliminated from the most popular facility. In fact, access was not being eliminated but the parking restrictions initially proposed would have significantly affected divers. Many members of the diving community, most of whom had been unaware of the planning process, reacted to this call by providing feedback. The CPS contacted and discussed these issues with diving representatives. On-going meetings were established. Recommendations for the management of diving will be made in the future as an Addendum to the Area Plan.

Approximately 50 submissions on the draft plan were received. These included extensive submissions from groups such as the Canadian Parks and Wilderness Society (CPAWS) and the Bow Valley Naturalists as well as brief comment forms from individuals within the area and the province. Reasons for decisions were requested in several submissions.

Public feedback was summarized and presented at a final planning team meeting in March, 1993. Contentious issues were discussed and consensus was reached by the planning team and steering committee. Several submissions were received following the deadline for public input. These were discussed with steering committee members and reflected in the final area plan.
5.2.2 Evaluation of the Participation Process According to the Criteria of a Fair and Effective Process

An evaluation of the Minnewanka Area Plan's public participation process according to the normative criteria for a fair and effective process (section 2.5.1 of the thesis) is presented below.

1. Clear objectives and priorities of the planning and stakeholder involvement process should be communicated to participants before the process begins.

Stakeholders received information about the objectives and timeline of the area plan as well a background on the main policies, mandates and decisions influencing the plan in a mail-out package before the first workshop. This information was articulated at the onset of the first stakeholder workshop. The decision-making process met the requirements of this criteria.

2. Representative Involvement

All stakeholders involved in meetings and workshops possessed a direct, demonstrable interest in the Minnewanka area. Although most parties with an interest in the area participated in planning workshops, the inclusion of several stakeholders could have enhanced the planning process.

Of several scuba diving representatives contacted, only one attended the first planning workshop. It was later revealed that this interest did not represent the opinion of most of Lake Minnewanka's diving community.
The location of workshops (Banff) likely inhibited the attendance of stakeholders who resided in Calgary and Edmonton.

The Banff Light Horse Association, a group with a long-term interest in the trails in the Minnewanka area, was not initially contacted during the planning process. They were identified as a stakeholder in the first workshop resulting in their participation in future workshops. The role of several additional stakeholders became apparent with the release of the draft plan. Representatives of power-boating as well as the local rowing club had not been contacted although they were affected by plan decisions. There was no provision for an on-going evaluative mechanism which measured representative involvement.

3. Comprehensive Involvement Opportunities

Stakeholders were not involved in the design of planning processes. Comprehensive involvement was expressed by stakeholder’s participation in determining planning issues, the vision for the area and the generation and assessment of planning options. During the early stages of the planning process, stakeholder participation was characterized by a partnership relationship where decision-making was shared. Involvement was less comprehensive in writing the draft plan. Stakeholders did not have equal opportunities to provide feedback on the first drafts of the plan in comparison to the planning team and steering committee. Participation was reduced to consultation in making the final plan decisions. Stakeholder participation would have been more comprehensive if the level of involvement remained consistent throughout the planning process.
Comprehensiveness was expressed by the involvement of participants at two levels: stakeholders who held a demonstrable interest in the area and interested members of publics in spheres outside of the planning area. Participants representing local and regional areas and interests responded to the draft plan at the public open house and through correspondence. Although this level of participation is described as token according to Arnstein's "Ladder of Participation" (1969), it represents a guage for the acceptance of decisions at a broader scale and is useful in combination with more meaningful forms of stakeholder involvement.

Overall, the public participation process was not comprehensive according to the evaluative criteria defined in the thesis. During the early stages of the planning, prior to the completion of a draft plan, stakeholders acted as partners in decision-making. As the process neared completion of the plan, participation was less comprehensive. Participation was difficult to maintain at a partnership level throughout the planning process because the CPS is ultimately responsible for decision-making through its mandate.

4. Timely Access to Information

Stakeholders were provided with a summary of important information which affected decision-making in the Minnewanka area prior to workshops. Copies of important resources and planning documents were made available at workshops and the open house and the planning team was available to provide additional information. Stakeholders received timely access to information in the early stages of the planning process.
Following the release of the draft plan and staging of the Open House, stakeholders and members of the public were given approximately two weeks to provide feedback on the draft plan. This deadline reflected the due date for completion of the plan. Participants were not given timely access to information at this stage in the process. Several stakeholder groups commented on the lack of time while one group requested a two week extension in order to coordinate their response with the members of their organization. The unreasonableness of this deadline emphasized the consultative nature of the process over one of shared decision-making.

