Model Class Screening Report for Aquatic-based Commercial Guiding Activities in the Mountain National Parks of Canada

Banff National Park of Canada, Jasper National Park of Canada, Kootenay National Park of Canada, Yoho National Park of Canada, and Waterton Lakes National Park of Canada

Parks Canada Agency
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Amendments based on original public consultation (January 2005)

The following sections of the Model Class Screening Report for Aquatic-based Commercial Guiding Activities in the Mountain National Parks of Canada have been amended in response to concerns raised through the Canadian Environmental Assessment Agency public review process, and through consultation with Parks Canada staff and other federal agencies. Users of this document should ensure that all amendments are applied appropriately when referring to, or applying the model class screening process.

Section 2.2.1: This section is modified by making reference to the appropriate parks management plans as follows: "*Guided fishing licences are currently issued only for Banff and Jasper. In accordance with the Banff National Park Management Plan guided fishing is restricted to Lake Minnewanka; no new guided fishing licences will be issued. In Jasper three companies provide guided fishing services, which are permitted to operate anywhere. However current use is focused on Maligne Lake and river, and Medicine, Pyramid, Talbot and Moab Lakes. In accordance with the Jasper National Park Management Plan, no new licences and no increase in current fishing levels will be permitted. No guided fishing licences are currently issued for Waterton, Yoho or Kootenay National Parks and in accordance with the various management plans no increase in guided fishing levels will be permitted."*

Section 2.3.1: This section is modified by adding the following after the last sentence: "*This restriction is enforced by inclusion of the recommendations of the strategy within the revised Banff National Park Management Plan*".

Section 2.4.1: The first paragraph is modified by the following sentence inserted at the end of the paragraph to read: "*In accordance with the Kootenay National Park Management Plan rafting in the park will be restricted to the Kootenay River*". The second paragraph is modified by the following sentence inserted at the end of the paragraph: "*Commercial use of rivers in Yoho will be maintained at current levels unless specifically addressed in future management plan updates or independently assessed as part of an overall river use management strategy "*. The third paragraph is modified by the following sentence inserted at the end of the paragraph: "*In accordance with the Banff National Park Management Plan commercial use of lakes and rivers in the park will be maintained at current levels"*. Put-in locations to be included in the paragraph on Jasper include "*12 kilometers below Athabasca Falls on the east side of Highway 93 and, the Mile 5 Bridge approximately 9 km south of Jasper"*. Take-out locations include "*12 kilometres below Athabasca Falls on the east side of Highway 93*". This paragraph is also modified by by the following sentence inserted at the end of the paragraph: "In accordance with the Jasper National Park Management Plan commercial river use will be

managed through the implementation of the Jasper National Park Guidelines for River Use Management and rafting is not permitted on the Maligne River".

Section 2.5.1: This section is modified by replacing the first sentence with the following: "*Two licences exist for guided kayaking and canoeing in Jasper National Park. These licences are managed in accordance with the Jasper National Park Guidelines for River Use Management*".

Section 3.1 *Harlequin Ducks:* The first sentence is reworded to state "*Harlequin ducks are noted for having low reproduction potential and specific habitat requirements.*" Also under "Westslope Cutthroat", "*Both westslope cutthroat trout and bull trout populations have declined in their historical ranges through a combination of overfishing, habitat fragmentation, dam construction, gravel extraction, and linear corridor construction*".

Section 4.2.4.1 Lake Minnewanka: This section is amended by adding the following after paragraph one. "*The fish species typically targeted by anglers on Lake Minnewanka are lake trout. This species has been the focus of regulatory changes invoked over time in an effort to protect fish populations. Despite a variety of other long-term stressors including dam construction, water level fluctuations and the introduction of non-native species, lake trout populations have endured and maintained healthy stocks over time. However recent evaluations of fish stocks in Lake Minnewanka suggest the lake trout population remains under some stress (Pers Comm. Charlie Pacas). Accordingly, continued monitoring of lake trout populations and the entire fish species assemblage is considered critical to the continued successful management of the fish population.*"

Section 5.1.5.2: "Creeks and rivers may be affected by fly-fishing because people may stand in the water to fish" replaced by "*Fish habitat in lakes, creeks and rivers may be disturbed by anglers as they stand and move about in the water while fishing*".

Section 5.1.5.4: With respect to mitigation for scuba diving in winter, the following actions are to be added to mitigation measures to be applied in winter. "*Clean up materials are to kept on site in the event of an accidental spill of hazardous materials such as fuel. Spills are to be cleaned up immediately including the removal and proper disposal of any contaminated snow from the site. Parks Canada authorities are to be notified immediately in the event of an accidental spill.*"

Section 5.2.2: This section is amended by adding the following: "*As mentioned previously in this document there are indications that the lake trout population in Lake Minnewanka is under stress from a variety of factors. In response to concerns with respect to the overall sustainability of the fishery on Lake Minnewanka a number of actions and issues were identified and appended to business licences issued to commercial fish guides for 2004 including limits to the number of boats per operator. Protocols and analysis techniques for the 2005 creel census will be confirmed by the Aquatics Ecosystem Advisory Committee and analysis of 2005 data and 2000 data will be*

used as necessary to determine the appropriate level and frequency of public and commercially guided fishing on Lake Minnewanka."

Section 5.3 Aquatic Resources: This section is amended by adding the following after paragraph one: "*As mentioned in Section 5.2.2 the sustainability of the lake trout population on Lake Minnewanka has been under evaluation for a number of years. The results of on-going monitoring efforts will be reflected as necessary in changes to fishing practices for both private and commercial anglers in order to sustain the lake trout population. As a result, the activities of commercial anglers are not expected to threaten the continued viability of the Lake Minnewanka fishery*."

Section 5.4.1.4: The third paragraph is modified as follows:
The first sentence is moved to the end of the previous paragraph;
The sentence "*The remaining fish species …"* is removed;
The last sentence "*Further evaluation of … "* is removed and replaced with "*As a result, the evaluation of cumulative effects related to fishing is focused on native species known or suspected to be under stress."*

This section is further amended by adding :"*Lake trout populations on Lake Minnewanka*" to the bulleted list of VECs. The following mitigation is added following the list of VECs: "*On-going reporting of the commercial lake trout and other fish catch on Lake Minnewanka makes an important contribution to understanding of the overall sustainability of the Lake Minnewanka fishery. In order to ascertain the contribution and potential impacts of commercial guiding activities to cumulative effects, reporting of fishing activity on Lake Minnewanka should include:*

- *Number of trips/day*
- *Trip Duration*
- *Number of fishing clients*
- *Species of catch*
- *Fish returned*
- *Fish removed.*

This section will conclude with the following statement: "*As outlined in Section 2 of this report, park management plans already provide significant direction on the management of cumulative effects by restricting the expansion of most activities affecting aquatic resources. These include maintaining commercial use of rivers and lakes at current levels and restrictions on the issuance of new licences*".

Section 5.4.2: The following is inserted as the first paragraph in this section: "*Although commercially guided activities make up a low proportion of overall park visitor use they may represent a relatively large proportion of visitor use related to certain areas or certain activities. For instance while guided angling comprises only 22% of total angling activity on Lake Minnewanka, guided anglers are nearly three times more successful at catching fish than recreational anglers (Pers Comm. Charlie Pacas). Staging areas for rafting and scuba trips and dive sites may also be disproportionally utilized by commercial groups. Despite this it is expected that activity-specific and site-specific*

mitigations required as a stipulation of the business licence will be sufficient to manage the cumulative effects related to a particular commercial operation at a particular site.

The current first paragraph is modified as follows: "*While acknowledging the potential contribution of commercial guiding activities to the stressors affecting natural and cultural park resources, cumulative effects can be effectively managed only in consideration of the influence of other projects and activities including park management activities, transportation and utility corridors, park communities, independent visitor use and activities outside park boundaries. Accordingly, the contribution of commercial guiding activities to cumulative effects are most effectively identified and managed at a landscape scale in concert with other projects and activities. Parks Canada considers the park management planning process as the appropriate tool to facilitate cumulative effects assessment across the mountain parks. This management approach is illustrated in the content of existing park management plans which outline restrictions on increases in commercial river and lake use and limit the potential for issuance of new licences. ".* The rest of the paragraph remains the same.

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Acronyms

BMP	Best Management Practices
CEA	Cumulative Effects Assessment
CEAA	Canadian Environmental Assessment Agency
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
CSPR	Class Screening Project Report
EA	Environmental Assessment
ESA	Ecologically Sensitive Area
ESS	Ecologically Sensitive Site
FA	Federal Authority
FEAI	Federal Environmental Assessment Index
LMU	Land Management Units
MCSR	Model Class Screening Report
RA	Responsible Authority as defined under the *Canadian Environmental Assessment Act*
SARA	The *Species at Risk Act*
The Act	The *Canadian Environmental Assessment Act*
WCSC	Western Canada Service Centre

1. Introduction

Commercial guiding within the national parks of the Canadian Rocky Mountains has a long history dating back to the early days following the completion of the Canadian Pacific Railway. Groups such as the Swiss Guides, working in collaboration with the Canadian Pacific Hotels, the Alpine Club of Canada, and the Trail Riders of the Canadian Rockies have been conducting guided mountaineering and horse packing tours in the mountains since the beginning of the 20th century. Guiding activities in the mountain parks have expanded over time beyond the scope of mountaineering and horsepacking to include fishing, rafting, scuba and canoeing.

Commercial guiding services provide a number of benefits to park visitors, park staff and the park environment. The services of a professional guide may provide the only means for many unskilled or inexperienced park visitors to safely and comfortably visit and appreciate more remote areas of the parks. Guides often take the opportunity to inform clients about the region's physical and cultural characteristics, as well as educate them on issues related to ecological integrity, good environmental practices, and park management. Many guiding operations have a strong focus on outdoor skill development and safety providing experiences for visitors that they would not otherwise be able to enjoy. Finally, the presence of skilled professional guides provides an additional measure of safety for backcountry visitors, even for independent users. Guides have taken part in rescues managed by the warden service, have performed rescues independent from parks staff (usually for non-guided parties), and have voluntarily taken on the responsibility to guide independent visitors through difficult weather and water conditions.

Uncontrolled commercial guiding activities may also have negative impacts on the park environment. The activities of commercial guiding operations may increase user numbers in sensitive areas of the parks that would otherwise see lower use. Some guiding operations are associated with large group sizes and seasonal or repetitive use patterns that may result in increased disturbances to vegetation, wildlife and visitor experience.

As a prerequisite to obtaining a business licence, commercial guiding operators within a national park are required to conduct an environmental assessment pursuant to the *Canadian Environmental Assessment Act* (the *Act*) of their current and projected future guiding activities. The Class Screening process under the *Act* provides an appropriate, efficient, fair, flexible and consistent approach to the environmental assessment of commercial guiding activities. A Class Screening approach can also be readily adapted over time to accommodate both park and business operational changes, and new information related to changing patterns of visitor use or visitor use issues. This Model Class Screening Report will address aquatic-based commercial guiding activities for five of the Rocky Mountain national parks in Alberta and British Columbia which can cover over 80 business licence application.

1.1. Management of National Parks

National parks are "dedicated to the people of Canada for their benefit, education and enjoyment ... and shall be maintained and made use of so as to leave them unimpaired for the enjoyment of future generations" *(Canada National Parks Act* 1998). The approach taken for the environmental assessment of commercial guiding activities recognizes the benchmarks of ecological and commemorative integrity that are mandated to the Parks Canada Agency for the management of national parks and historic sites. The approach also recognizes that outdoor recreation in national parks is considered to be an appropriate use in accordance with Parks Canada policy and that the quality of the visitor experience is an important consideration in management decisions.

1.1.1. Managing for Ecological Integrity

The *Canada National Parks Act* Section 8(2) identifies the importance of protecting park resources in relation to visitor use by stating "the maintenance or restoration of ecological integrity, through the protection of natural resources and natural processes, shall be the first priority of the Minister when considering all aspects of the management of parks."

The *Canada National Parks Act* Section 2(1) states "ecological integrity means, with respect to a park, a condition that is determined to be characteristic of its natural region and likely to persist, including abiotic components and the composition and abundance of native species and biological communities, rates of change and supporting processes."

In operational terms ecosystems can be characterized in terms of composition, structure and process. An ecosystem can be considered to have integrity when native components (plants, animals and other organisms), physical structure (such as habitat connectivity or vegetation patterns) and processes (such as interspecies competition and predation) remain intact and function unimpaired by human activities. Conversely a loss in ecological integrity can be characterized by changes to physical structure, or interference with ecosystem processes as a result of human activity, that result in a loss of native species biodiversity.

Indicators of, and stressors affecting, ecological integrity as identified in park management plans were reviewed to identify the environmental components most likely to be affected by commercial guiding activities.

1.1.2. Managing for Cultural Resources

The protection of cultural resources is a priority for Parks Canada, with the highest obligation being to protect and present those resources of national historic significance in order to retain their historic value and extend their physical life (Canadian Heritage Parks Canada 1994). The protection of cultural resources also involves the consideration of the cumulative impacts of any proposed actions concerning the historic character of cultural resources, the goal being to preserve cultural integrity.

A cultural resource is defined as "a human work, or a place that gives evidence of human activity or has spiritual or cultural meaning, and that has been determined to be of historic value." (Canadian Heritage Parks Canada 1994). Within national parks, cultural resources are inventoried and assigned a value based on the particular qualities and

features that make up their historic character. Resources are evaluated for their historical associations, their aesthetic and functional qualities and their relationships to social and physical environments (Canadian Heritage Parks Canada 1994).

1.1.3. Managing for Visitor Experience

The *Canada National Parks Act* states that "The national parks of Canada are hereby dedicated to the people of Canada for their benefit, education and enjoyment...". To fulfill Parks Canada's mandate of facilitating the education and enjoyment of national parks by the public, a variety of outdoor recreation opportunities are permitted, consistent with direction provided by Parks Canada Guiding Principles and Operational Policies (Canadian Heritage Parks Canada 1994). Outdoor activities that promote the appreciation of a park's purpose and objectives, and respect the integrity of the ecosystem, are intended to serve visitors of diverse interests, ages, physical capabilities and skills. The private sector and non-governmental organizations are encouraged under park policy to provide skills development programs that will increase visitor understanding, appreciation and enjoyment of the national parks. Individual park management plans specify the types and ranges of both new and existing appropriate outdoor recreation activities and their supporting facilities. Parks Canada, working in cooperation with others, is committed to offering high-quality visitor services by ensuring that park resources do not deteriorate and that quality visitor experiences are not diminished.

Commercial guiding is a traditional park activity dating back to the early 1900s. The contribution of the private sector in the delivery of "skills development programs that will increase visitor understanding, appreciation and enjoyment of the national parks" is recognized under Section 4 of *Parks Canada Guiding Principles and Operational Policies.* Aquatic-based commercial guiding activities provide a number of benefits to park visitors, park staff and park residents including:

- Safe access to the backcountry for unskilled or inexperienced visitors
- Visitor education on the physical, biological, and cultural resources and ecological integrity of the national parks
- Outdoor skills development and safety training
- Unique experiences, not otherwise possible for visitors
- Skilled resource pool for dealing with emergencies and rescues
- Job opportunities and economic benefits.

1.1.4. Park Management Plans

In order to fulfill the mandates for ecological integrity, cultural resources and visitor experience, management plans are developed for each park and reviewed every five years. These documents are tabled in parliament and contain "a long-term ecological vision for the park, a set of ecological integrity objectives and indicators and provisions for resource protection and restoration, zoning, visitor use, public awareness and performance evaluation" *Canada National Parks Act* Section 11(1). Management plans provide the direction for all activities within the park. Based on the management plan, human use strategies and other plans can be developed to further direct activities within the parks.

The park management planning process includes public input and review, strategic environmental assessment and Ministerial approval prior to being tabled in parliament. As a result of the intensive management planning and review process, issues related to the cumulative impacts of overall management of human use are addressed more appropriately within the scope of the management planning process including:

- Appropriate use of park lands and facilities
- Management and maintenance of park facilities
- Management of overall visitor use levels
- Commercial business licence allocations or restrictions
- Area closures, visitor use restrictions or zoning.

1.2. Applicability of the Class Screening Process to Aquatic-Based Commercial Guiding Activities

The *Canadian Environmental Assessment Act* (the *Act*) was brought into force in 1995 to establish a Canadian environmental assessment process for projects in which the federal government has decision-making authority. The purpose of the *Act* is to consider the effects of projects on the environment before irrevocable decisions are made.

The *Act* applies to projects where a Federal Authority performs one or more of the following duties, powers or functions in relation to that project:

- proposes the project;
- grants money or other financial assistance to a project;
- grants an interest in land for a project; or
- exercises a regulatory duty in relation to a project, such as issuing a permit or licence that is included in the *Law List Regulations* as prescribed under the *Act*.