A contentious issue regarding access to information involved the concurrent license renewal discussions taking place between TransAlta Utilities (TAU) and the CPS. As the operation of TAU's facilities significantly influences the Minnewanka area, information and access to this process was critical. This license renewal process initially had no provision for public participation and was isolated from the Minnewanka area planning process. Public reaction to the TAU license renewal process resulted in greater access to information, however the lack of coordination and information exchange between these processes was poorly received by stakeholders and members of the planning team. This experience reduced stakeholder's trust in the CPS and credibility in planning processes within the park. This was reflected in approximately 10% of the public feedback on the draft plan.

In summary, stakeholders had timely access to information early in the planning process but were constrained in responding to the draft area plan.
Stakeholders did not have adequate access to selective information like the TAU license renewal discussions.

5. Adequate Resources to Participate

The provision of adequate resources such as intervener funding was not considered nor was it perceived as necessary within the context of the planning process. Available time was likely a more limiting resource to stakeholder participation. The lack of time and inconvenience associated with travelling to workshops in Banff was a problem for some representatives from Calgary. Concurrent Natural Resource Conservation Board (NRCB) public hearings associated with a proposed mega development in the Bow Valley filled several stakeholder's schedules.

Provision should have been made to meet with all stakeholders who had an interest in participating. One-on-one meetings could be scheduled with participants who could not attend workshops. Several of these meetings did occur during the planning process.

6. Written Reasons for Decisions

Written reasons for decisions were not provided to stakeholders. Several stakeholder groups requested reasons for decisions and answers to questions expressed in their submissions of the draft plan. No provision was made to submit written reasons for decisions during the planning process. Providing written reasons for decisions could have clarified several decisions
where stakeholders had incorrect information. The decision-making process was inadequate in this respect.

7. Appeal Mechanisms / Conflict Resolution

No formal appeal mechanism was incorporated into the planning process. Stakeholders and members of the public who responded to the draft plan were invited to raise issues with the Chief of Planning in Banff National Park. Members of the scuba diving community used this mechanism to voice concerns and establish a negotiation process with the CPS.

There was no appeal mechanism or third party established for conflict resolution in the planning process. The provision of direct access to the Chief of Planning and CPS decision-makers was seen as an adequate appeal mechanism within the context of area planning.

8. Consistent Objectives of the Managing Organization

The CPS expressed their objectives to stakeholders through the articulation of the mandate, guiding policies, strategies and decisions which might affect the area plan. This was communicated in written form in the stakeholder's package, during workshops and within background information in the draft area plan. This information served as a basis by which discretionary decisions within the plan could be measured.

One stakeholder group expressed concern regarding discretionary decisions contained within the draft plan (Bow Valley Naturalists, March,
Concern related to the CPS's decisions to continue to support hydroelectric generation within Banff National Park as well as maintaining a high level of visitor use in the Minnewanka area while advocating the mandate of "maintaining ecological integrity." Such claims were undeniable although these issues clearly superseded the scope of the area plan and were highly complex, reflecting changing history and policy within BNP. The option of abandoning and rehabilitating the hydro facilities on Lake Minnewanka was examined as part of the TAU license renewal process. The economic compensation required by the CPS combined with the uncertainty of rehabilitation deterred the adoption of this option (Beswick, 1992). In the final plan, efforts were made to more clearly identify the influences of decision-making and the trade-offs involved in the CPS's decisions within Banff National Park.

9. Provision of Notification of the Results of Monitoring

Provisions for the notification of the results of monitoring of decisions were made in recommending the establishment of the Operational Management Committee which will continue to involve key stakeholders in decision-making and management on an on-going basis. The idea of establishing this group emerged from one of the stakeholders during a planning workshop.

No provision was made to share the results of plan implementation and monitoring with members of the larger public in the future, although all CPS reports are public and are available to anyone requesting them. Managers should be encouraged to share the results of implementation (or
non-implementation) of the plan with other members of the organization and to inform the public through regional communication strategies such as the Canadian Park Service's newsletter, *Participation*.

### 5.2.3 Evaluation of the Outcomes and Attitudes of the Area Planning Process

The outcomes of the area planning process and the attitudes of stakeholders are evaluated according to the measures defined in Chapter 2.0 of the thesis.

1. **Frequency of contact between stakeholders and decision-makers measured quantitatively by numbers of meetings, calls, correspondence, workshops and other means**

   Over the nine month period of the planning process, stakeholders were contacted through correspondence, meetings, workshops and calls approximately nine times/stakeholder. These contacts were broken down into: a minimum of two calls/stakeholder, stakeholder participation in two planning workshops, three information packages sent out through correspondence, a mail-out of the draft area plan and one written submission from stakeholders.

   Of the above contacts, all except the mail-out of the draft plan and stakeholder’s response to the plan occurred during the first four months of the process, prior to completion of the draft plan. The majority of stakeholder involvement therefore occurred during the early stages of the process in the identification of planning issues, the generation of a desired vision and management options for the area. The planning team and steering committee ultimately assessed options and formulated the draft plan. This
stage of the process reflected a consultative level of participation rather than shared decision-making or decision-making partnerships.

Overall, the frequency of contact was seen as satisfactory by the author but was inconsistent throughout the planning process. This represents a consultation level of participation rather than one of shared decision-making.

2. The degree to which participants felt they had a voice in participation opportunities.

Stakeholders were not asked to provide feedback regarding the extent to which they felt they had a voice in decision-making however several indicators infer a perception of their influence.

Discussion was facilitated by the thesis student during workshops and not directly led by the CPS. All participants (including the CPS) were given equal opportunities to participate at workshops. Stakeholders contributed the majority of discussion in both workshops. Stakeholder's feedback of the experience (spoken comments) was positive and members appeared to be motivated after both workshops.

The reduced degree to which stakeholders had a voice in the evaluation of options and formulation of the final plan was reflected in feedback on the draft plan. Only 60% of the stakeholders submitted written comments on the draft plan.

The perception of the broader public's voice in decision-making was not surveyed. Several of these participants commended the CPS on the
participation process (CPAWS, individual submissions). One regional stakeholder group was not contacted through an inadvertent omission at the CPS Regional Office. This group complained of the exclusionary public participation process (Alberta Federation of Naturalists).

Overall stakeholders expressed satisfaction regarding the degree to which they had a voice in participation opportunities. The reduced level of participation during final decision-making was likely associated with a reduced sense of influence by stakeholders.

3. The degree to which participants actually influenced the decision-making process.

Stakeholders influenced decision-making to a significant degree. Decisions which were affected included:

- the establishment of an Operational Management Committee, involving key stakeholders in on-going decision-making;

- the management of scuba diving which will be determined following discussions with scuba representatives and presented as an addendum to the plan;

- on-site interpretation which will be jointly managed with TAU;

- the proposed trail system reflects the recommendations of stakeholders;

- a one-way loop road option was suggested by stakeholders and assessed to be unfeasible due to the weight capacity of the road, but may be considered in the future as road upgrading occurs;

- the decision to eliminate the proposed parking strategy at the Cascade trailhead;

- a greater emphasis on ecosystem protection;

- trails closed to mountain bikes around Johnson Lake.
Stakeholder input influenced decisions regarding facilities to a greater extent than fundamental decisions such as the overall ecosystem management strategy or the opportunities facilitated in the area.

4. Output of the participation process.

The output of the two stakeholder workshops consisted of the identification of planning issues, a vision and management options for the area. The output of stakeholder workshops acted mainly as input which was evaluated by the CPS in decision-making. Stakeholders began to evaluate proposals, thereby making preliminary decisions during the second workshop.

Further output from the participation process consisted of approximately 50 submissions on the draft plan. Of these approximately one half were received from members of stakeholder groups. This output was evaluated by the CPS and considered in decision-making.

The level of output from participation processes was high in relation to the time spent participating. The process was therefore seen as efficient. Provision of preparatory materials for workshops (written packages) likely enhanced the efficiency of the process. The type of stakeholder output (essentially input into CPS's decision-making) was more reflective of a consultative level of participation than of shared decision-making.
5. The extent to which polarization of public opinion was prevented

Potential polarization of public opinion may have been prevented by holding one-on-one meetings with several stakeholders before workshops which enhanced relationships. An open sharing of information was emphasized at workshops over the establishment of positions creating an informal atmosphere and preventing polarization.

Significant polarization of opinion was expressed in stakeholder's submissions on the draft plan. Many members of the scuba diving community contacted the Chief of Planning in Banff expressing a strong difference of opinion from the draft plan. Concerns were discussed with the Alberta Scuba Divers Council and representatives of major diving organizations. A significant degree of misinformation was clarified and further discussions were planned. The approach of discussing contentious issues with individual stakeholder groups while assuring them the plan was not finalized may have avoided the polarization of stakeholder opinions in several situations.

The public open house was organized so that participants discussed concerns with members of the planning team rather than voicing concerns through a public hearing format. This helped to avoid potential confrontations and polarization of opinion.

In summary, the extent to which polarization of public opinion was prevented was high indicating a low level of conflict and a high level of
agreement. Some prevention was necessary following the release of the draft plan.

6. Acceptance of Final Decisions

At the time of this evaluation, the final plan had not been printed or received by stakeholders. Based on the draft plan, all stakeholders and most members of the broader public supported the general direction of the plan which included:

- the vision of the plan (strong support),
- maintaining and monitoring the current level of facility development (strong support),
- rehabilitation of disturbed sites (strong support),
- providing a comprehensive communications program including on-site media (strong support),
- establishing partnerships (strong support),
- implementing an integrated ecosystem management program (moderate support),
- improving facilities at the Minnewanka day use area (moderate support).