The majority of projects subject to the *Act* are assessed through a screening level assessment. Screenings are self-directed assessments, where the FA (as proponent, land administrator, funder or regulator), takes responsibility for the environmental assessment and acts as a *Responsible Authority* (RA) under the *Act*. Section 19 of the *Act* outlines a "class screening" process for assessing groups of projects that: deal with similar issues, are relatively small in scale and size, and have predictable and mitigable environmental effects.

A Model Class Screening is a two-part process involving a model class screening report and a class screening project report form:

Model Class Screening Report (MCSR) – The MCSR sets out an environmental assessment process for projects within the class. The MCSR typically includes the rationale for the projects included in the class, the rationale for the scope of those projects and the scope of the assessment, typical environmental effects, mitigation measures, a determination of significance of any effects following mitigation, and follow-up and monitoring requirements. A MCSR also describes the process and procedures under which future projects will be assessed, including responsibilities, documentation requirements, amendment mechanisms and public consultation requirements.

Class Screening Project Report Form (CSPR Form) - The CSPR Form is the project specific screening report that must be completed for each project assessed under the MCSR. These forms are prepared in accordance with the procedures outlined in the MCSR and contain additional site-specific information to supplement information contained in the MCSR. The CSPR, together with the MCSR provide the basis for meeting the requirements of the *Act*.

The class screening process is intended to provide a greater measure of predictability, consistency, and timeliness to the environmental assessment process. Benefits to the process include:

- Improvements in the effectiveness of the EA process
- Savings in time and resources
- Streamlining project approvals
- Demonstrating accountability (Canadian Environmental Assessment Agency 2000).

The commercial guiding activities addressed through this class screening have many common characteristics. The subject group of activities are aquatic-based, make use of common water bodies, staging sites and backcountry areas, overlap in terms of seasonal use, and have similar environmental effects. Aquatic-based commercial guiding is well suited to the application of the class screening process because of the common characteristics, overlapping geographic and temporal scope, and the generally predictable and mitigable environmental effects.

1.3. Key Issues and Challenges

A number of key issues and challenges exist related to the environmental assessment of commercial guiding activities.

- Many impacts of guided activities are typically mitigated through the application of standardized best management practices. However site-specific environmental concerns exist that may not be mitigated through standardized best management practices. A key challenge of the assessment is to apply an appropriate level of detail to the evaluation and mitigation of site-specific environmental issues.
- Guided recreational use is only one of many activities taking place within the mountain parks. A key challenge is specifying and justifying realistic, effective and fair mitigation measures given the relative contribution of guided activities to cumulative environmental effects in a given area.
- There is a paucity of data and inconsistent quality of information on visitor use in and between different parks. The lack of consistent information makes it difficult to accurately identify areas of concern and evaluate the relative contribution of commercial guiding activities to cumulative environmental effects in a given area, and to do so consistently from park to park.
- There is a lack of information on the effects of human disturbance/activities on sensitive wildlife and aquatic species in the parks. This is particularly true for fishing.
- A key environmental assessment challenge is to link mitigation and management of commercial guiding to the broader visitor use management picture including guidelines and thresholds established by Parks Canada.
- Patterns of visitor use, the type, number, size and nature of commercial operations, and priority environmental issues may be considered to be dynamic over time. A key

environmental assessment challenge is the development of an adaptive management process that can identify, evaluate and address changes to commercial operations and incorporate new information over a regular period of time.

The class screening process for aquatic-based commercial guiding activities has been developed to address the requirements of the *Canadian Environmental Assessment Act* and the key issues and challenges presented above. To a large degree, key challenges are related to current limitations in the available data and information base. Expanding the available information base will require the development of monitoring and information gathering programs targeted at filling designated information gaps. However in the interim, the available data and the expert knowledge of Parks Canada staff provide adequate information for the conclusions outlined in the MCSR. In addition, Parks Canada will be able to respond to new information through the CSPR process and link to the management planning processes outlined in the MCSR.

The class screening process:

- Provides a consistent, scientific approach across the mountain parks to the identification, evaluation and mitigation of environmental effects related to commercial guiding activities
- Addresses site-specific and cumulative environmental effects and mitigation
- Provides an assessment tool that is consistent and fair to operators and recognizes the responsibility shared by Parks Canada to mitigate the cumulative environmental effects of all visitor impacts
- Provides an adaptive management process by which the environmental assessment of commercial guiding activities can be evaluated and improved over time
- Is consistent with the *Act* and with management direction provided by the *Canada National Parks Act*, parks policy and park management plans.

1.4. Development of the Class Screening

Park specific information was researched and compiled by field unit environmental assessment staff. The Western Canada Service Centre offices in Calgary and Winnipeg coordinated the preparation of the MCSR document. Park staff, commercial operators, and environmental groups were provided with the opportunity to review and comment on the draft MCSR prior to submission to the CEAA. The following steps were used to develop the MCSR.

Step 1: Definition of the project class

The first step in the development of the MCSR was to review the business licences issued in the mountain parks to determine if they are subject to CEAA and may be amenable to and benefit from a class screening assessment approach. From this review the licences that would be included in this MCSR were identified and grouped into sub-classes.

Step 2: Description of the environmental effects

The second step in the process was to identify and describe the potential environmental effects of the projects that are covered by the MCSR. The environmental setting in each park was described, including sensitive environmental and cultural sites. National park

zoning and land management units, Aboriginal land use and socio-economic context were also discussed. The activities for each sub-class were described in detail. Potential activity-specific and site-specific environmental effects were described and analyzed.

Step 3: Identification and Development of Best Practices

Best practices were developed based on literature and consultation with park staff. This process included the following:

- Identifying the potential environmental effects of the project and associated activities;
- Identifying appropriate best practice to mitigate the environmental effects that are considered likely to occur;
- Assessing potential effects of accidents and malfunctions;
- Considering the potential for cumulative environmental effects; and,
- Identifying potential residual adverse environmental effects and their likely significance.

Step 4: Development of the format and requirements for the Class Screening Project Report (CSPR form)

The fourth step in developing the MCSR was to identify and outline the process and procedures through which a screening of a project subject to the class would be completed. This involved examining the results of steps 1, 2 and 3 and incorporating them in the screening process. Once the screening process was determined, the format and requirements for the CSPR form were identified.

The CSPR Form allows for the collection of site and project-specific data to supplement the information and procedures contained in the MCSR.

Step 5 - Preparation of the Model Class Screening Report (MCSR)

In this step, the results of all of the previous steps were brought together to form the MCSR. The MCSR documents all aspects of the development and application of the class screening process including project and environment descriptions; the identification of environmental effects and mitigations; the procedure for applying the CSPR to project activities; follow-up and monitoring requirements, and; procedures for amending the class screening.

Step 6 - Submission to the Canadian Environmental Assessment Agency for review and declaration

The MCSR was submitted to the CEAA for declaration in accordance with the requirements of the *Act*.

Following the submission of the MCSR to the Canadian Environmental Assessment Agency, it underwent a public review period prior to declaration. The Agency published a notice in the local media inviting comments from the public on the appropriateness of using the proposed MCSR. Direct notices were also sent out to interested organizations and individuals. As with the consultation on the development of the MCSR, comments received were recorded, considered and incorporated into the Model Class Screening Report as appropriate.

The MCSR was declared once the CEAA determined that the issues raised in the public comments where adequately addressed, and that the MCSR met the requirements of the *Act*. An official notification was then published in the *Canada Gazette*. Notification was also provided to those organizations and individuals who provided comments on the proposed model class screening report.

1.5. Application of the MCSR to the Business License Process

1.5.1. Integration of Environmental Assessment and Business Licence Administrative Process

The business licencing process and the environmental assessment process are individual legal requirements mandated by separate legislative requirements under the *Canada National Parks Act* and the *Canadian Environmental Assessment Act.* However, the requirements for issuing a business licence encompass the requirements for environmental assessment under the *Act.* In order to ensure operational efficiency and consistency, and to facilitate cumulative effects assessment, the environmental assessment process has been integrated into the overall business licencing process.

The National Parks business licence administrative process will continue to operate, as it has in the past, on an annual basis. The issuance of licences, collection of licence fees, and reporting requirements will be completed annually. Application for new, expanded or altered commercial guiding operations will also be considered on an annual basis. The licencing process can be divided into three stages as illustrated in Figure 1:

- Licence Pre-screening
- Licence Application and Team Review
- Monitoring and Annual Reporting.

Environmental assessment requirements are incorporated within the licence application and team review stage. A brief description of the stages is outlined below.

Licence Pre-screening

At this stage, applications for new, expanded or altered licences for commercial guiding operations are reviewed by Parks Canada against existing appropriate use policy, and management plan direction. Applications that are not consistent with policy and management plan direction may be rejected or returned to the applicant for modification. Applications that are considered to be compatible with policy and management plan direction may proceed to the licence application stage.

Licence Application and Review

There are two streams to the licence application stage; the licence application itself, and; the environmental assessment process. The licence application deals with the nature and administration of the business itself including collection of information on contacts, management, office location, business size, nature of the business etc. Stipulations on group size, guide/client ratios, public safety, and certification requirements are applied based on approved and standardized business licencing policies and procedures. The environmental assessment process may take the form of either a class screening as outlined in this MCSR, or a regular screening under the Act. Both the licence application

and the environmental assessment must be completed and reviewed by business administration, public safety and environmental assessment staff within Parks Canada prior to proceeding to the next stage. At any point in the review it may be necessary for Parks Canada to request additional information from the applicant in order to properly assess the application.

Licence applications are received and reviewed by a Parks Canada team in the spring of every year.. The team review focuses on the identification of additional site-specific issues and mitigation, on the identification of cumulative effects issues and mitigation, and on potential impacts to park facilities, budgets, and public safety. Mitigations required by the environmental assessment are attached as a condition of the business licence. Failure to reasonably comply with the mitigation could result in the cancellation of the business licence. The review team may add additional stipulations and mitigations to the business licence for an individual operation to deal with site-specific or cumulative effects, or other operational concerns as required. Finally the review team makes a recommendation to the Park Superintendent with respect to licence approvals.

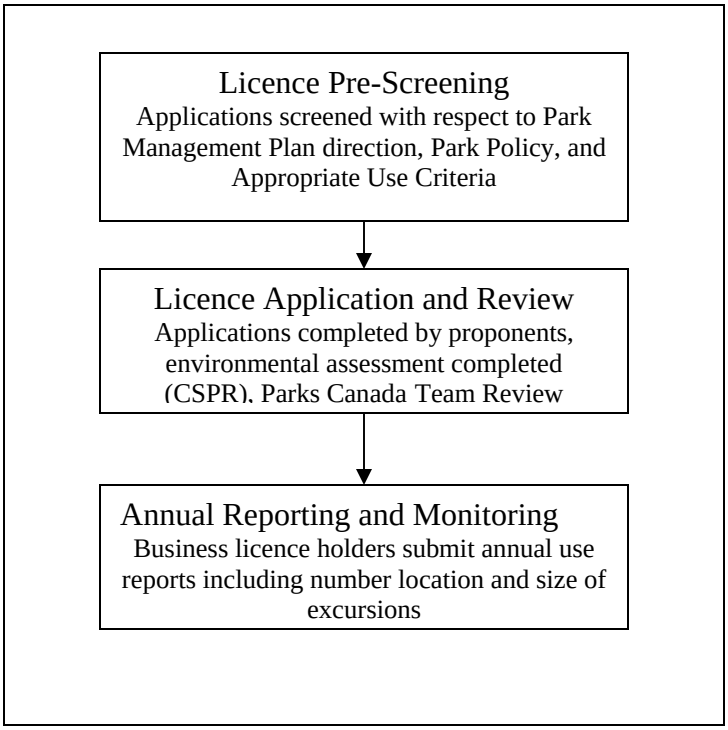
Annual Reporting and Monitoring

Business licence holders are required to submit annual reports on commercial activities including the number, location, and size of excursions. Reports are submitted to and held in an electronic database that can be used to confirm and evaluate patterns of commercial use over time. Annual reports are used as baseline information for the Parks Canada Team Review and for the identification of cumulative effects issues and mitigation.

1.5.2. Application of Section 13.1 Inclusion List Regulations

In accordance with section 13.1 of the Inclusion List Regulation, completed and approved environmental assessments conducted through the Class Screening process will be considered valid unless the scope and nature of the business changes. Commercial guiding operations that do not plan to significantly alter or expand commercial operations would not require a new or updated environmental assessment until the scheduled five year class assessment review. Every five years following the completion of the park management plan review, all commercial guiding operations would be reevaluated and notified with respect to the need for a new or updated environmental assessment.

Figure 1: Business Licence Process Overview



1.5.3. Class Screening Project Report

The Class Screening Project Report (CSPR) functions as the environmental assessment documentation for business licence applications that are assessed using the Class Screening process. Sections of the CSPR that document the proposed business activities are completed by the applicant. Sections of the CSPR that evaluate the environmental impacts of the proposed business activities are completed by Parks Canada.

The class screening project report is divided into six sections:

- Section 1 provides proponent identification and references the business licence application number.
- Section 2 provides information to ensure the class screening applies to the proposed activity.
- Section 3 describes the activities being proposed and identifies the standard mitigation requirements for activity-specific and site-specific environmental impacts.
- Section 4 identifies any additional environmental effects and mitigation required with respect to the proposed activity.
- Section 5 identifies potential cumulative effects associated with the proposed project and specifies cumulative effects mitigation as required.
- Section 6 records the decision statement and signature of the Responsible Authority.

1.5.4. Roles and Responsibilities

Parks Canada is the sole Responsible Authority under the *Act* as well as the sole business licensing authority in the National Parks. Parks Canada will be responsible for reviewing

completed CSPRs submitted as part of a business licence application, for making a determination of significance of environmental effects, and for incorporating the appropriate mitigation measures as outlined in the MCSR as conditions of a business licence approval.

Business licence applicants will be responsible for submitting completed CSPRs along with their business licence application. Licence holders will be responsible for notifying Parks Canada in the event that their business operations are expanded beyond the scope of activities approved in the business licence and assessed under the Class Screening process. Licence holders who wish to expand their operations may be required to reapply for a new licence and complete a new CSPR at the discretion of Parks Canada.

1.6. Projects Subject to the Model Class Screening

1.6.1. Projects subject to the *Act*

All commercial guiding operations in national parks (other than in the town of Banff) require a business licence in accordance with direction provided by Section 3 of the *National Parks Businesses Regulations* 1998. Section 13.1 of the *Inclusion List Regulations* under the *Act* defines recreational activities that take place outdoors in a national park, outside of a town or visitor centre, as projects under the *Act.* Because a permit is required pursuant to subsection 5.1 of the *National Parks Businesses Regulations* 1998 (included in section 24.1 (Schedule I, Part II) of the *Law List Regulations* under the *Act*), the issuance of this authorization triggers the *Act* and an environmental assessment is required. Subsection 5.1 of the *National Parks Businesses Regulations 1998* requires that the superintendent consider the effects of a business on:

- the natural and cultural resources of the park;
- the safety, health and enjoyment of persons visiting or residing in the park;
- the safety and health of persons availing themselves of the goods or services offered by the business; and,
- the preservation, control and management of the park.

The net result of applying the above regulations is that all commercial guiding operations require a business licence and prior to the issuance of a business licence the proposed operation must undergo an environmental assessment under the *Act* as a means of evaluating the impacts of the business on the park.

1.6.2. Projects excluded from the *Act*

The *Exclusion List Regulations* under the *Act* make no provision for excluding any type of commercial guiding activity from assessment. Proposed commercial guiding activities that have been previously assessed either under the *Act* or under the Federal Environmental Assessment and Review Process Guidelines Order may be exempted from further environmental assessment in accordance with provisions in Section 13.1 of the *Inclusion List Regulations.*

1.6.3. Projects subject to the MCSR

Commercial guiding activities included within the scope of the model class screening report include all aquatic-based guiding activities taking place in areas of Banff National Park of Canada (hereafter Banff), Jasper National Park of Canada (hereafter Jasper), Kootenay National Park of Canada (hereafter Kootenay), Yoho National Park of Canada (hereafter Yoho) and Waterton Lakes National Park of Canada (hereafter Waterton) (Figure 2). Glacier National Park of Canada and Mount Revelstoke National Park of Canada will not be included because they do not have any aquatic activities. Specific activity subclasses include:

- Guided fishing
- Scuba diving
- Rafting (including guided voyageur canoes)
- Canoeing, whitewater kayaking and kayak touring as well as potential overnight use

The list of specific activities covers most aquatic-based commercial guiding services known to be currently operating in the mountain parks. The list does not include all recreational activities that may occur in national parks, only those that are the focus of current guiding services.