The key decisions of the draft plan which were not fully accepted by stakeholders included:

- limitations to horse use on the proposed trail system (strong disagreement),
- parking restrictions associated with the management of scuba diving (strong disagreement),
- the ecological implications and financial realities of site improvements,
- the extent of proposed on-site media,
- the lack of definition of the integrated ecosystem management approach.

The main decisions which were contentious according to the broader public input involved:

- parking restrictions which would significantly influence scuba diving activities (strong disagreement),
- trails in the Johnson Lake area closed for wolf recolonization,
- the provision of winter parking at the Cascade trailhead,
- limiting horse use on several hiking trails (strong disagreement),
- the ecological implications of proposed facility improvements.

All of the above decisions were influenced in the final plan as a result of public/ stakeholder feedback. It is interesting to compare some participants' perceptions of the most desirable level of participation with that supported in the literature reviewed which advocated shared decision-making and partnership arrangements. The Bow Valley Naturalists noted in their submission, which was likely the most comprehensive of those received, that (see next page):

We support the process whereby various interest groups are involved at the early stages in planning. We appreciate the opportunity to have participated in that process. However, we must flag a deeply felt unease which arises when "interest groups" are encouraged to bring their particular concerns forward. We sense a very real danger that the focus of participants will shift from what is best for the national park to what is best for them. Although we are on the alert for this pitfall ourselves, we profess no superior, self righteous purity in this regard...
7. Frequency of examples which indicate changed self-perception of committee representatives (e.g. new leaders in groups, previously inarticulate members speaking out, etc.)

The frequency of examples which indicate changed self-perception of committee representatives was significant and reflective of a positive experience. Partnerships were established with three stakeholder groups through the initiative of these groups (TAU, Banff Light Horse Association and Trout Unlimited). Minnewanka Tours, the principal stakeholder at the most highly used visitor area, established a positive working relationship with CPS and proposed the establishment of the Operation Management Committee. This represented a significant change from a formerly adversarial relationship. Positive relationships were established with many of the stakeholders and a changed self-perception could be measured in the level of familiarity which characterized discussions later in the planning process.
CHAPTER VI. CONCLUSIONS AND RECOMMENDATIONS

Conclusions and recommendations specific to the plan evaluation are identified within this chapter followed by general conclusions regarding the outcome of the planning process. Areas for further research are suggested.

6.1 SUMMARY OF CONCLUSIONS FROM THE EVALUATION RELATIVE TO CARRYING CAPACITY MANAGEMENT

The Minnewanka Area Plan met all of the criteria for effective carrying capacity management which were identified within section 2.3 of the thesis. The six criteria advocated in this model represent an ideal planning process for determining strategies to manage visitor activities and ecological resources according desired social and ecological conditions. This model is a useful approach for facilitating integrated ecosystem management in the Minnewanka area.

According to the criteria for effective carrying capacity management, the weakest areas of the plan pertain to the adoption and implementation of the LAC approach. Specifically, the provision of precise measures of the existing ecosystem conditions, the analysis of existing and desired conditions and the recommendations for monitoring indicators were inadequate. A summary of the conclusions from the evaluation of the plan according to these criteria is shown in Table 6.1.
Table 6.1 Summary of Conclusions of Evaluation According to the Carrying Capacity Management Framework

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Definition of Specific Objectives Which Describe Conditions</td>
<td>Highly adequate definition of objectives describing desired social and ecological conditions, represented at three levels of specificity.</td>
</tr>
<tr>
<td>Measure of Existing Social and Ecological Conditions</td>
<td>Sufficient background information describing existing conditions however, measure of existing social conditions and values weak. The lack of identifying and measuring indicators hindered specific measurement of existing ecological conditions.</td>
</tr>
<tr>
<td>Comparison and Analysis Between Existing and Desired Conditions; Rationale of Planning Problems</td>
<td>Comparison between existing and desired conditions satisfactory; analyses relatively weak. Approximately 17% of the causes of issues not well explained or poorly understood.</td>
</tr>
<tr>
<td>Formulation and Assessment of Specific Management Strategies</td>
<td>Almost 85% of the proposed management strategies were rated as effective to highly effective because they specifically addressed problems and discrepancies between existing and desired conditions. Many ineffective strategies related to monitoring indicators which were not defined.</td>
</tr>
<tr>
<td>Provisions for Implementation and Monitoring</td>
<td>An highly adequate implementation strategy was presented. Proposed monitoring program is weak and lacks specificity because indicators are not identified.</td>
</tr>
<tr>
<td>Interdisciplinary Input and Meaningful Public Involvement</td>
<td>On-going involvement by interdisciplinary planning team effective; meaningful public stakeholder involvement adequate.</td>
</tr>
</tbody>
</table>

As identified within the evaluation (Section 5.1), reasons linked with the lack of precise measures of existing conditions were associated with the general lack of social data as well the representation of park information at scales larger than that needed for area planning (i.e. 1:50,000). Existing ecosystem information in BNP has tended to focus on natural resource management while failing to adequately consider the human phenomena
associated with national park ecosystems. More recent projects within the park are beginning to integrate human and natural systems. This is exemplified in the Tourism, Recreation and Communications (TRAC) Plan (Environment Canada, April, 1992) and the Cultural Resource Management Plan which is currently being completed.

Recommendations for selecting and monitoring indicators presented an effective approach for assessing ecosystem health, however the lack of defining indicators reduced the likelihood that this approach would be implemented. Because area planning is the most specific level of land-use planning in national parks, specific indicators should be identified in the plan and not left to be determined during the implementation phase. The background information and specific objectives in the plan may provide sufficient information to propose indicators representing the area's ecosystems.

The plan was marginally inadequate in the analyses of planning problems. The approach of analysing discrepancies between existing and desired conditions to determine the causes of problems is highly effective. This approach was facilitated in the organization of Minnewanka Area Plan where existing conditions were described within the "background" of each section followed by an expression of the desired conditions or "objectives." Although the plan sufficiently compared conditions, it failed to adequately analyse the discrepancies between existing and desired conditions for a number of planning issues. Of these, a significant number were related to the complex relationship between use and acceptable impacts. The analysis associated with ecosystem management failed to reveal causes for
discrepancies between existing and desired ecosystem conditions. The causes for this are likely attributed to the inherent complexity of the Minnewanka area's ecosystems, the lack of accurate information, and the organizational framework of the CPS in BNP which has functioned as different departments operating apart from each other.

The evaluation of the Minnewanka Area Plan according to the normative criteria for carrying capacity management revealed that most of the inadequacies of the plan were related to recommendations for adopting the LAC approach. Most of the proposed management strategies that were rated as ineffective were associated with monitoring indicators which were not specified in the plan. Concerns regarding the operational and economic constraints of identifying and monitoring indicators representative of the Minnewanka area ecosystems were raised by the planning team and the stakeholders during the planning process.

Although the LAC model is seen as a useful means to guide management strategies towards the achievement of desired conditions through an on-going adaptive management approach, it is perhaps an overly complex approach within the context of area planning in the Minnewanka region. The evaluative framework for carrying capacity management which was introduced in section 2.3 of the thesis, was devised from a review of various approaches for recreational carrying capacity management including the LAC approach. It maintains all of the essential concepts embraced in the LAC approach, yet is simpler and would likely be easier to implement and more effective in the Minnewanka area planning project.
The evaluation revealed that the most effective proposed management strategies were those which reflected an adequate understanding of the causes of the problem and were integrated into existing management plans or frameworks. Proposals related to aquatic resource management for example, reflected an adequate understanding of the hypothesized causes of problems. These included the effects of reservoir drawdown on destruction of the littoral zone and the fall spawn of trout as well as the disturbance of riparian habitat due to the diversion of the Cascade River and gravel extraction (see 3.1.2 of the Minnewanka Area Plan). Proposed management strategies were integrated with other CPS management activities such as the TAU license renewal agreement and the park's proposed fisheries management programme.

The strategy to adopt the LAC approach was poorly integrated with existing management frameworks. This issue is complex as there is a need to adopt an integrated ecosystem-based management approach in BNP where the CPS has traditionally functioned in separate, specialized divisions. Although structural changes which integrate divisions were recently established within the CPS, a clearly defined strategy for implementing an integrated ecosystem management approach in the Minnewanka and other areas of the park is needed (Environment Canada, Canadian Parks Service, June, 1992).
6.2 RECOMMENDATIONS FOR IMPROVING THE MINNEWANKA AREA PLAN ACCORDING TO THE NORMATIVE CRITERIA ASSOCIATED WITH CARRYING CAPACITY MANAGEMENT

The following recommendations for facilitating integrated ecosystem management in the Minnewanka area were determined through the evaluation of the plan according to the normative criteria associated with effective carrying capacity management.

1. Define indicators representing the social and ecological conditions that are specific to the objectives of the plan and the Minnewanka area ecosystems. Monitor these to provide more precise data on the existing state of the ecosystem and to guide management strategies towards desired conditions. The definition of indicators within the plan should enhance the likelihood of implementing a carrying capacity approach to resource management. These indicators should be chosen so that they can be readily monitored by CPS staff within the existing management framework in BNP.

Suggested indicators for the management of scuba diving were determined by examining information contained in the plan. Indicators representing other aspects of the area's ecosystems could be developed in the same manner as a means of initiating a simple monitoring program which could be adapted over time.
2. Adopt a simpler approach to carrying capacity management using the evaluative framework suggested in section 2.3 of the thesis for carrying capacity management. This model embodies the essential concepts of the LAC and VIM approaches while presenting a simpler method to implement integrated ecosystem management. The approach is appropriate for area planning and is more compatible with the structure and resources of the CPS.