1.6.4. Projects not suited to the MCSR

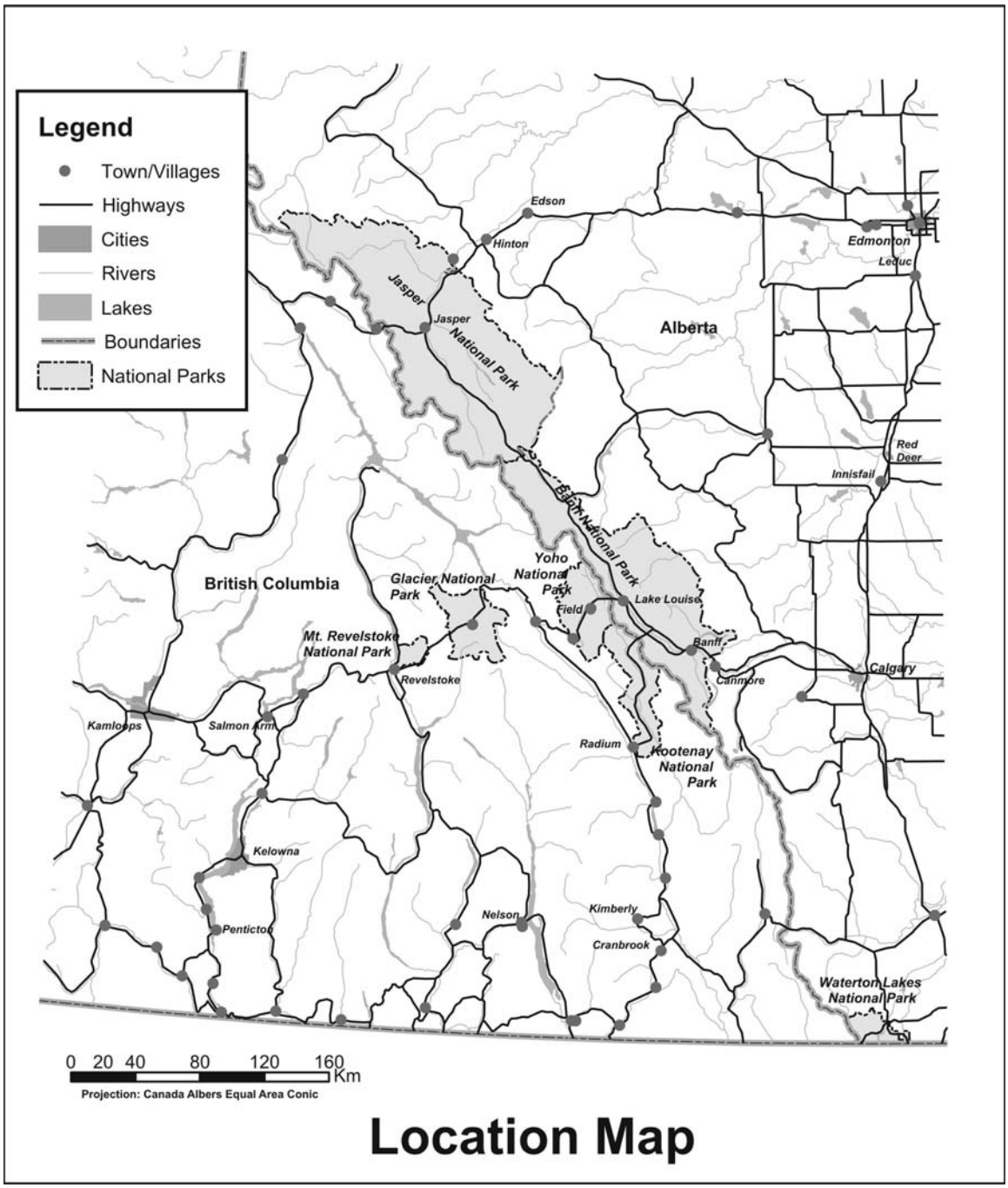
Limitations to the scope of the project were identified to address pragmatic environmental assessment purposes. Limiting the scope of the project to aquatic-based commercial guiding activities defines an environmental assessment that was felt to be manageable in terms of time and scale, addresses similar activities and similar environments, and addresses activities with clearly overlapping and cumulative environmental impacts.

Some commercial guiding activities conducted in the Parks do not meet the model class screening requirements of being aquatic-based guiding activities. Other activities do not meet the requirements of being routine, repetitive activities with known, easily mitigable environmental effects. Activities that fall outside these categories are not included within the scope of the MCSR. Activities that require a lease or licence of occupation are also not included within the scope of the MCSR.

Projects that are not suitable for application of the model class screening also include those that may adversely affect species at risk, either directly or indirectly (for example by adversely affecting their habitat). For the purposes of this document, species at risk include:

- species identified on the List of Wildlife Species at Risk set out in Schedule 1 of the *Species at Risk Act (SARA*), and including the critical habitat or the residences of individuals of that species, as those terms are defined in subsection 2(1) of the *Species at Risk Act.*
- species that have been recognized as "at risk" by COSEWIC or by provincial or territorial authorities.

Figure 2: Parks included in this class environmental assessment are Jasper National Park, Banff National Park, Yoho National Park, Kootenay National Park and Waterton Lakes National Park.



Specific projects that are not included within the scope of the MCSR include:

- Facility-based recreational activities such as boat rental operations, marinas, motorized sight-seeing/interpretative boat tours, backcountry hut, lodge and camp operations;
- One-time, occasional or annual special events such as military exercises, sporting events, or festivals;
- Land-based commercial guiding activities.

In addition to the above list, new types of guided activities, and those not listed in Section 1.6.3, are not included within the scope of the MCSR and must undergo an individual environmental screening.

2. Descriptions of Activities

Section 2.1 begins with a discussion of unique characteristics of commercial guiding activities that may distinguish the general group of activities and associated impacts from those of independent park users. Each activity covered under the model is then described in detail.

2.1. Unique Characteristics of Commercial Guiding Activities

Several characteristics make commercial guiding unique. First the group size of the commercial groups is generally larger than non-commercial groups. Rafting groups can involve from 6 to 20 people and "voyageur" canoeing groups can be up to 12 people. Scuba diving groups also tend to be larger than non-commercial groups. Guided fishing groups, however, are usually smaller than other guided groups, from 1 to 4 clients. These large groups are particularly noticeable at put-in, take-out or lunch stops. They require support vehicles such as buses, vans, and trucks for the transportation of boats and people to and from these areas. Scuba diving groups also have air compressors on site to refill tanks.

Fishing with guides can result in more fish caught and in more places accessed to catch fish.

Guides often take the opportunity to inform clients about the region's physical and cultural characteristics, as well as educate them on issues related to ecological integrity and park management. Many guiding operations have a strong focus on outdoor skill development and safety leading to an increase in the number of experienced and skilled backcountry users, which in turn, results in fewer incidents that may require park rescue services. The presence of skilled, professional guides provides an additional measure of safety and surveillance for backcountry visitors, even for independent users. Guides have taken part in rescues managed by the warden service, have performed rescues independent from parks staff (usually for non-guided parties), and have voluntarily taken on the responsibility to guide independent visitors through difficult weather and water conditions. The services of a professional guide may provide the only means for many unskilled or inexperienced park visitors to safely and comfortably visit and appreciate more remote areas of the parks. Many people would not take part in certain activities in the park without the availability of a guide.

2.2. Guided Fishing

Guided fishing includes both fly-fishing and spin-fishing on lakes, rivers and streams. Spin-fishing takes place from motorized boats (gas and electric) as well as from shore. Fly-fishing takes place both from the shore and from standing in streams and rivers. Fishing is required, by Park regulations, to take place between one hour before sunrise and two hours after sunset. Guided fishing occurs on a seasonal basis as allowed by fishing regulations, generally between May and October when the ice is off the lakes.

Some trips may involve staying overnight in campgrounds. Some boat rentals for the purpose of fishing are also included.

Accessory activities include:

- use of park facilities including parking areas, boat launches, privies, garbage containers, and public telephones
- obtaining access to fishing locations by using existing hiking trails and camping areas and by going off-trail
- use of motor boats on lakes and large rivers
- support facilities (docks, fish cleaning tables, boat storage areas)

2.2.1. Current Use

Guided fishing currently only occurs in Jasper and Banff. In Banff, guided fishing is restricted to Lake Minnewanka and no new licences will be issued. In Jasper, 3 companies provide guided fishing services which are permitted anywhere, but the areas with the most use are Maligne Lake and river, Medicine Lake, Pyramid Lake, Talbot Lake, and Moab Lake. No new guiding licenses will be issued for fishing and the number of guides is limited. In Waterton Lakes, Yoho and Kootenay no business licences for fishing will be issued.

2.3. Scuba Diving

Scuba diving activities use day use areas and access roads provided by and maintained by Parks Canada. Activities take place on a wide variety of terrestrial ecological types and fresh water environments. Lake and river access points have been in place for years and are intended to be hardened to sustain visitor use through design and maintenance activities. Conditions vary considerably with ecological setting, use type and levels, maintenance schedules, priorities and budget constraints.

The specific activities covered under this class screening include:

1) Scuba instruction
2) Certification dives (open water, night diving)
3) Scuba tours, wreck diving
4) Ice scuba diving

Accessory activities include:

- use of park facilities at staging areas including parking areas, privies, changing areas, garbage containers, and public telephones.
- access for divers to lakes
- staging areas for commercial vehicle(s) for equipment storage (dry suits, oxygen tanks, air compressor), designated location for refilling oxygen bottles and use of compressor
- use of marker buoys on the water surface to indicate the presence of divers.
- cutting ice holes
- setting up temporary shelters and operation of heated shacks over ice holes

Timing of commercial scuba diving activities is seasonal and generally occurs during the ice-free period between May and October. Ice scuba diving occurs in February and March. Duration of dives averages 45 minutes but the courses usually run for the full weekend.

2.3.1. Current Use

Currently commercial guided scuba diving occurs only in Banff, Jasper and Waterton Lakes. Scuba diving in Waterton Lakes occurs in Upper Waterton Lake at Emerald Bay and Cameron Bay, Driftwood Beach in Middle Waterton Lake and in Cameron Lake. Scuba diving in Banff is only allowed in Lake Minnewanka and Two Jack Lake. In Jasper, scuba diving occurs in Lake Edith, Lake Annette, Lac Beauvert, and Lake Patricia. Scuba diving in all locations occurs from June to November. Diving on Lake Minnewanka also takes place in February and March, depending on weather conditions. The draft document titled "Human Use Strategy for Banff National Park" states that no more commercial licences will be issued for scuba diving.

2.4. Rafting

Guided rafting activities involve groups of 6-20, depending on the boat size. Also included in the rafting subclass is "voyageur" canoeing in a large 32' canoe with 10-12 people. The trips are on river or lake water of varying levels of difficulty and involve varying levels of involvement from participants. Some trips involve stopping for lunch at a designated spot or floating in the river.

Accessory activities include:

- use of park facilities at staging areas including parking areas, privies, garbage containers, and public telephones

2.4.1. Current Use

Currently rafting occurs in Kootenay, Yoho, Banff and Jasper. In Kootenay, rafting occurs on the Vermillion/Kootenay River System. Some rafts are put-in at the Simpson trailhead, with overnight camping allowed at Crooks Meadow Group Campsite. Rafts also put-in at the Kootenay River picnic site south of McCloud Meadows Campground. Rafts are taken out of the river outside the park, usually off Settlers Road.

Rafting in Yoho occurs on the Kicking Horse River below Wapta Falls. Rafts are put in near the boundary approximately 4 kilometres upstream of the Beaverfoot Road Bridge. Rafts continue downstream of the bridge for several kilometres outside of the park. No stops or takeouts occur within the park.

In Banff, rafting occurs from the Bow Falls to beyond the boundary of the park with rafts being put in at the base of the Bow River Falls and east of the golf course and sewage plant. Rafts are taken out of the rivers outside of the park. The draft Human Use Strategy for Banff National Park states that no new rafting business licences will be issued.

In Jasper, rafting occurs on the Sunwapta and Athabasca Rivers. Put-in locations on the Sunwapta River are 1km or 3.6km south of Bubbling Creek Picnic Area. Rafts are taken out of the Sunwapta River about 1km south of Sunwapta Falls. Put-in locations on the Athabasca River are: Mt. Christie viewpoint, just below Athabasca Falls, and Poplar Flats. Rafts are taken out about 1km south of Athabasca Falls, the bridge over Highway 93(5^{th} mile bridge) and Old Fort Point. Voyageur canoe trips occur in Jasper on the Athabasca River between Old Fort Point and the Jasper Airfield and may occur on Lac Beauvert. Commercial rafting on the Maligne River is not permitted by the park management plan and Jasper National Park Guidelines for River Use Management.

2.5. Kayaking and Canoeing

Commercial kayaking and canoeing typically involves 1-3 people paddling canoes, river kayaks or touring kayaks on lakes or rivers. Commercial trips may be focused on the development of paddling skills, on natural history interpretation or just on the paddling experience itself. Water bodies used by commercial paddling outfitters are usually accessed by road to enable easy access for boats and clients. Most commercial paddling activity is typically focused on day trips although some overnight trips may be offered. Accessory activities may include:

- use of park facilities at staging areas including parking areas, privies, boat launches, garbage containers, and public telephone
- stopping on shore for lunch or to explore
- use of overnight camping facilities.

2.5.1. Current Use

No licences are currently operating for guided kayaking and canoeing. New licences may be considered for these activities in areas that have been identified as appropriate in park management guidelines and policy e.g., road-accessible lakes where adequate facilities exist such as parking, washrooms, boat launches, or available campground facilities.

3. Scope of the Environmental Assessment

The scope of the environmental assessment for commercial guiding activities must remain consistent with management directions already initiated with respect to ecological and cultural integrity and the quality of visitor experience as outlined and assessed in individual park management plans. Existing management direction is used to focus the environmental assessment on the most relevant management issues. The mitigation identified within the MCSR and CSPRs will be consistent with the management plans, human use strategies and any other appropriate guiding documents.

The environmental assessment of commercial guiding activities is based on factors as outlined in section 16(1) of the Act. Management plan direction is used to focus the environmental assessment on the most relevant management issues through identification of valued ecosystem components. Section 1.7.2 describes the valued ecosystem components that will be the focus of the MCSR.

The park management planning process includes public input and review, strategic environmental assessment and Ministerial approval prior to being tabled in parliament. As a result of the intensive management planning and review process, issues related to the cumulative impacts of overall management of human use are addressed more appropriately within the scope of the management planning process including:

- Appropriate use of park lands and facilities
- Management and maintenance of park facilities
- Management of overall visitor use levels
- Commercial business licence allocations or restrictions
- Area closures, visitor use restrictions or zoning.

3.1. Valued Ecosystem Components

Valued Ecosystem Components (VECs) were selected based on issues of concern and ecological integrity indicators identified in the park management plans. The VECs selected represent ecosystem components that are particularly vulnerable to disturbance and/or are likely to be impacted by the activities covered by this MCSR. The selected VECs serve as the focus of the environmental effects analysis. Concerns with respect to air quality are considered to be primarily aesthetic and are addressed under the visitor experience VEC.

Wildlife

Grizzly Bears

Grizzlies are considered a “species of special concern” by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) and act as an umbrella species for many other wildlife species.

Harlequin Ducks
Harlequin ducks are considered a sensitive species because of their low reproductive potential and specific ecological requirements. They are considered a sensitive species in Alberta.

Other Wildlife
Other wildlife including birds such as raptors, waterfowl and songbirds, and small mammals may be considered sensitive on a site-specific basis.

Vegetation and Soils
Native Riparian Vegetation
Outdoor aquatic recreation activities may impact native riparian vegetation. Vegetation in riparian areas is more vulnerable to the potential impacts of recreational use.

Non-Native Vegetation
Guides and clients could contribute to the introduction and spread of exotic plant (land and aquatic) species that may in turn affect the functioning of natural ecosystems and integrity of native plant communities.

Soil
Soil structure could be impacted through compaction or erosion.

Aquatic Resources
Water Quality
Water quality could be impacted by pollution, human waste or erosion. Impacts to water quality may result in subsequent impacts to aquatic wildlife and vegetation species.

Bull Trout
Bull trout have declined throughout their range because of fishing and introduction of non-native species. They are considered "threatened" in the United States, "sensitive" in Alberta and "sensitive" in British Columbia. The bull trout are vulnerable to overfishing because they are slow to mature.

Westslope Cutthroat
The Westslope Cutthroat range has been dramatically reduced by habitat fragmentation, overfishing and stocking of non-native fish species.

Non-Native Aquatic Species and Diseases
Guides and clients could contribute to the introduction and spread of exotic aquatic plant and animal species that may in turn affect the functioning of natural ecosystems and integrity of native plant communities. The spread of fish diseases is also a concern.