3. Improve the specificity of the implementation strategy by identifying indicators and more clearly defining the roles and responsibilities of individuals involved in implementing and monitoring an integrated ecosystem management approach in the Minnewanka area. The continued involvement of the planning team is suggested.
6.3 SUMMARY OF CONCLUSIONS FROM THE EVALUATION OF THE PUBLIC PARTICIPATION PROCESS

6.3.1 Summary of Conclusions According to Criteria for a Fair and Effective Participation Process

The area plan incorporated all of the criteria defined for a fair and efficient public participation process except the provision of written reasons for decisions. The omission of written reasons for decisions in the plan process hinders the building of a trust relationship between stakeholders and the CPS and reduces stakeholder's power in decision-making. A summary of the conclusions from the evaluation according to the criteria for a fair, efficient and representative public participation process is represented in Table 6.2.

The plan did not achieve a high performance rating for several of the evaluative criteria. Following the release of the draft plan, it became apparent that scuba diving representatives and the Alberta Federation of Naturalists were inadvertently omitted from participating (criterion for Representative Involvement). The analysis also revealed that participation occurred essentially as a consultative process as opposed to a higher level of shared decision-making (see criteria for Comprehensive Involvement and Timely Access to Information). Criteria such as Adequate Resources to Participate and Provision of Appeal Mechanisms were not considered within the context of the planning process.
Table 6.2. Summary of Conclusions from the Evaluation of the Public Participation Process According to Criteria for Fairness and Effectiveness

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clear Objectives and Priorities of the Planning Process</td>
<td>Stakeholders were provided with clear objectives of the participation process.</td>
</tr>
<tr>
<td>Representative Involvement</td>
<td>Involvement was representative but lacked participation of a few stakeholders; stakeholders should have had adequate input into who participated.</td>
</tr>
<tr>
<td>Comprehensive Involvement Opportunities</td>
<td>Stakeholders had comprehensive involvement opportunities early in the process but not during decision-making. Provision of involvement at two levels (stakeholders, broader public) was comprehensive.</td>
</tr>
<tr>
<td>Timely Access to Information</td>
<td>Timely access to information in early stages of planning process; insufficient access to information and to respond at final decision-making.</td>
</tr>
<tr>
<td>Adequate Resources to Participate</td>
<td>Adequate financial resources not an issue; the distance to stakeholder workshops was a limiting factor for several stakeholders.</td>
</tr>
<tr>
<td>Written Reasons for Decisions</td>
<td>Did not provide stakeholders with written reasons for final decisions.</td>
</tr>
<tr>
<td>Appeal Mechanisms</td>
<td>Access to Chief of Planning and CPS decision-makers provided a sufficient appeal mechanism which was used.</td>
</tr>
<tr>
<td>Consistent Objectives of the Managing Organization</td>
<td>Consistent objectives of managing organization were maintained within the plan.</td>
</tr>
<tr>
<td>Provision of Notification of the Results of Monitoring</td>
<td>Provision for the communication of results of plan implementation through the on-going involvement of stakeholders; no specific provision for notification of larger public.</td>
</tr>
</tbody>
</table>
These results may be attributed to a lack of discussion and planning about the participation process and the appropriate levels of participation. Ideally, all of the criteria in Table 6.2 should be discussed with members of the planning team, stakeholder groups and steering committee and tailored to the context of the planning exercise in designing the participation process. The facilitation of an evaluative mechanism such as on-going feedback from stakeholders, might have improved the participation process and made it more inclusive and consistent with respect to the level of involvement.

6.3.2 Summary of Conclusions from the Evaluation of Outcomes and Attitudes of the Public Participation Process

A summary of the conclusions reached through the evaluation of the outcomes and attitudes of the public participation process (section 2.5.2 of the thesis) appear in Table 6.3. This evaluation reaffirmed that the participation process occurred at a partnership level early in the process and was lowered to a position of consultation during final decision-making and completion of the plan. Some stakeholders preferred a consultative role over shared decision-making because they wanted to ensure that the CPS's mandate was upheld and not altered by the individual interests of stakeholders (Bow Valley Naturalists, March, 1993).