Other Aquatic Species
Other species include aquatic invertebrates, amphibians and other fish species.

Cultural Resources
The *Act* requires consideration of the effects of changes to the environment as a result of the project on socio-economic conditions, and any archaeological or historical site of

significance. Parks Canada policy states that "Parks Canada will assess effects on cultural resources whether or not they flow from bio-physical effects" (Parks Canada 1998b). To address both the requirements of the Act and of Parks Policy, direct impacts to cultural resources will be assessed in addition to indirect impacts caused as a result of changes in the environment resulting from effects caused by the project.

Visitor Experience
As described in section 1.1.3, Parks Canada also has a mandate to facilitate the education and enjoyment of the parks by the public. To address this mandate, direct impacts to visitor experience will be assessed in addition to indirect impacts caused as a result of changes in the environment resulting from effects caused by the project.

3.2. Identification of Potential Environmental Effects and Standard Mitigation Practices

The environmental impact analysis of aquatic-based commercial guiding activities is based upon a three-tiered assessment approach organized into activity-specific, site-specific and cumulative effects analysis (Figure 3). The three-tiered environmental assessment approach is designed to address the requirements of the *Canadian Environmental Assessment Act*, and to be consistent with guidance provided by the *Canada National Parks Act*, *Parks Canada: Guiding Principles and Operational Policies* (Canadian Heritage Parks Canada 1994) and the mountain park management plans.

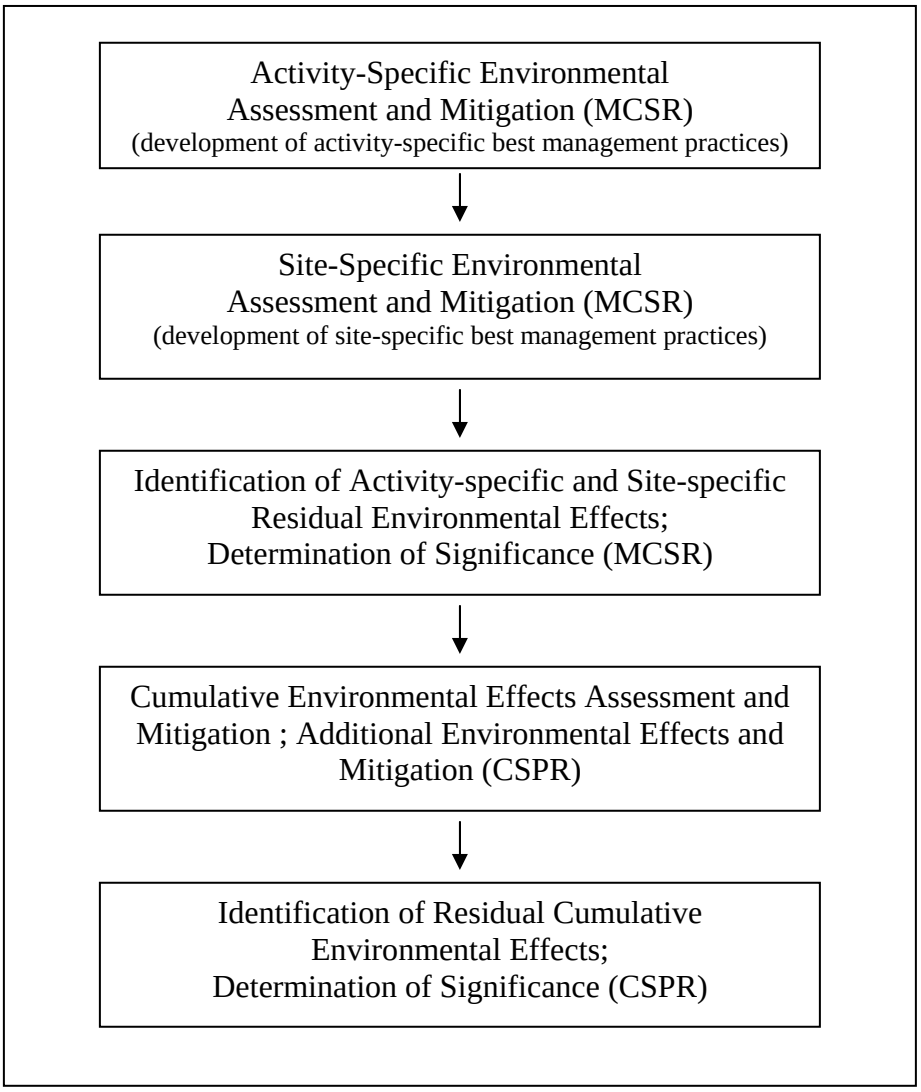
First, the ***activity-specific*** environmental assessment describes the project activities and evaluates the environmental impacts associated with each specific category of commercial guiding activity covered under the scope of the model class screening: guided fishing, scuba diving, canoeing/kayaking and rafting. Mitigation to address environmental impacts at this level of assessment focuses on the development of a set of standardized Best Management Practices (BMPs) for each activity. BMPs associated with each activity are researched, reviewed and selected for their application to a mountain park setting. Including BMPs as a condition of a business licence is intended to ensure that operators in the field implement appropriate environmental practices in a consistent fashion. The activity-specific environmental assessment and mitigation is completed within the scope of the MCSR.

Second, the ***site-specific*** environmental assessment identifies and evaluates environmental or culturally significant sites with unique characteristics that may be considered vulnerable to the impacts of commercial guiding activities. Special Preservation Zones and Environmentally Sensitive Sites as identified through park management plans, culturally sensitive sites, and other sites identified by Parks Canada are evaluated for environmental sensitivities and potential impacts that may not be effectively mitigated through the application of the standard BMPs. Sites that are vulnerable to cumulative effects are also identified. Site-specific mitigation for commercial operators using these areas is identified as appropriate. The site-specific environmental assessment and mitigation is completed within the scope of the MCSR.

Third, the ***cumulative effects*** assessment (CEA) describes and evaluates the impacts of aquatic-based commercial guiding activities in combination with other past, present and

future human use impacts. The approach to the CEA of commercial guiding activities has been aligned with the approaches and direction taken to human use management in the various park management plans. The CEA identifies and evaluates areas that are considered to be vulnerable to overall human use impacts. Areas considered to be vulnerable to cumulative human use impacts are assessed using the Class Screening Project Report process. The CSPR also provides the opportunity to identify any additional activity-specific or site specific environmental effects that may not have been addressed within the scope of the MCSR.

Figure 3: Environmental Assessment Process



3.3. Definition and Evaluation of Significant Environmental Effects

Responsible Authorities are required to make a decision on the significance of adverse environmental effects of a proposed project pursuant to Section 20 of the *Act*. The effects assessment will determine significance through the assessment of effects on each VEC (Section 1.7.2).

Significant adverse environmental impacts to ecological integrity are considered to be those likely to threaten the continued existence of native species or biological communities. Adverse impacts to cultural resources are evaluated in terms of risk to the integrity and context of the site in consultation with Parks Canada cultural resources experts. Potential impacts to the use of cultural resources or impacts to related functions of other governments, communities or Aboriginal peoples, will also be considered. (National Historic Sites Directorate et al. 1993). Adverse impacts to visitor experience are evaluated in terms of potential effects to visitor satisfaction.

The criteria of magnitude, geographic extent, duration, frequency, and reversibility will be used to evaluate the significance of environmental impacts. Significance is determined at the activity-specific and site-specific scale in the MCSR and again, with respect to additional and cumulative environmental effects, through the CSPR process.

Table 1: Criteria for Determining Significance

Criterion	Negligible	Minor	Considerable
Magnitude	Effect results in disturbance	Effect results in damage	Effect results in destruction
Geographic Extent	Effect is limited to the activity footprint and adjacent areas	Effect is likely to have impacts at an ecosystem scale	Effect is likely to have impacts at a regional scale
Duration of Activity	Minutes to hours	Days to weeks	Months or longer
Frequency	Effects occur on a monthly basis or less	Effects occur on a weekly basis	Effects occur on a daily basis or more often
Reversibility	Effects are reversible over a short period of time without active management	Effects are reversible with active management over a short period of time; or if active management is not possible, effects are reversible over a season	Effects are reversible with active management over an extended period of time; or if active management is not possible, effects are permanent

4. Environmental Setting

Section 4 describes the environmental setting of the mountain National Parks within which aquatic-based commercial guiding activities take place. The section discusses land use and management within the mountain National Parks and outlines the natural and cultural resources of these areas by VEC and by Park . To obtain information on species at risk, beyond what is outlined below, please consult the following:

- provincial conservation data centre (contact by email to receive map showing location of known species at risk)
  e.g. British Columbia Conservation Data Centre http://srmwww.gov.bc.ca/cdc/
- Environment Canada
  Species at Risk www.speciesatrisk.gc.ca
  COSEWIC www.cosewic.gc.ca
  SARA Registry www.sararegistry.gc.ca

4.1. Land Use and Management in the National Parks

An understanding of the land use and management system in the National Parks is fundamental to the analysis and evaluation of environmental impacts. The discussion on land use and management in the mountain National Parks is divided into discussions on the National Park zoning system , the use of Land Management Units , and aboriginal land use.

4.1.1. National Park Zoning System

The national parks zoning system is an integrated approach to the classification of land and water areas in the national parks. Areas are classified according to the need to protect the ecosystem and the parks' cultural resources. The capability and suitability of areas in terms of providing visitor use opportunities is also a consideration in making decisions about zoning. The zoning system has five categories, which are described in *Parks Canada: Guiding Principles and Operational Policies* (Canadian Heritage Parks Canada 1994).

As the zoning system generally addresses the appropriate types and intensity of visitor use in a given area it is relevant and should be considered in the assessment and management of commercial guiding activities.

Zone I – Special Preservation
Zone I lands deserve special preservation because they contain unique, threatened, or endangered natural or cultural features and are excellent examples of representative natural regions.

Zone II – Wilderness
Zone II contains extensive areas that are good representations of a natural region and are conserved in a wilderness state. The perpetuation of ecosystems with minimal human

interference is the key consideration. Zone II areas offer opportunities for visitors to experience, first hand, the park's ecosystems and require few, if any, rudimentary services and facilities. In much of Zone II, visitors have the opportunity to experience remoteness and solitude. Motorized access is not permitted.

Much of this land consists of steep mountain slopes, glaciers and lakes. Zone II areas cannot support high levels of visitor use. Facilities are restricted to trails, backcountry campgrounds, alpine huts, trail shelters and warden patrol cabins. Some wilderness sections of the parks will continue to have no facilities.

The *Canada National Parks Act* provides for the designation, by regulation, of wilderness areas of the park. A high level of ecological integrity is synonymous with wilderness. The intent of the wilderness declaration is to assist in ensuring a high level of ecological integrity by preventing activities likely to impair wilderness character. The perpetuation of ecosystems with minimal human interference is the key consideration in maintaining wilderness character. Only development and activities required for essential services and the protection of the park resources will be permitted in declared wilderness areas. Human use levels in declared wilderness areas will be managed based on landscape management unit objectives and human use strategies.

Zone III – Natural Environment
In Zone III areas, visitors experience the park's natural and cultural heritage through outdoor recreational activities that require minimal services and facilities of a rustic nature. Zone III applies to areas where visitor use requires facilities that exceed the acceptable standards for Zone II. While motorized access may be allowed, it will be controlled. Public transit that facilitates heritage appreciation will be preferred. Access routes and land associated with backcountry commercial lodges are in Zone III.

Zone IV – Outdoor Recreation
Zone IV accommodates a broad range of opportunities for understanding, appreciation and enjoyment of the park's heritage. Direct access by motorized vehicles is permitted. Zone IV generally includes frontcountry facilities and the rights-of-way along park roads. Zone IV nodes also exist at various locations with intensive tourism and recreation facility development such as lodges, ski hills, campgrounds, visitor centers and day use areas.

Zone V – Park Services
These areas of intensive visitor use include the communities of Banff, Jasper, Lake Louise, Waterton, and Field as well as the visitor facilities at Radium Hotsprings in Kootenay National Park.

Environmentally Sensitive Site or Area
The Environmentally Sensitive Site or Area (ESS, ESA) designation applies to areas with significant and sensitive features that require special protection.

4.1.2. Land Management Units in National Parks

Human use in the national parks has the potential to reduce habitat effectiveness for sensitive species of wildlife such as bears, wolverine, wolves and cougar. Construction

and operation of roads, buildings or other facilities eliminates or compromises habitat. Even low levels of disturbance due to human recreation use may result in wildlife abandonment of an area and a reduction in effective habitat for sensitive species. Habitat effectiveness models are one of the tools Parks Canada uses to examine the impact of human use on sensitive wildlife species. Using computers, biologists overlay roads, trails, campgrounds, towns, and facilities on a map of vegetation and other landscape features. The resulting models help to determine the ability of a given area to support sensitive wildlife indicator species such as the grizzly bear.

To effectively evaluate the impact of human use on grizzly bear habitat effectiveness and on other ecosystem elements, each of the mountain parks has adopted the concept of the Landscape Management Units (LMUs). In the Rocky Mountain national parks the delineation of LMUs is based upon watershed units that approximate the home range size of a female adult grizzly bear.

Banff, Jasper, Yoho, Kootenay and Waterton have established target thresholds for desired levels of habitat effectiveness in LMUs throughout each of the parks. LMUs were classified according to the potential habitat available for grizzly bears before consideration of human use and development or disturbance. Habitat effectiveness is a comparison between the potential of an area to support grizzly bears and the value of the area as bear habitat, after accounting for human disturbance. Habitat effectiveness in several LMUs throughout the parks is currently below the desired target thresholds. In other words human use and development has already reduced the effective grizzly bear habitat to unacceptable levels.

The LMU habitat effectiveness analysis for the parks essentially identifies areas that are already under ecological stress from excessive human use and development. As such the habitat effectiveness analysis provides useful information related to the management of visitor use and should be considered in the assessment and management of commercial guiding activities.

4.1.3. Aboriginal Land Use in National Parks

A number of sites within the mountain parks are of particular interest to Aboriginal people. There is an unsettled 67 square kilometre land claim near Castle Mountain in Banff. Also access to pipestone quarries in Banff may be requested in the future. In Kootenay, the “Painted Pots” and “Kaufmann Lake” areas are of particular importance to the Ktunaxa tribe. Aboriginal interest in precontact archaeological sites and burial sites in Banff, Jasper, Kootenay and Yoho may increase in the future. Negotiations over the land claim and access to other sites are ongoing. Commercial activity could be impacted by the outcomes of these discussions. All other Aboriginal use of the mountain parks is similar to other visitors. Special requests for access or gathering of plants are considered on an individual basis.

4.2. Description of Natural and Cultural Resources

The description of natural and cultural resources in the mountain National Parks is arranged by VEC and further subdivided where appropriate by Park or Park grouping.

The following VECs described are terrestrial wildlife, soils and vegetation, aquatic resources, cultural resources, and visitor experience.

4.2.1. Methods

Since most of these activities are restricted to summer, the description of the environment will be restricted to summer. Although scuba diving occurs in winter, this activity is restricted to public access points and lake ice, with no impacts to land resources anticipated. Impacts to aquatic resources in winter will also be considered. The description of the aquatic environment will be focused on the lakes and rivers where current commercial activities take place, as listed in the table below.

Park	**River Locations (put-in, take-out and campsite locations)**	**Lake Locations**
Waterton Lakes	None	Middle Waterton Lake Upper Waterton Lake Cameron Lake
Banff	Bow River from the falls to the park boundary (base of the Bow River Falls and east of the golf course and sewage plant)	Lake Minnewanka Two Jack Lake
Kootenay	Vermillion/Kootenay River System (Simpson trailhead and Crooks Meadow Group Campsite)	None
Jasper	Sunwapta River (1km and 3.6km south of Bubbling Creek Picnic Area and 1km south of Sunwapta Falls) Athabasca River (Mt. Christie viewpoint, just below Athabasca Falls, Poplar Flats, 1km south of Athabasca Falls, 5th mile Bridge and Old Fort Point)	Maligne Lake, Medicine Lake, Pyramid Lake, Talbot Lake, Moab Lake, Beaver Lake and Cabin Lake

The review of environmentally sensitive areas of concern in relation to commercial guiding activities will focus on Zone I – Special Preservation lands and Environmentally Sensitive Sites as outlined in the various park management plans (Parks Canada 1997a; Parks Canada 2000a; Parks Canada 2000b; Parks Canada 2000c; Parks Canada 2000d; Parks Canada 2002d).

Culturally sensitive sites are described for each park, having been selected after consultation with the responsible archaeologist(s) for that park (Rod Heitzmann pers. comm. 2002; Gwyn Langemann pers. comm. 2002). There are hundreds of known archaeological sites in the parks and this number was greatly reduced by focussing only on those sites classified as Zone I, ESS or in areas currently with aquatic commercial guiding activities.