Despite the level of participation, it is interesting to note that the role and self-perception of stakeholders was enhanced through the development of partnerships and working relationships. Stakeholder input significantly influenced the decisions made within the plan and improved the information base for decision-making.
Table 6.3 Summary of Conclusions From the Evaluation of Outcomes and Attitudes of the Public Participation Process

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency of Contact Between Stakeholders and Decision-Makers</td>
<td>Frequency of contact high early in participation process, decreased during decision-making. Process more reflective of consultation, not shared decision-making.</td>
</tr>
<tr>
<td>Degree to Which Participants Influenced Decision-Making</td>
<td>Stakeholders influenced final plan decisions significantly.</td>
</tr>
<tr>
<td>Output of Participation Process</td>
<td>A high level of output occurred in early stages of the process, decreased output during decision-making. Stakeholder's output became input for CPS decision-making.</td>
</tr>
<tr>
<td>The Extent to Which Polarization of Public Opinion Was Prevented</td>
<td>Some polarization prevented following release of draft plan; not highly problematic.</td>
</tr>
<tr>
<td>Acceptance of Final Decisions</td>
<td>Final plan not released. General support for draft plan. The final plan reflects the feedback of the draft plan.</td>
</tr>
<tr>
<td>Frequency of Examples Which Indicate Changes Self-perception of Stakeholders</td>
<td>Significant number of examples indicating changed self-perception of stakeholders and a positive participation experience. Several partnerships and on-going stakeholder involvement established.</td>
</tr>
</tbody>
</table>

6.4 RECOMMENDATIONS FOR IMPROVING THE PUBLIC PARTICIPATION PROCESS

The following recommendations for improving the public participation process were determined through the author's evaluation of the plan according to the criteria identified sections 5.2.2 and 5.2.3 of the thesis.

1. Provide written reasons for decisions to stakeholders who participated in the planning process and to members of the larger public who provided feedback on the draft plan and requested reasons for decisions. This action makes the CPS accountable for decisions made in the plan, builds trust with
stakeholders and clarifies the rationale for decisions which may have been confused due to misinformation.

2. Plan future public participation processes with members of the planning team, steering committee as well as potential stakeholders. Levels of participation which support a partnership or shared decision-making relationship are desirable while the CPS's role and mandate should ultimately lead in decision-making. This level of decision-making is supported in *Canada's Green Plan* (Government of Canada, 1990) and the *Western Region Strategic Plan* (Environment Canada, Canadian Parks Service, June, 1990). The design of the planning process should consider the criteria defined for a fair and efficient process as well one which facilitates positive outcomes and attitudes as identified in sections 2.5.1 and 2.5.2 of the thesis. These evaluative frameworks are models for ideal public participation processes in area planning.

3. Stakeholders should be involved in reviewing drafts of the plan before they are released for general public review and should be given adequate time to provide feedback on the draft plan.

4. A mechanism for on-going evaluation, such as the facilitation of stakeholder and planning team feedback, should be incorporated into the participation process. This provision would help to avoid omitting potential stakeholders from participating. It would help to ensure that all groups and individuals who wanted to participate in the planning process had the opportunity to do so.
5. Maintain the involvement of stakeholders and interested members of the public by regularly communicating the results of plan implementation and monitoring through arrangements such as the proposed Operation Management Committee recommended in the Minnewanka Area Plan as well as through CPS publications.

6.5 GENERAL CONCLUSIONS - THE OUTCOME OF THE PLANNING AND RESEARCH PROCESS

The process of coordinating the Minnewanka Area Plan, developing an appropriate theoretical framework and critically evaluating the plan has been an invaluable experience. Insight regarding the ecological, social, political and economic influences of planning in Banff National Park compared to a theoretical ideal was gained through this experience. Such theories are useless if they cannot be tried, tested and evaluated.

Overall, the planning process and the outcomes of planning were seen by the author as very successful. The plan is an innovative proposal within the context of the CPS in Banff National Park. By expressing specific desired social and ecological conditions for the area through an agreed upon and collectively determined "vision," the plan avoids merely reacting to increased demand and ecosystem impacts.

The ultimate test of the plan's efficacy is whether it can be implemented and the goals and objectives are achieved. Although this cannot presently be determined, implementation of the plan appears to be highly likely. The plan presents a feasible strategy for implementing the proposed actions over the next four years within the CPS's management
framework. By measuring the plan against objective criteria representing an effective integrated ecosystem management approach, the author rated over 80% of the proposed strategies as effective to highly effective. These strategies were highly compatible with the goals and objectives of the Minnewanka Area Plan.

The Plan operationalizes the concept of integrated ecosystem management by considering social and ecological systems holistically in the design of management strategies. For example, the relationship between former and present human activities and perceptions and the montane ecosystem is reflected in the management strategies introduced in the plan. The proposed ecosystem management approach is based on the Limits of Acceptable Change (LAC) model which is an alternative method of trying to determine carrying capacity or a user limit in wilderness recreation areas. LAC focuses on managing to achieve desired social and ecological conditions by defining and monitoring indicators to guide management strategies.

The evaluation (based on normative criteria for carrying capacity management) indicated that implementation of the LAC approach within the context of the Minnewanka area planning project was inappropriate. This was attributed to the complexity of the step-by-step LAC approach and the lack of identifying indicators within the plan. The basic premises of the LAC approach, however, reflected a useful means for facilitating integrated ecosystem management. A simpler model which retains the essential criteria of LAC and combines attributes of other useful models for integrated ecosystem management (i.e. VIM) was developed within the thesis. This
model has application to area planning in the Minnewanka area and is summarized below.