4.2.2. Terrestrial Wildlife

Grizzlies, wolves, cougars, wolverines, lynxes, black bears, bobcats, caribou, and elk are all mammals of concern mentioned in the Management Plans as indicators for the ecological integrity of these parks. To facilitate management and protection of wildlife in the mountain parks during summer, the grizzly bear is used as an umbrella species. Grizzly bears are particularly vulnerable to disturbance by humans because of their biological characteristics: low reproductive rate, large home range, limited capability of dispersing females, and need for high quality forage in spring and fall (Kansas 2000). Understanding and managing for grizzly bears will also protect the survival requirements of other species. The following description, therefore, focuses on grizzlies, but applies to other mammals as well. The primary grizzly bear biological requirements under threat in national parks are habitat effectiveness, habitat connectivity and freedom from human-wildlife conflicts. As a result the following discussion focuses on these elements for grizzlies, based on the understanding that protecting these elements for grizzlies will also provide for other mammals. Since birds have different requirements, the terrestrial wildlife section concludes with a discussion of waterfowl and raptors that may be affected by these activities.

Habitat Effectiveness

Although habitat may be appropriate for an individual species in terms of shelter and food, wildlife may avoid the habitat for various reasons because of human use in the area. Outside the parks, habitat destruction is a concern; however, inside the parks habitat avoidance is the important issue. Disturbances within their habitat can cause grizzlies to avoid otherwise suitable habitat and reduce the secure area for grizzlies (Kansas 2000). River travel, camping, vehicles, trains, hikers, horses, campgrounds and other development all disturb grizzlies to some extent and decrease the effectiveness of habitat. The nature and frequency of disturbances and the extent of cover impact the extent of habitat avoidance (Kansas 2000).

Roads are avoided by wolves, wolverines, lynx, and bears to some degree. With respect to the avoidance of trails by wolves, when the number of people per month exceeded 100 there is an avoidance and complete alienation when more than 10000 people per month use the area. In summer, this means that the percentage of habitat that is not considered effective for wolves is very high in Banff (Paquet et al. 1996). Cougars were found to avoid areas with human use greater than 250/500 users/month (Bow Corridor Ecosystem Advisory Group 1999). This research and others indicates that the habitat effectiveness as measured for grizzlies (using the 100 person/vehicle threshold) will also address the habitat requirements of other species in the summer.

Habitat effectiveness and core security areas for grizzlies have been measured using models and geographic information systems based on the assumption that measuring the habitat effectiveness for grizzlies will adequately address the habitat needs of other species. Habitat effectiveness was considered unacceptably low in Banff (Gibeau et al. 1996). Currently of the 77 land management units (LMUs) in Waterton Lakes, Banff, Kootney, Yoho and Jasper National Parks, 30 are not meeting their threshold for habitat effectiveness (Table 2). Secure area goals have not been set for Kootenay, Yoho and Banff, so a value of 60% was chosen as a goal for this environmental assessment (Kansas 2000). In Jasper 5 of 33 LMUs are not reaching their secure area goal.

Table 2. Number of Land Management Units (LMUs) not reaching grizzly habitat effectiveness and secure area goals.

Park	Number of LMUs	Number not reaching Habitat Effectiveness goal	Number not reaching Secure Area goal
Waterton Lakes (2000)	4	4 (not modelled on GIS)	4
Jasper (2000)	33	7	5
Kootney (2000)	7	2	1
Yoho (2000)	6	2	2
Banff (1997)	27	15	14
Total	**77**	**30**	**26**

Woodland caribou are considered threatened by COSEWIC and protected under the *Species at Risk Act* (SARA). Their population is small and declining (Pers. Comm. George Mercer, December 2002). Displacement from habitat by human activity is one concern for the woodland caribou in Jasper. The primary habitat for the caribou is in the Tonquin Valley and Maligne Valley (Mercer and Purves 2000). None of the activities in this class screening are likely to impact these caribou.

Habitat Connectivity

Habitat connectivity is considered a particular concern for the large carnivores: grizzlies, wolves, cougars, wolverine, lynx, black bear, and bobcat. Connections between areas of habitat play a critical role in the survival of a species. At a broad multi-park scale habitat is fragmented for populations by the mountains, with good habitat primarily in the river valley bottoms and low elevations. Particularly for wolves and wolverines, movement between these habitat areas is important for the exchange of genes and to recolonize areas where a population has gone extinct. At a local scale, wildlife (particularly lynx, wolves and wolverine) seasonally move to optimize use of habitat and search for prey. Some species travel extensively to find mates (Tremblay 2001).

Impediments to movement at both scales include roads, railways, areas of high human activity, fences and removal of cover. Studies have clearly shown a reluctance by grizzlies, wolves (in summer), wolverines, and lynx to cross roads. For those who do attempt to cross the roads, some are killed. Railways do not seem to restrict movement, but some wildlife are killed crossing them every year. Areas of high human activity, for example frequently hiked trails or rivers with many rafting trips, are a discouragement for wildlife to come near, enter into and/or cross. Fences clearly prevent movement of wildlife. Areas without adequate security cover will also be avoided by some wildlife, particularly lynx and grizzly bears (Tremblay 2001).

Over the past decade a lot of research and action has been taken to identify, understand, protect and improve wildlife corridors in Kootenay, Yoho, Jasper and Banff National Parks. Efforts have been focused on high use areas and mitigation has included: highway overpasses, open span underpass, and trail closures or restricted use. At the same time,

however, traffic and visitors are increasing in these parks and mitigation for wolverine and lynx are not well known (Tremblay 2001).

Wildlife-Human Conflicts

Habituation occurs when wildlife repeatedly come in contact with people. As a result, some wildlife will not be as easily disturbed by people. Some wildlife become bolder and attracted to people and food sources associated with people. If these wildlife are dangerous, for example bears, there could be an increased risk of harm to people.

The only records of wildlife-human conflicts in the backcountry are for grizzly bears and black bears. Some incidents with other wildlife may not have been recorded, but negative incidents with other species are likely low. In Jasper, the total number of incidents in the backcountry involving both black bears and grizzly bears has ranged between 2 and 20 per year over the past 10 years. Backcountry incidents represent 10% of the total park incidents with bears. The causes of these incidents shows that of the total incidents with bears, 11 involved human food, 2 garbage and 6 property. Since 1996, an average of 5 incidents have occurred with black bears and 6 incidents with grizzlies (Dillon and Bradford 2001). In Yoho there were 2 incidents with black bears and 2 incidents with grizzlies in the past 3 years in the backcountry. No incidents were recorded in Kootenay. In the Lake Louise area there were 2, 3, and 1 black bear incidents recorded in 2000, 2001 and 2002 respectively. These incidents usually involved people encountering a bear. For grizzlies, 6, 11, and 14 incidents were reported in 2000, 2001 and 2002 respectively. These incidents included closures, trappings, sightings and bears following people (Pers. Comm. Solange Poirier).

Human caused mortality of grizzlies in Banff increased over time until 1983, after which mortality decreased; however, the mortality rate in 1996 was considered higher than acceptable for a national park (Gibeau et al. 1996). In Jasper, an average of 1 bear has died from human causes each year since 1992 (Dillon and Bradford 2001). Human caused mortality accounts for 70% of grizzly bear mortalities and 90% of black bear mortalities in Jasper over the past 10 years (Dillon and Bradford 2001). All of these occurred in high human use areas. Between 60-80 grizzlies have been estimated to live in Banff. Another estimate is of 200 grizzlies in Jasper, Banff, and Waterton Lakes National Parks (Gibeau et al. 1996). The small population makes these bears vulnerable and the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) considers them a species of special concern.

When wildlife are disturbed and need to escape a perceived threat they expend a lot of energy. Depending on the condition of the animal and their habitat, this could be a significant stress on an individual and population. Reduction in the number of viable offspring is a possibility if animals are repeatedly disturbed during their pregnancy.

Waterfowl and Raptors

Over 120 species of birds are found in the mountain parks. Raptors, such as bald eagles and ospreys, may nest along rivers and depend on fish for food. Bald eagles are rare in some locations in North America, but both populations are not at risk in the Mountain Parks. Similarly waterfowl nest near water and depend on aquatic organisms for food.

Harlequin ducks are identified in the Jasper Guidelines for River Use Management as a species requiring particular attention.

Harlequin ducks are sea ducks that migrate inland to breed in the mountains. Harlequins are long-lived with low productivity, making their population survival more vulnerable. Suitable breeding habitat is limited because of the narrow habitat requirements on eastern slopes within the mountains. Research has shown that these birds can be disturbed by recreational activities on waterbodies or shorelines. Although the population is small, limited population estimates in the past make determining trends difficult (MacCallum 2001). Alberta considers this population "sensitive" and British Columbia considers the population vulnerable when clustered in large concentrations on their wintering grounds. The Maligne River in Jasper and Bow River in Banff have large concentrations of harlequin ducks.

4.2.3. Vegetation and Soil - Ecological Land Classification

4.2.3.1. Banff, Jasper, Yoho, Kootenay

Detailed biophysical land classification studies for each of the four contiguous mountain parks complete with ecosite descriptions and information on landform, soils, vegetation and wildlife have been documented (Achuff et al. 1984; Achuff et al. 1986; Achuff et al. 1996; Holland and Coen 1982; Poll et al. 1984). Three major ecoregions are recognized for the four mountain parks; Montane, Subalpine – divided into the Lower Subalpine and Upper Subalpine, and Alpine. The activities covered by this assessment only occur in the Montane and Lower Subalpine; consequently, the Upper Subalpine and Alpine will not be described.

The climate of the *Montane Ecoregion* is generally the warmest and driest in the four mountain parks. The Montane in Banff, Jasper and Kootenay may be characterized as warm and dry while the Montane in Yoho is more aptly characterized as warm and wet. Although the Montane is generally the warmest ecoregion it probably has the greatest temperature fluctuation. Winds in the Montane are slightly stronger and more frequent than in other areas. Warm winter winds from Pacific air masses raise winter temperatures and the Montane is intermittently snow-free.

The Montane Ecoregion is predominantly forested and mature vegetation is typically characterized by douglas fir *Pseudotsuga menziesii*, white spruce *Picea glauca*, and trembling aspen *Populus tremuloides.* Stands of lodegepole pine *Pinus contorta* are usually successional but may form climax forest in drier areas. On the driest montane sites, grasslands form the mature vegetation. Fire appears to be important in maintaining montane grasslands and return to climax condition following fire may take as little as ten years. White spruce-subalpine fir *Abies lasiocarpa* forest types occur on wetter sites in the montane in Yoho. The douglas fir-ponderosa pine *Pinus ponderosa* vegetation type occurs in the Stoddart Creek area of Kootenay and is unique to the mountain parks.

Montane forests and grasslands in each of the mountain parks are critical to wildlife especially during fall, winter and spring. Many animals, especially ungulates and associated large carnivores, move to montane areas during the winter due to the shallower

snowpack. Montane wetlands are particularly important for communities of birds, amphibians and mammals that are unique to each of the mountain parks.

The Montane Ecoregion in each of the mountain parks is also the area most extensively used and developed by humans. The Towns of Banff and Jasper, the Trans Canada and Yellowhead highways, the major railways, utility rights-of-way, and tourism developments at Radium Hotsprings and Emerald Lake all fall within the limited extent of the Montane Ecoregion in the mountain parks. Human activity in the Montane has the potential to result in reduction of usable wildlife habitat as a result of wildlife displacement, in seasonal disturbance of wildlife during critical periods, and in the destruction of unique or rare wildlife habitat sites. An important consideration in terms of potential impacts to critical wildlife habitat is that the Montane Ecoregion makes up a relatively small proportion of the park landscape.

The *Subalpine Ecoregion* is very extensive and dominates most of the landscape in each of the mountain parks. Precipitation is higher and temperatures cooler in the Subalpine than in the Montane. Winter snow accumulation is higher and lasts longer than snow in the Montane. Subalpine wetlands are less productive than those of the Montane, remaining frozen longer.

Closed coniferous forests characterize the *Lower Subalpine Ecoregion*. Mature forest is dominated by englemann spruce *Picea engelmannii* and subalpine fir in Banff, Jasper and Yoho. Engelmann spruce and white spruce dominate the Lower Subalpine in Kootenay. Seral lodgepole pine forests are common at lower altitudes. Lower subalpine forests and wetlands are important for a wide variety of wildlife including mammals, birds and amphibians.

4.2.3.2. Waterton Lakes

Waterton Lakes is a biodiversity hotspot in Alberta and in Canada. The interface between the Plains and Cordillera and the juxtaposition of the Aspen Parkland and Rocky Mountain Natural Regions has led to the development of some interesting wildlife assemblages. Overall, there is a high diversity and density of wildlife species.

The *Foothills Parkland Ecoregion* is characterized by a landscape pattern of rough fescue (*Festuca scabrella*) grassland and aspen (*Populus tremuloides*) grove forest. Foothills Parkland occurs in a limited geographic area in Canada and the USA, occupying a narrow band along the eastern edge of the foothills from Calgary south to the Porcupine Hills, and from Pincher Creek south to the US border, including portions of Waterton Lakes. Waterton Lakes is the only Canadian national park that contains a portion of the Foothills Parkland Ecoregion.

At lower elevations, there are extensive grasslands that support declining populations of sharp-tailed grouse, a species that is vulnerable to disturbance on its dancing grounds. Fire and grazing play an important role in the maintenance of the biodiversity of many grassland systems. Conservation of diverse bird populations will require maintaining a mosaic of upland habitats that are subject to grazing and fire. It should be noted that

lightly grazed grasslands are relatively rare in Alberta and every effort should be made to maintain their excellent condition.

The *Montane Ecoregion* is characterized by both open and closed coniferous forests dominated by *Pseudotsuga menziesii* (douglas fir) and *Pinus flexilis* (limber pine). Aspen forests (C60, C61) also occur sparingly in the Montane Ecoregion but seldom in the parkland landscape pattern of the Foothills Parkland Ecoregion. Black cottonwood forests (C76) occur on wet fluvial sites along rivers and creeks. Grasslands occur on dry, exposed sites.

The Foothills Parkland and Montane are the two most productive ecoregions for birds in the park and the Montane is a highly productive area for small mammals. Highly productive stream valleys with wetland and riparian woodland ecosystem complexes characterize both ecoregions. Wetlands in these ecoregions are especially important for amphibians and water birds and overall contain the greatest diversity and highest densities of wildlife in the park. Like the montane regions in the other Rocky Mountain National Parks, the Foothills Parkland and Montane also have the highest concentration of development and human use.

With respect to vegetation types, the Subalpine and Alpine Ecoregions in Waterton Lakes are very similar in nature to the matching Ecoregions of the other mountain parks. The Lower Subalpine is a highly productive area for small mammals. The Upper Subalpine and Alpine have the lowest productivity in terms of wildlife but feature several restricted range species including the water vole, white-tailed ptarmgian, timberline chipmunk, gray-crowned rosy finch, and american pipit.

Extensive and productive Upper Subalpine and Alpine forest and meadow complexes are relatively restricted in Waterton Lakes. They also tend to be some of the most scenic and favoured back-country recreation areas. Species of particular concern include water vole and white-tailed ptarmigan. The white-tailed ptarmigan exhibits a behaviour that may make it more prone to predation since it readily allows humans to approach and observe it at close range.

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4.2.3.3. Non-native species within all Parks

Non-native species of plants can be harmful to native ecosystems when they spread and replace native species. Often these species spread rapidly because they have no natural diseases or predators making it difficult to eliminate them after they begin spreading. In Banff there are 77 non-native species and in Kootney/Yoho there are 68 non-native species (Parks Canada 2001) (DeLong and Pengelly 2002). Non-native species have spread into the park through a variety of methods including: ornamental gardens, horse feed, and unintentional transportation of seeds. Information on the current rate of spread by each method is not available. A number of aquatic plant species, such as Eurasian

Milfoil, are spreading throughout North America and may be spread into the parks, without care.

4.2.4. Fish and Aquatic Resources

Rivers in the mountain parks are the most significant aquatic resource. As the headwaters for a number of river systems, they influence a vast area beyond the park boundary. Many upper streams have steep gradients and large fluctuations in flow in response to storms and glacier melt. Lakes are also found throughout the parks, though they are often small (Schindler and Pacas 1996). Wetlands are more rare in the mountain parks.

Aquatic ecosystems in the mountain parks have been altered in a number of ways over the past 150 years. Dams, reservoirs and other structures have altered the flows of rivers, damaged wetlands and changed the size and shapes of lakes. Chemical inputs from various sources have also altered the aquatic environment in some waterbodies. Fisheries management has included the introduction of non-native species into many waterbodies and alterations to native fish populations.

Several native sport fish are of particular concern. Bull trout have declined throughout their range and are considered “threatened” in the United States, “sensitive” in Alberta and “sensitive” in British Columbia. Two of the three main life history strategies involve spawning in tributaries and residing in mainstream rivers or lakes. As a result, barriers to movement have impacted migratory patterns as well as genetic exchange at a population scale. Bull trout is vulnerable to overfishing because they are slow growing and slow to mature. Unrestricted angling over many decades in the past has contributed to their decline. Currently, fishing regulations in the mountain parks prohibit keeping bull trout. Introduction of brown trout, rainbow trout, brook and lake trout into waterbodies with bull trout have caused the extirpation of bull trout in some locations, slower growth and reduced survival (Post and Johnston 2002).

The westslope cutthroat range has been dramatically reduced by habitat fragmentation, overfishing and stocking of non-native fish species. Overfishing began as soon as European settlement came to the area with the railway in the 1880’s. Westslope cutthroat may not be kept in Banff and specific areas of Waterton Lakes. Hybridization with rainbow trout has altered the population in many areas.

In Jasper National Park, both Lake whitefish and Northern pike are at the edge of their range and therefore may be especially vulnerable to population declines. As well, Rainbow trout may be native to the Athabasca River drainage in Jasper and may warrant special concern.

Fish health in the mountain parks is also threatened by whirling disease. Although not yet present in the mountain parks, this disease has spread through most of the lower mainland United States since the 1950s. Caused by a parasite, this disease infects coldwater salmonids and can dramatically reduce young-of-the-year.

Amphibian populations have been affected by fish stocking and releasing bait frogs into the wild. Northern leopard frogs were once found in Kootenay and are now considered endangered in British Columbia by COSEWIC and protected by SARA.

For each park, site-specific information on waterbodies with commercial guided activities and other sensitive aquatic sites is described below. The need for site-specific mitigation for each site will be evaluated in Section 4.2.

4.2.4.1. Banff

The Bow watershed drains approximately 53% of Banff including the Bow, Cascades, Pipestone and Spray rivers. The Bow River originates at the Bow Glacier and flows 130 km through the park. Fed by first to sixth order streams, the Bow reaches its peak flow in June or July from snowmelt, rainfall and glacier melt. Human activity in the park has led to higher levels of nutrients in the Bow River. A 5 year study on the "Effects of Nutrient Additon to Rivers in the Canadian Mountain National Parks" has shown that effluent discharges from sewage treatment plants into mountain rivers naturally low in phosphorous and nitrogen cause changes in plant and algal communities (M. Bowman 2001). This in turn can change the types of insects and fish found in the mountain aquatic systems. Fish stocking in the Bow River and its tributaries has altered the fish community. Native bull trout populations have had to compete with introduced brook trout. In the Bow River system, brook trout now occupy 100% of the bull trout range and densities of bull trout are low. Similarly the native westslope cutthroat trout have had to compete with brown trout and rainbow trout and their range has been reduced by 30% in the Bow River system (Schindler and Pacas 1996).

Lake Minnewanka

Lake Minnewanka, a reservoir, is the deepest and largest lake in the park, covering 2230 ha. Lake Minnewanka is fed by springs, the Cascade River and a diversion of the Ghost River. The majority of water leaves the lake through a dam at Two Jack Lake. Water subsequently flows through Two Jack Lake to the Cascade generating station and out to the modified lower Cascade River channel. A small amount of water also flows through another Lake Minnewanka dam structure releasing water into the original lower Cascade River channel. Initially dammed in 1912, the current dam was built in 1941 and altered the hydrology of the lake and rivers. The dam increased the level of the lake by 25m and annual drawdown exposes the littoral area and causes erosion. Originally the fish species in Lake Minnewanka included lake trout, westslope cutthroat trout, bull trout, mountain whitefish, and longnose sucker. Between 1901 and 1972 over 17 million fish, including Atlantic salmon, brook trout, cisco, lake trout, lake whitefish and rainbow trout, were stocked into the lake. Over 250, 000 people each year use the lake and area for angling, boating, camping, cycling, hiking, horse use and scuba diving (Pers. Comm. Charlie Pacas)(Schindler and Pacas 1996).

Vermilion Lakes Wetlands ESS

The Vermilion Lakes Wetlands support a diversity of vegetation including many rare and significant plant species. The area serves as an important wildlife habitat and wildlife movement area and contains many special features: lakes, ponds, springs, rare birds, moose winter range, elk calving areas and ungulate mineral licks. The alluvial landforms

on the north and east shores of the lakes and adjacent wetlands are also rich in significant archaeological resources from at least 10,700 years ago.

4.2.4.2. Jasper

Athabasca River

The Columbia Glacier feeds the Athabasca River, which flows 168 kilometres through Jasper. The river begins as a fairly steep river with a number of rapids then widens and eventually forms wide, open-braided river channels. The broad river valley from the Upper Athabasca to the town of Jasper provides wildlife escape routes and corridors. Above the Athabasca Falls, a natural barrier, one native fish species is found, the bull trout. Goat Lick-Lick Creek confluence is an area of sensitivity because of the large mineral lick. On the lower portion of the river (from the town of Jasper to the park boundary) there are a number of sensitive sites including the aeolian sand dunes and the Pocohontas ponds and wetlands. The Pocahontas ponds and wetland area is classified as a sensitive site (Parks Canada 1998a). Around the townsite and Jasper Park Lodge, human activity increases the barriers to movement by wildlife. Other concerns related to human use include: effluent from the town, modification to riparian areas around Athabasca Falls, human use at Old Fort Point during elk calving, and devegetation and erosion at several sites.

Old Fort Point

Old Fort Point, an area on the Athabasca River near the town of Jasper, is a highly impacted high use area. Multiple uses, including the taking out of rafts, hiking, mountain biking, fishing and day use, all occur in this area. The area is also a wildlife corridor and calving grounds for elk.

Sunwapta River

The Sunwapta River is glacial fed and heavily braided creating a large vegetated floodplain. The floodplain is forage habitat for grizzlies and caribou in the spring and fall. The floodplain also provides area for wildlife movement. Upstream of the Sunwapta Falls, the river is faster and flows through a canyon preventing wildlife movement across and along the river. Human activity in this area is mostly on one side of the river and does not appear to negatively impact wildlife movement (Parks Canada 1998a).

Maligne River

The Maligne River flows into Maligne Lake and 33 kilometres from there to the confluence with the Athabasca River. The Maligne River, downstream from Maligne Lake, is narrow, fast flowing and located in a steep-sloped valley. The Maligne Valley is narrow, with steep relief, and a unique geological and biotical environment. It provides important wildlife habitat, including staging areas for harlequin ducks at the Maligne Lake Outlet, an ESS site, and Medicine Lake delta. The Maligne River also provides spawning habitat for rainbow and brook trout. Downstream of Medicine Lake the river valley provides a wildlife corridor for travel between the higher Maligne and the low elevation montane. Habitat for bears and harlequin ducks is found here in the summer (Parks Canada 1998a). The Maligne River is a popular destination for visitors because of the spectacular scenery, scenic drives, hiking and wildlife viewing.

Lakes in Jasper

Lakes in Jasper are affected by similar issues to the rivers. Introduced fish species and barriers to movement (dams, roads etc.) have impacted native fish species distribution. Contamination of lakes has affected water quality. The lakes are too numerous to describe all of them, therefore Table 3 provides basic information on the lakes most often used for commercial guided activities.

Talbot Lake
Talbot Lake contains only native fish. As many of the lakes in the park have introduced species altering the ecosystem, Talbot Lake is ecologically important. Fishing activities occur on this lake.

Lac Beauvert
Lac Beauvert is a highly used area. Jasper Park Lodge, golf course and hiking trails are found on the shores of Lac Beauvert. Activities on the lake include scuba diving, fishing, and canoeing. Recent management actions include removal of the fish barrier across the outlet of Lac Beauvert and reintroduction of lake whitefish to the lake.

Maligne Lake Outlet ESS
The Maligne Lake outlet is a "club site", or area of high concentration for harlequin ducks particularly during the pre-nesting period. Similar concentrations are rare in North America. Harlequin ducks require special management due to their sensitivity to in-stream disturbance, narrow ecological requirements and low reproductive potential. The outlet is part of the mid-Maligne River, a movement corridor between Maligne and Medicine lakes for harlequin duck broods.

Table 3. Lakes in Jasper used for commercial guided aquatic-based activities.

Name	Activities	Maximum Depth (m)	Surface Area (ha)	Fish Species (Native Only/Non-Native Only/Both)
Maligne Lake	Boat rentals for fishing, guided fishing	96	2066	Non-Native Only
Medicine Lake	Guided fishing	17.5	546	Non-Native Only
Talbot Lake	Boat rentals for fishing and guided fishing		430	Native Only
Pyramid Lake	Boat rentals for fishing, guided fishing	19	127.4	Both
Lac Beauvert	Canoes, boat rentals	25	32.3	Both
Patricia Lake	Boat rentals for fishing	40	69	Both
Moab Lake	Boat rentals for fishing, guided fishing	18	23.9	Both
Beaver Lake	Boat rentals, guided fishing	2	31	Non-Native Only

Sources: (Anderson and Donald 1978; Anderson and Donald 1980; Donald and Anderson 1978; Donald and Henau 1981) Pers. Comm. Ward Hughson, February 2003

Pocahontas Ponds ESS
The wetlands of the Athabasca floodplain near Pocahontas are known locally as the Pocahontas Ponds. This area of small ponds and active and dead stream channels is very important to wildlife. The area provides critical winter range for elk and moose and is also important to small mammals. Carnivores are attracted by these prey species. Numerous bird species occur in high densities, many of which are not found elsewhere in the parks. Raptors such as osprey and bald eagle nest here. Any major construction in the area (e.g., roads) will change sedimentation and erosional patterns. Care must be taken that future development and use do not have a negative impact on the area's special resources.

4.2.4.3. Yoho

Kicking Horse River
Fed by glacier melt water the Kicking Horse River flows through Yoho. Large waterfalls, alluvial fans, hoodoos, gorges and a natural bridge are found along the river. The area is important for many land mammals and birds. Environmentally sensitive wetlands associated with the river include Wapta Marsh, Ottertail Flats and Leanchoil Marsh. These areas support a diversity of species and include nesting areas for bald eagles and ospreys and important habitat for moose and other ungulates.

Harlequin ducks are believed to use the river as a travel corridor during migrations between coastal areas and the Rocky Mountains. Some sections of the river provide feeding and breeding habitat, with tributary streams providing nesting habitat.

The river provides habitat for several native fish species, including bull trout, pygmy whitefish, slimy sculpin, and torrent sculpin. Mountain whitefish, rainbow trout, and Eastern brook trout are also present in the Kicking Horse system.

The section of the Kicking Horse River within Yoho National Park was designated as a Canadian Heritage River in 1989, in recognition of its significant natural and cultural heritage and recreational values.

4.2.4.4. Kootenay

Vermilion/Kootenay River System
The Vermilion River begins in the ice and snowfields of Mount Whymper and is fed by other glacial fed creeks. The Kootenay River, technically a tributary of the Vermillion, begins 40 kilometres above the confluence of the rivers. The Vermillion River has a mean annual flow 4.3 times greater than the Kootenay River. Runoff into the river consists of snowmelt, precipitation, and glacial melt-waters. The peak flow is between June and July. Lodgepole pine is dominant along much of 105 kilometres of river within the park. Harlequin ducks are occasionally sighted, and are believed to breed in some locations along the Vermillion/Kootenay system. The rivers provide habitat for a variety of waterfowl and other birds. Golden eagles have been noted to congregate along the

Kootenay River near McLeod meadows in the fall. Bald eagles and ospreys are also seen occasionally.

The Vermillion/ Kootenay system provides habitat for cutthroat trout, rainbow trout, bull trout, Eastern brook trout, slimy sculpin, mountain whitefish and kokanee.

4.2.4.5. Waterton Lakes

Upper and Middle Waterton Lake
The Waterton Lakes are part of the Saskatchewan river drainage which empties into the Hudson Bay. The larger lake, Upper Waterton is partially in the United States and partially in Canada. It has an area of 941 hectares and a maximum depth of 135.3 metres. Middle Waterton Lake has an area of 429 hectares and a maximum depth of 27.4 m. The lakes are fed from the Waterton River in Glacier National Park, Montana and are very cold and alkaline. Strong winds on Upper Waterton Lake prevent the lake from freezing until the end of the first week in January and occasionally the lake never freezes. Middle Waterton Lake has ice from approximately November 20th until the end of March (Fisher and Smith 2000). The water quality of the lakes is considered good (Pers. Comm. Derek Tilson).

There are 17 native fish species in the Waterton Lakes including: lake whitefish, bull trout, lake trout, and mountain whitefish. The pygmy whitefish, found in Upper Waterton Lake, is not found in any other lake in the Hudson Bay drainage. This is the only known occurrence of the deepwater sculpin in Alberta. Stocking has introduced 6 other fish species into the lakes, including brown trout, arctic grayling, rainbow trout and West Slope Mountain cutthroat trout (Seel et al. 1984).

4.2.5. Cultural Resources

4.2.5.1. Banff

Rafting tours embark on a gravel beach near the bridge where the Golf Course Loop Road crosses the Spray, near the confluence of the Spray and the Bow Rivers. There are two known archaeological sites here.

Site 1204R, a precontact quarry site, was recorded on the rock outcrops immediately at the junction of the rivers. Chert flakes and core fragments were seen on the outcrop, which was likely a source for many of the chert flakes found in other sites on the golf course. The site is of moderate to high potential for further recovery of archaeological remains.

Site 1207R, a precontact campsite, was recorded on a fluvial terrace of the Spray about three to four m above river level. The site area is at least 300 sq. metres. A hearth feature with a number of lithic tools and artifacts was radiocarbon dated to 735 ± 100 BP. There are also historic artifacts in the uppermost levels. The site has moderate to high potential for further recovery of archaeological remains. The site also shows good preservation of organic remains, due to rapid overbank deposition, which is uncommon in Banff National Park sites.

Lake Minnewanka has a number of significant sites. There are submerged remains that are extremely popular dive sites, which include features from the Minnewanka townsite that was once there (foundations, street layouts, wharves), and the remains of the 1895 wooden dam and the 1912 concrete dam that are now submerged. The 1895 wooden dam is particularly fragile. The 1912 structure is more substantial, but there are hazards to divers present that sometimes require the park to close the area to diving. There are also some extremely significant 10,000 year old sites on the shores of Minnewanka.

4.2.5.2. Jasper

Operation Habbakuk: W.W. II Vessel Prototype
Habbakuk was a prototype experiment conducted on Patricia Lake in Jasper National Park during World War II. The objective was to construct airplane landing strips of ice in the North Atlantic to protect shipping lanes. The prototype model at Patricia Lake required construction of an ice and wood structure with considerable metal ductwork and refrigeration pipes.

The site is located in Patricia Lake at depths ranging from 85 to 140 feet. Wooden remains of four walls and a floor are present at the site along with an "...incredible jumble of piping from the ductwork and the great quantity of asphalt/bitumen which lies scattered in slabs or still clinging to the walls" (pg.35) (Langley 1995).

4.2.5.3. Waterton Lakes

Emerald Bay contains the sunken *Gertrude*. The *Gertrude* was a 60 horse power, 100 foot long steam paddle wheeler. It was built in 1907 for pulling logs to a lumber mill. After the lumber mill closed in 1911, the boat was used for tourists until 1916 and as a tea room and restaurant until 1918. In 1918, Parks Canada considered the boat inappropriate for a park setting and it was scuttled in Emerald Bay because it was impractical to remove it from the park (Pers. Comm. Gwyn Langemann).

The Emerald Bay beach is itself part of a highly significant precontact archaeological site (570R, or DgPl-3), which is a campsite with artifacts dating over the last 8000 years. Artifacts are often found eroding on the beach itself, exactly in the area used by the diving groups.

4.2.6. Socio-Economic/Visitor Experience

The visitation to the mountain parks in 2001-2002 was between 413515 visitors in Waterton Lakes and 4 687 378 visitors to Banff (Table 4). Associated with these visitors is a variety of infrastructure, recreational activities and commercial activities, townsites, ski hills, campgrounds, hiking trails, bus tours and other activities. Over 20 commercial aquatic guiding companies are based out of Jasper, Banff, and surrounding cities. In a 1995 study of visitors to the rivers within Jasper, 21% of visitors participated in guided rafting, and 3.8% participated in guided canoeing/kayaking (Wright et al.). Guiding companies contribute to the local economy through employment, accommodation for employees, taxes and local purchases of supplies, equipment and support services. Often staff housing must be found within the limited housing offered in park communities.