Figure 6.4

Model for Implementing Integrated Ecosystem Management in Area Planning in National Parks

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
</table>
| 1.   | Definition of specific objectives which describe the desired social and ecological conditions for the area  
      - A collectively determined vision, detailed objectives |
| 2.   | Measure the existing social and ecological conditions in the area  
      - define and measure indicators representing the ecosystem (including its social components)  
      - existing information and sources |
| 3.   | Compare and analyse the existing and desired conditions  
      - determination of causes of discrepancies between conditions |
| 4.   | Formulate and assess management strategies which specifically address the problems identified in (3) |
| 5.   | Develop plans for implementing and monitoring management strategies  
      - (Implement and monitor) |
| 6.   | Provide for meaningful interdisciplinary, stakeholder and public input at all levels of the planning process |

The literature reviewed in the development of the theoretical framework for the thesis suggested that meaningful social input was integral to an ecosystem-based management approach (e.g. Lyle, 1985; Environment Canada, Canadian Parks Service, June, 1993; Stankey et al., 1985; White et al., 1993). A variety of input from differing perspectives (i.e. specialists, stakeholders, managers) was facilitated by involving an interdisciplinary CPS planning team on an on-going basis as well as a steering committee (CPS) which reviewed the project periodically. An extensive public participation process involving stakeholders through meetings, workshops and
correspondance and members of the broader public through an open house and written feedback ensured representative involvement.

The degree to which stakeholders and members of wider spheres of the public influenced the Minnewanka Area Plan final decisions was high as indicated in the evaluation. Overall, the participation process improved the CPS's relationships with stakeholders and facilitated the development of several new partnerships for managing the Minnewanka area. The process raised stakeholder's and members of the larger public's awareness of important planning issues which served indirectly to achieve the goals of the plan. The primary weaknesses of the public participation process were that the level of stakeholder involvement was not consistent throughout the planning process and stakeholders were not provided with reasons for final decisions.

The evaluation identified that the public participation process occurred largely at a consultative level where the CPS maintained the ultimate responsibility for decision-making. This is reflected in the current CPS mandate. While the literature reviewed suggested that shared decision-making represented an ideal model whereby stakeholders partook equally in making decisions during a defined period, it was not within the scope of the thesis to assess the application of this model to planning in BNP. Normative criteria for meaningful public participation were developed based on consultative and shared decision-making levels of participation as well as outcomes of the participation process to evaluate the Minnewanka Area Plan. The criteria for fair and efficient participation serve as a model for planning and implementing public participation processes in area planning.
Figure 6.5

Model for the Development of a Meaningful Public Participation in Area Planning

1. Communicate clear objectives and priorities of the planning and stakeholder process
2. Facilitate representative involvement
3. Provide comprehensive involvement opportunities
4. Provide timely access to information
5. Ensure participants have adequate resources to participate
6. Provide written reasons for decisions
7. Provide appeals mechanisms
8. Maintain consistent objectives within the managing organization
9. Communicate the results of implementation and monitoring

The above model complements the framework presented in Figure 6.4. Together, these processes form an integrated ecosystem based approach which has application to planning in the Minnewanka area of Banff National Park as well as area planning in national parks and similar environments. This approach is seen as instrumental in achieving the CPS's mandate of maintaining and enhancing ecological integrity.
6.6 AREAS FOR FURTHER RESEARCH

Several areas for further research became apparent through the thesis.

1. The development of a monitoring program for the management of the Minnewanka area would enhance the plan and help to test the planning approach proposed in the thesis. This work would require the determination of a set of ecosystem indicators based on information contained within the plan in addition to other research and data. The monitoring program could be refined through information gleaned from the actual monitoring of indicators over time. This research would advance work on the LAC process and develop much needed strategies for integrated ecosystem management in national parks.

2. The need to examine the role of shared decision-making in planning in national parks became apparent through the evaluation of the Minnewanka Area Plan. Although the CPS is legally responsible for making decisions according to the national park mandate (Environment Canada, Canadian Parks Service, 1991), developing policies and strategic plans such as Canada's Green Plan support meaningful public involvement in environmental issues. More specific information identifying the types of decisions where participation is desirable, who potential decision-makers might be and what levels of participation are appropriate is required. National parks such as Banff provide manageable case studies for exploring the feasibility of adopting shared decision-making within the Canadian Parks Service.
3. Finally, larger questions regarding the role and effectiveness of national parks emerged during the thesis. Questions of whether national parks actually protect ecological integrity and what their evolving role is need to be addressed in future research. Perhaps other models such as biosphere reserves are more appropriate in facilitating integrated land-uses while protecting significant resources. Answers to these questions will require extensive research but would be invaluable at a time when the protection of ecosystems is critical.
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