Table 4. Visitation to mountain national parks in 2001-2002

National Park	2001-2002 Visitation
Banff	4, 687, 378
Jasper	1, 947, 286
Kootenay	1, 590, 596
Yoho	1, 371, 105
Waterton Lakes	413, 515

Visitor experience to a park is a complex mix of values, perceptions, opportunities and events. Surveys are used to try and understand what are some of the most important factors affecting visitor experience. A study of visitors participating in activities associated with rivers in Jasper, found different motivations for their activities. Visitors participating in rafting tended to be motivated most by a "sense of adventure", whereas nature and the environment was the highest motivation for other visitors (Wright et al.).

Visitation in the parks has increased by between 1% and 32% over the past 5 years (2% in Kootenay, 32% in Yoho, 1% in Rev/Glacier, 10% in Banff, 11% in Jasper, 12% in Waterton Lakes). In general increases in backpacking, camping, and winter activities are the current trend in the United States and likely in Canada as well (Cordell et al.). In Jasper, overnight use has remained stable or slightly decreased over the past 15 years (Pers. Comm. Grant Potter).

5. Analysis of Environmental Effects

This section of the MCSR outlines the environmental effects and mitigation associated with aquatic-based commercial guiding activities. The environmental effects and mitigation associated with each activity are then outlined and discussed by VEC. Site-specific sensitivities are identified by Park and site-specific mitigations outlined where appropriate . Residual environmental effects are identified and evaluated for significance. The process for the evaluation of cumulative effects through the CSPR and business licencing process is outlined. The Section concludes with a discussion of the surveillance and follow-up activities required to monitor the impacts of aquatic-based commercial guiding activities.

5.1. Activity Specific Analysis

5.1.1. Introduction

The activity specific analysis focuses on environmental effects that most commonly occur as a result of aquatic-based commercial guiding activities. A review of literature was used to identify the most common effects of each type of activity on the VECs identified in section 3.1. Based on literature and existing practices, mitigation measures were identified to mitigate for environmental effects described. In addition to sources specifically referenced, mitigation was developed and cross checked against best management practices based on the work of Harmon (Harmon 1994), Klassen (Klassen et al. 1999) and NOLS (NOLS 2002).

The discussion is organized by impact on VEC. For each VEC environmental impacts and mitigations are identified that are associated with, and applicable to, all aquatic-based guiding activities. Additional impacts and mitigation are identified for specific activities that may affect a specific VEC and that are not applicable to all guided activities. The impacts and mitigation associated with overnight use are generally addressed under impacts applicable to all aquatic-based guiding activities, or under the impacts of specific activities as appropriate. The potential effects of the environment on project activities, and the potential effects of accidents and malfunctions are also discussed.

In Appendix 2 mitigation measures were developed into "best management practices" (BMPs) to be used by guides when conducting guiding operations. The mitigation measures in the following sections apply to all guiding operations included in the scope of the Model Class Screening. The terms "operator" and "operation" refer to the company offering a guiding service. The term "guide" refers to the individuals actually in the park leading visitors on a commercial outing.

In addition to the measures outlined in the Model Class Screening, business operators and guides are expected to comply with any local park regulations, policies, guidelines, travel restrictions, area closures, established reservation systems or other directives issued by Parks Canada for the purpose of mitigating environmental effects or ensuring public safety.

Guides are expected to act as stewards, set proper examples for trail and river etiquette, and educate guests on the importance of keeping areas pristine. Guides are expected to monitor client actions and ensure that minimal impact practices are implemented.

5.1.2. Terrestrial Wildlife

5.1.2.1. Environmental Effects of All Guided Activities

The following effects apply to all guiding operations included in the scope of the Model Class Screening.

Effects of guided recreational activities on wildlife can include physical displacement from an area, disruption of the animal's activities through fragmentation of habitat, and habituation and interactions with humans.

Repeated disturbance of wildlife by people may result in wildlife moving away from familiar habitat and in changes to home ranges (Hammitt 1987). Larger groups of visitors are a greater threat to wildlife and create more noise, resulting in a greater likelihood of disturbance. Frequent disturbances also are more likely to displace wildlife. Displacement may result in an increased vulnerability to predators and competitors, disruption in foraging, or movement to a poorer quality of habitat. Disturbance of birds on nests can cause the birds to abandon their nest or predators/parasites could prey on the eggs while they are away from their nest. For example, nesting waterfowl could be frightened away from their nests or chicks from preferred feeding spots repeatedly by rafting or canoeing groups in the same areas. This effect could be magnified if the birds flee in the direction the boats are going and then are again disturbed from this habitat. This disturbance could decrease the survival rate of the chicks. The aquatic foraging activity of raptors, waterfowl, and wading birds can be disrupted by guided aquatic activities. Large carnivores such as bears and wolves seem to be particularly affected by human presence because they require larger areas without disturbance. Core carnivore habitat is fragmented by trail networks, roads and other human activity (Gibeau et al. 1996).

Wildlife movement is also affected by the presence of humans. Wildlife may not be able to move naturally through their home range or to other areas if human activity blocks their path. Wildlife use informal trails as travel paths or ‘movement corridors’ to avoid human use on designated trails. ‘Movement corridors’ are often river valleys and human activity on and near the river can discourage or prevent movement through these areas. As human use increases on non-designated trails, wildlife are displaced from their established feeding and travel paths (Parks Canada 2002).

Habituation occurs after repeated interactions between people and animals. Animals and birds such as ground squirrels and Clark’s nutcrackers will beg for or steal food at lunch sites, in campsites and on trails (Parks Canada 2002a). This type of behaviour may lead to animals becoming a nuisance and altering their natural feeding habits. Wildlife that become threats to public safety (black bears, grizzly bears, elk, wolves and cougars) may be removed, relocated or destroyed. Unleashed dogs are likely to chase wildlife, and in some instances, may attract bears towards their owners, resulting in a conflict that may end in the injury or death of the owner and/or death of the bear (Spowart 1990).

Urination has little direct affect on vegetation or soil but may attract wildlife to the salts resulting in defoliation of plants and dug up soil (Parks Canada 2002c).

5.1.2.2. Environmental Effects of Specific Activities

Fish Cleaning
Both the acts of cleaning fish and of improper disposal of the entrails can attract wildlife and modify their behaviour which may lead to habituation and wildlife/human conflict.

Kayaking/Canoeing
The type of activity and environmental impacts of canoeing and kayaking are very similar to those associated with rafting and voyageur canoeing. Canoe and kayak groups however may include numerous boats allowing groups to potentially separate and disperse. This raises potential public safety concerns and also has the potential to spread out potential impacts and disturbance to wildlife.

5.1.2.3. Mitigation for All Guided Activities

- As part of a pre-trip briefing, operators and guides shall ensure clients are aware of wildlife sensitivities and potential hazards, National Parks regulations on feeding, enticing or disturbing wildlife and understand wildlife viewing and safety procedures.
- Wildlife viewing and safety procedures should be based upon the guidelines presented in Parks Canada brochure "Keep the Wild in Wildlife". The brochure describes appropriate behaviour when encountering habituated wildlife, safe distances for viewing and photographing wildlife, avoiding encounters and limiting attractants while travelling in the backcountry, and specific precautions for bears, elk and cougars. This brochure can be found on the Banff National Park of Canada internet site (http://www.worldweb.com/parkscanada-banff/visinfo.html). Other safety information regarding wildlife in the mountain parks is available on the internet at http://www.worldweb.com/parkscanada-banff/pubsafe.html. Where practical, operators should recommend these websites to clients during the time of booking.
- Guides shall manage groups during wildlife viewing opportunities such that the animal's normal behaviour is not disturbed – do not approach wildlife, keep lines of escape open for the animal and clients, and keep groups close together. Use binoculars in situations where it is desirable to enhance viewing opportunities.
- Guides shall maintain a distance of at least 100 metres from raptors, waterfowl and wading birds, or move to the opposite side of the river, stay in the boat, and remain quiet when appropriate.
- Guides shall maintain a distance of at least 100 metres from bears and a distance of at least 30 metres from Elk and other large wildlife species, or move to the opposite side of the river, stay in the boat, and remain quiet when appropriate.
- Guides shall maintain a distance of at least 300 metres from known wildlife den sites and nesting birds, or roosting birds, or young wildlife.
- Guides shall leave the area immediately in the event that dens, nests or young animals are accidentally encountered.

- Operators should discourage clients from bringing dogs on guided excursions. In the event that it is necessary to bring a dog, they are to be kept on leash at all times and must not be left unattended.
- Guides and operators are asked to report wildlife sightings, unusual wildlife behaviour, encounters with wildlife, injured animals and carcasses to Parks Canada. Marked animals (radio collars, ear tags, leg bands on birds, neck bands on swans) and injured animals should also be reported.
- Operators and guides and operators shall implement alternate trip or route plans as required in order to avoid close encounters with wildlife.

Operators and guides shall ensure that food and food smells are managed to avoid enticing wildlife:

- All garbage and food waste must be packed out. Garbage or food waste shall not be burned or buried or otherwise disposed of in the backcountry.
- If necessary, store all food in special caches provided, or hang it between two trees at least 4 metres above the ground.
- If camping, cooking, eating and supply areas shall be set up at least 100 metres from tenting areas. Designated backcountry campsites may already be arranged this way.
- All dishes and food utensils shall be washed and stored immediately after use. Strain food particles from dish-water and store with garbage. Dump dishwater in designated areas, or at least 100 metres from your sleeping area.
- Guides shall ensure that staging areas and facilities are kept clean to minimise the high percentage of animal mortality that occurs near human infrastructure (Parks Canada 2002a)

5.1.2.4. Mitigation for Specific Activities

Fish Cleaning
Dispose of entrails properly to reduce the risk of attracting bears and creating a safety hazard for visitors (Parks Canada 2002b). Use fish cleaning and disposal facilities where provided. In backcountry areas where bear-proof garbage bins are not accessible, dispose of entrails by puncturing the swim bladder (this allows entrails to sink) and deposit into deep water, using a boat if available (Parks Canada 2002b). Always clean your catch well away (300 m) from campsites, picnic sites, docks or other facilities.

Kayaking/Canoeing
Guides shall maintain visual contact with all boats in a group at all times and should stay within easy calling distance to minimize the spatial extent of, and repeated impacts to, wildlife.

5.1.3. Vegetation and Soils

5.1.3.1. Environmental Effects of All Guided Activities

Although aquatic activities take place on or in the water, impacts may result during access to the watercourse and certain activities take place in the riparian areas adjacent to them. The following effects apply to all guiding operations included in the scope of the Model Class Screening.

Vegetation

Vegetation can be removed by trampling or collection, damaged by trampling or altered through invasion of non-native species.

Trampling leads to soil compaction and can reduce plant cover and density, as well as alter species composition by damaging root systems (Roe et al. 1997). Removal or reduction of plant cover can lead to soil erosion through the loss of root stabilization, particularly on steep slopes or along shorelines (Spowart 1990). Removal of vegetation in campsites may occur to facilitate tent pads, although, in most cases, the areas have already been cleared of vegetation through intensive use. New areas may be used to provide a softer site (grass, moss), a drier site (under large tree branches) or when the capacity of the site is exceeded. For the activities covered by this MCSR, removal of vegetation is most likely near water's edge, which could result in further soil compaction and erosion as described on the following page.

Plants, particularly showy wildflowers such as orchids, wood lilies and columbine, are sometimes picked. Aesthetically, picking of wildflowers is a negative impact, as removal results in other users not being able to enjoy them. Ecologically, some species will not recover from picking and will not grow again in the next growing season. Species such as lady's slipper orchids (*Cypripedium* spp.) and wood lilies (*Lilium montanum*) are damaged so severely by annual picking resulting in total elimination from an area.

Collection of coarse woody debris, deadfall, lower branches, standing dead and live trees may occur around campsites and picnic areas for campfires. The lack of deadfall can impact the insects and bacteria and upset the natural cycle of decomposition in the forest. The impacts of firewood collection can impoverish forest stand structure and ultimately impact the diversity of vegetation. Removal of organic material can reduce soil quality changing soil chemistry and nutrient levels (McCann 1982). Coarse woody debris is also important for small mammals and their predators.

Non-native plants such as tall buttercup (*Ranunculus* spp.), dandelions (*Taraxecum* spp.), and Eurasian milfoil (*Myriophyllum Spicatum*) can be introduced by park users. Seeds may be transported and dispersed from footwear, clothing and equipment. Aquatic plants, such as Eurasian milfoil, can be transported from one lake to another in tangles attached to the propeller or boat trailer or in bilge water. Non-native plants threaten native species and impacts can be cumulative with potential to alter localized species diversity and composition (Roe et al. 1997).

Soils

Impacts to soils can include soil compaction, erosion and pollution. These impacts are particularly significant during wet and early season conditions or in sensitive areas such as riparian areas.

Soil compaction is one of the most obvious and direct impacts of foot traffic and camping activities (McCann 1982); Spowart 1990). Soil compaction causes changes to soil porosity, chemistry, moisture, temperature, soil microbia, as well as a loss of surface organic horizons (McCann 1982; Roe et al. 1997). Reduced moisture retention capacity may lead to runoff, erosion, trail widening and braiding in areas that are frequently used.

Soil compaction is more often problematic in areas with wetter soil; therefore, riparian areas could be impacted more severely than drier upland areas.

Erosion is the removal of vegetation, soils and moisture from an area. Foot traffic can cause trenching in trails resulting in soil enhanced moisture loss and channelization of run-off (Parks Canada 2002c). Soil erosion in riparian areas can occur more frequently because soil is often moist. The secondary impacts of soil erosion in riparian areas can also be important including sedimentation in waterbodies, slope destabilization and further erosion.

Trail braiding and trail widening contribute to both compaction and erosion of soil. Trail braiding is the creation of multiple pathways where one trail previously existed. Trail braiding and widening may be a result of wet or dry conditions. When or where trails are wet, trail users will avoid wet areas by going around them causing progressively wider detours and enlargement of the wet area (Parks Canada 2002c). In dry conditions, trail users will detour to avoid sections of exposed stones and roots. Trail braiding and widening can result in large patches of denuded terrain, particularly on hillsides, where the magnitude of terrain damage is compounded by erosion. The severity of impacts to soils caused by trail users depends on the intensity and duration of use, the nature of terrain, soil, drainage, and vegetation. Wet, poorly drained soils have longer recovery times than soils with better drainage. As explained in the previous paragraph, if trail braiding or widening occurs in riparian areas, for example landing locations for rafting lunches or trails for access by fishers, the secondary impacts can be important.

Soil can be polluted by garbage and fuels carried for cook stoves.

5.1.3.2. Environmental Effects of Specific Activities

Boating
Wave action caused by motorboats (gas and electric) can cause shoreline erosion.

5.1.3.3. Mitigation for All Guided Activities

- Operators and guides shall ensure that all clients are aware of National Parks regulations on picking or removing vegetation. Clients should be briefed on travel procedures including potential impacts to vegetation and soils prior to departure from staging areas.
- Guides should request that clients check for, remove and dispose of into garbage containers any bur-like seedpods or mud from boots, clothing and pets prior to departure from staging areas to reduce the risk of new weed infestations.

Operators and guides should make use of existing designated put-ins, take-outs, parking lots, trailheads, access trails and other established facilities where appropriate and available:

- Groups should be assembled on hardened surfaces such as parking lots and docks for activities or instruction.
- Ensure that clients have proper footwear for the ground and weather conditions including waterproof boots if conditions warrant. Soft sole shoes should be preferentially selected when ground conditions are wet.

- Avoid using access trails that have extensive wet areas or snow patches until later in the season when soils are dry and trails are clear of snow.
- When using access trails, groups should stay to the middle of the trail even when conditions are wet to avoid widening or braiding of trails.
- Pass on wide parts of access trails to reduce trampling and trail widening.
- Where a maze of multiple trails exist, travel on those trails most heavily used, with the most durable surface and the least potential for erosion.
- Do not use shortcuts or cut switchbacks and inform clients of the associated environmental impacts including vegetation damage, soil erosion, and damage to trail infrastructure.
- Avoid the use of markers or cairns except where they would encourage proper use; never blaze trees or otherwise damage vegetation to mark a location or route.
- Concentrate lunch and other rest stops in areas that are established for these purposes, on hardened surfaces, or that are already impacted.
- Guides and operators are asked to report adverse trail and facility conditions, vandalism, and user group conflicts to Parks Canada.

It is recognized that guides may at times decide to move off-trail or utilize areas that are not within the bounds of established facilities. Use of non-developed areas may under certain circumstances be an appropriate means of reducing the intensity of environmental impacts in and around heavily used areas and may be used to enhance visitor experience and reduce visitor conflicts for both commercial and private users. Care and discretion is required in order to ensure that the benefits of using non-developed areas are realized without causing additional environmental damage:

- Guides should choose routes or locations that follow or utilise the most durable surfaces whenever possible. Rock, talus, gravel and sand are considered to be the most durable surfaces. Snow is also a durable preferred travel surface provided that groups are equipped for comfort and safety.
- Guides should choose routes or locations that minimise impacts to vegetation and soils. Areas of naturally sparse vegetation are preferred routes as trampling can be easily avoided. Dry vegetation and soils are more durable than wet vegetation or soils.
- Guides should use discretion in the management of group travel and select the appropriate technique depending on the circumstances. When travelling through areas of undisturbed vegetation groups should spread out laterally to avoid repeated trampling and the creation of informal paths. In circumstances where travel is on durable surfaces it may be preferable to concentrate the group in one area or along one route.
- In general guides should avoid concentrating use in sensitive areas such as wet meadows, steep slopes and riparian areas or other undisturbed vegetated areas close to water.

Campfires are a traditional use that may enhance the visitor experience for many clients; however, operators and guides should discourage unrestricted use of fires. Operators should use gas stoves and lanterns as the primary sources of heat and light. Operators and guides shall ensure that they are aware of and comply with Park regulations,

restrictions and bans pertaining to the use of campfires. Operators and guides should note that updates to restrictions and bans might occur frequently and with little notice. The National Park Fire Regulations limit campfires in the parks to certain types of facilities or equipment:

> 4(1) No person shall start or maintain any fire in a park except
> a) in a fireplace on private property;
> b) in a fireplace provided by the superintendent;
> c) in a portable stove, hibachi or barbecue; or
> d) when in possession of a permit issued under subsection (3).

As a result commercial guides and operators are not permitted to build or use informal fire sites.

When using fires guides should educate clients on the environmental effects of campfire use including damage to vegetation and aesthetic impacts and best management practices as outlined below. Guides shall ensure that damage to vegetation, ground cover or soils is minimized when using campfires in permitted locations.

- Portable stoves, hibachis, or barbecues should be set up on durable, heat resistant surfaces and away from vegetation or litter wherever possible.
- Supplied wood should be used wherever available
- Where supplied wood is not available use fallen deadwood found on the ground for firewood; small standing deadwood under 2" in diameter is also suitable firewood.
- Select wood of a size that may be broken or felled by hand; avoid the use of saws or axes except for splitting supplied wood at established campgrounds.
- Avoid breaking off the lower dead branches of trees; if required remove the branch at the trunk ensuring that no unsightly or dangerous splinters remain.
- Guides should ensure that fires are completely extinguished, including all embers and coals and are cool to the touch.

5.1.3.4. Mitigation for Specific Activities

Scuba Diving and Fishing – Boating Operations

Avoid producing a wake that disturbs the shoreline and can cause erosion.
To avoid the introduction of exotic species, always clean the hull and propeller of a boat before transferring it from another body of water. Clean and inspect the boat trailer as well. Remove all dangling or attached pieces of vegetation.

5.1.4. Cultural Resources

5.1.4.1. Environmental Effects of All Guided Activities

Impacts to cultural resources can include damage to a site through vandalism or through removal of artifacts. It is considered extremely unlikely that guided groups are involved in vandalism or removal of artifacts. No report of damage by guided groups has been noted (Glenfield 2002). The following effects apply to all guiding operations included in the scope of the Model Class Screening.

Less intrusive impacts to cultural resources may be incurred by overuse of an area (Glenfield 2002). Cultural features which may be found on shorelines include evidence of pre-historic camps, aboriginal pit houses, the fur trade era, the railroad era, and explorers and surveyors camps. Trails may be established to hidden cultural resources and encourage other hikers to the sites. Trampling and vegetation removal (for example at rafting put-in and take-out locations) at locations containing buried cultural sites could result in the alteration of sediments affecting the contextual integrity of the site. Damage could occur to exposed or shallowly buried artifacts (particularly in eroding river banks) and alter their spatial associations and relationships. This can be a particular problem for fragile objects such as bone or ceramic. Trampling and vegetation loss can also lead to compaction and hence erosion as there is decrease in porespace and moisture content, reducing the capacity of the soil to absorb moisture. This will naturally increase the potential for runoff and erosion exposing artifacts and damaging site context. Sites situated in areas which contain silts or fine sands would be particularly vulnerable. Exposing artifacts will make them more vulnerable to vandalism or removal by visitors. Log structures can be disturbed through the removal of portions for firewood, carving of names, dates and other messages and tying up horses to the structures. Pictographs can be disturbed by over-painting of names, dates and other messages. Rock features, cairns, and tent rings can be disturbed by removal of rocks from these features.

5.1.4.2. Environmental Effects of Specific Activities

Scuba Diving

Underwater cultural resources, such as shipwrecks, can be adversely affected by touching the objects in any manner. This includes moving objects (swinging open doors), resting against them or simply brushing up against the object while passing by. Small artifacts may be removed from the site.

5.1.4.3. Mitigation for All Guided Activities

- Educate clients about the value of cultural resources when at a cultural site.
- Guides are responsible to ensure that clients do not remove any items from cultural sites nor vandalize the sites.
- Guides are responsible to ensure that clients do not deface or write on rocks, outcrops, trees, logs or park infrastructure.
- Do not rearrange cairns or add rocks to existing cairns.
- Limit foot traffic to hardened trails in the area if cultural sites are exposed as a result of trail braiding or the development of informal trails.
- Report the discovery of an artifact or cultural site to Parks Canada – do not remove or otherwise disturb the site.

Culturally Sensitive Sites

- Encourage operators to convey the message that parks are mandated to preserve and protect both natural and cultural resources.
- Advise all operators that historic or prehistoric artifacts should not be removed.
- Report any significant historic or prehistoric artifacts to the Warden Service.
- Report any disturbance of cultural resource sites to the Warden Service.

5.1.4.4. Mitigation for Specific Activities

Scuba Diving

- Divers must avoid touching underwater artifacts and cultural resources in any manner.
- Buoyancy must be controlled to avoid accidentally bumping into artifacts.
- Removal of artifacts is forbidden.
- Do not use anchor dragging to locate the site. The action of hooking onto remains of the structure could tear the structure remains and scatter components.
- Do not attach dive flags, lines, screws or any other devices to vessels.
- Do not build underwater cairns.

5.1.5. Aquatic Resources

5.1.5.1. Environmental Effects of All Guided Activities

Impacts to aquatic resources are in riparian areas and water quality. The following effects apply to all guiding operations included in the scope of the Model Class Screening.

There is a potential for changing habitat dynamics where riparian areas (vegetation, soils, landform) are adversely impacted by concentrated use. Loss of riparian vegetation can result in changes to water temperature and quality and can affect fish habitat.

Potential impacts to water quality can be chemical and bacteriological. They may include impacts to water clarity, water quality, aquatic species populations and distribution, and habitat change (Parks Canada 2002c). Sources for drinking water and human waste disposal are concerns as they can impact both human health and the environment. There are also potential impacts to aquatic species such as fish, amphibians, birds and mammals that use the aquatic environment as a food source. Drinking water can be contaminated directly or from runoff from human feces which may carry bacteria, giardia, hepatitis and other diseases. Surface and groundwater contamination can occur at campsites by improper disposal of garbage and direct deposit of gray water into water bodies from dishwashing and bathing. Washing dishes and bathing in streams and lakes leaves soap residues (Parks Canada 2002c).

Many factors influence water turbidity including wind action, water source, water temperature, nutrient levels, water chemistry, aquatic vegetation, productivity, substrate, erosion and run off. Of these, erosion and runoff can be altered as a result of disturbance by foot traffic and camping activities (Parks Canada 2002c). These effects may occur at stream crossings, on trails adjacent to rivers and lakes, and at or near backcountry campsites and lodges adjacent to water bodies.

Amphibians may be affected by habitat alteration in riparian areas and disturbance of egg masses.

5.1.5.2. Environmental Effects of Specific Activities

Fishing

Due to careless fishing techniques, many released fish do not survive (Lukacovic). The risk increases significantly in warm water (Lukacovic). Fish caught with barbed hooks have a greater number of injuries than those caught with barbless hooks (USGS 2002). The practice of culling fish, holding live fish for a time, then releasing smaller fish as larger ones are caught, lowers survival rates. Anglers may treat less desirable fish species that they catch carelessly or even kill them directly. Although catch and release is practiced widely, fish are killed and kept. This alters the age distribution of fish populations of the species and can impact the non-target fish species and other aquatic organisms.

Creeks and rivers may be affected by fly-fishing because people may stand in the water to fish. This disturbs the river bed and decreases water clarity. The fish may also be disturbed by the presence of people fly-fishing in creeks and rivers. The impact of wading through water can be particularly severe during spawning season when people may step on or disturb redds and eggs (Steele). Inappropriate disposal of fish entrails can attract wildlife and diminish the experience for other visitors.

Boating

Motorboat noise, movement, turbulence and wave production can disperse fish and aquatic wildlife (DFO 1998). Introduction of exotic species can occur when moving boats between lakes or rivers. Fish, amphibians and invertebrates can attach themselves to the bottom of a boat or trailer and can survive undetected in the bilge water or live well.

Cleaning any boat, even a small one, can dirty a lot of water. Many cleaning products contain phosphates and other chemicals that are toxic to aquatic ecosystems (DFO 1998). All soaps persist throughout the water column and are extremely harmful to aquatic life forms.

Diesel, gas, and petroleum lubricants are deadly aquatic pollutants (DFO 1998). Boat engines, automatic bilge pumps, fuel handling facilities, and accidents are responsible for spilling a great quantity of oil and fuel. Up to one billion litres of hydrocarbon and oil pollution enter North America's waters every year from recreational boating. Two-stroke engines are the most important source of a persistent form of pollution that has devastating effects on the aquatic environment (DFO 1998). An estimated 30 percent of all fuel and oil used in two-stroke engines ends up in the water. Exhaust fumes from both two- and four-stroke engines are of concern because these engines usually lack any form of emission control. There are approximately three million pleasure craft in Canada, most with two-stroke engines. Taken individually, their impact may be small; collectively it is a major concern. Manufacturers around the world are responding to this concern by developing four-stroke marine engines, lean-burn two-stroke engines, and fuel injection systems, which greatly reduce the amount of oil and fuel entering the water and air emissions. Electric motors are much more environmentally friendly as they do not require fuel or produce exhaust.

Scuba Diving

Diving can have direct and indirect impacts on water clarity as activities take place in the water and on the shoreline. Disturbing the bottom of lakes (on entry or during the dive)

can increase the sediment in the water column. Secondary impacts on aquatic life are likely localized and short-term. In winter, contaminants may be spilled or leak into the water from heaters and ice cutting equipment.

5.1.5.3. Mitigation for All Guided Activities

Operators and guides should be aware that riparian areas are often susceptible to damage through trampling due to wet soil conditions and the associated impacts they can have on the health of aquatic ecosystems. Avoid any fish spawning grounds.

- Guides should advise clients to bring their own water where feasible.
- When group water sources must be refilled in the field guides should select access points on durable materials or using crossing structures wherever possible.
- Guides should avoid deviating from established trails and rest stops adjacent to streams and lakes unless durable surfaces or dry surfaces are used.
- Use bridges where available to minimize damage to stream banks at water crossings.

Operators and guides should ensure that human waste is minimized and handled appropriately in the field to avoid visual and aesthetic impacts as well as to protect water sources from contamination.

- Encourage clients to use outhouse facilities where available at staging areas prior to the start of the excursion .
- Where available, schedule rest stops where toilet facilities exist.
- Where rest stop facilities do not exist, guides should carry a small spade, toilet paper, hand wipes, and plastic garbage bags to ensure proper disposal of human waste and garbage.
- Bury solid human waste when possible at least 60m (200 feet) from watercourses in a cathole covered with between 10-15cm (4-6 inches) of mineral soil.
- In areas where no active soil exists solid human waste should be covered but left near the surface to facilitate dessication and dispersal.
- Pack out toilet paper, hand tissues or any other personal human waste products.

Operators and guides should take measures to prevent and minimize potential water contamination associated with human activities such as washing, bathing, and cooking.

- Never deposit garbage, food wastes or wastewater refuse in streams or lakes.
- Use biodegradable soaps for dishwashing and bathing when soap is necessary.
- Bathe or wash away from water sources and avoid durable surfaces that lead directly to the water so that gray water may be absorbed and filtered by vegetation and soils before reaching any body of water.
- Dispose of gray water by screening and/or removing all food particles, then dispersing at least 50m (200 feet) away from watercourses and sleeping areas.
- Manage large amounts of wastewater by concentrating it in a sump hole; sumps should be at least 25-30cm (10-12 inches) deep and 70m (250 feet) from water sources.
- Treat drinking water by filtering, boiling or use of iodine to prevent disease.
- Store fuel in leak proof containers and use a funnel when pouring fuel from a container into a stove to reduce spillage.

- Guides shall not dispose of excess fuel, food or materials anywhere in the backcountry – any excess food fuels or materials must be packed out and disposed of at an approved facility.

5.1.5.4. Mitigation for Specific Activities

Fishing
A National Park fishing licence must be purchased and Park fishing regulations must be followed. The regulations include guidelines for catch-and-release practices (Claggett 2002) which include:

1. **Don't play fish to exhaustion.** Instead, use a landing net to bring fish under control before they're played out.
2. **Wet your hands when handling fish.** Dry hands and gloves will remove the protective mucous coating and scales.
3. **Handle fish in the net.** Grasp them across the back and head for firm but gentle control.
4. **Turn fish belly up while removing hooks.** This disorients fish momentarily for easier, quicker handling.
5. **Don't remove swallowed hooks.** Just cut the line next to the fish's mouth.
6. **Don't keep fish out of the water more than 10-15 seconds.** Fragile gills are damaged after that, especially in cold weather.
7. **Revive the fish before releasing (The Catch and Release Foundation 2001).** Hold it under the belly and by the tail, keep it in an upright position underwater. If you are fishing in a river or stream, hold the fish facing the current. Be patient and give the fish as much time as it needs to recover and swim away on its own.
8. **Bring a fish up slowly from depths 30 feet or greater (The Catch and Release Foundation 2001).** This can allow the fish to decompress and increase survival chances. Pause while reeling the fish in and allow the air or gas from the fishes swim bladder to rise to the surface.
9. **Don't cull fish.** Decide quickly whether to keep the fish or not. Do not retain fish on stringers or in live wells, only to be set free when a larger fish is caught. This practice results in an increased mortality of released fish.
10. **Do not angle in waters over 18^0C.** Continuing to angle in waters greater than 18^0C reduces the ability of fish to survive the catch and release process.

Guides must educate clients about the importance of non-sport fish to prevent the destruction of these species when they are accidentally caught (Mayhood 1992). Avoid wading in rivers, creeks or streams when fish are spawning in that particular area. This requires knowledge of species diversity in the different streams, rivers and creeks as well as their biology. Retrieve as many snagged hooks and lines as possible. Always rinse all mud and debris from all waders and gear that will enter the water to avoid introducing exotic species. If waders or equipment is known to come from an area heavily affected by whirling disease, disinfect the equipment with bleach (1 part chlorine to 9 parts water for 10 minutes), rinse and let dry in the shade (The Whirling Disease Foundation). Fish entrails should be sunk in the middle of the lake after puncturing the swim bladder or packed out.

Scuba Diving

- When diving from shore, choose sites with coarse substrates and little vegetation growth to minimize damage to the riparian area when entering the water. Restrict access to one entry site and contain equipment in one localized area (preferably on a hardened surface) to prevent compaction, erosion and so as not to discourage use of the area by the general public.
- In winter:
    - Refuel and maintain all equipment off ice, in areas with impermeable surfaces, a minimum of 30 m from water.
    - Use biodegradable chain oils if possible, in ice cutting equipment.
    - Heating stoves or equipment must be filled with fuel in spill proof containers.
    - No vehicles are permitted on the ice.
    - When cutting a hole in the ice, push the freed piece of ice to the side underwater so that it can be used to plug the hole when diving is finished. (Several 2 x 2 boards placed between these ice sheets prevent them from freezing together). Holes in the ice must be no larger than 4 m in diameter, (usually a triangle is cut). All open holes must be constantly supervised by persons at the hole. Holes completely covered by a tent may be left unsupervised overnight, for a maximum of two nights, if the name of the person responsible, the company offering the course and a contact phone number are affixed to the tent. No overnight camping is permitted.
    - Generators are permitted but must only be run during diving activities. Place generators on a waterproof base to eliminate spilling during refuelling and oil leakage. Place generators at least 3 m from the ice hole, and berm snow to prevent seepage into the water in the event of a fuel spill or leak.
    - Remove all garbage (each day) and equipment brought onto the ice.
    - When the site is vacated, slide the ice “plug” back into place, and mark the corners of the hole with flagging tape and wands, for a period of 4-10 days. Remove these markings within 2 weeks.
    - Use washroom facilities located on shore or directly deposit human waste in a container and remove (Duane 2001).

Scuba Diving and Fishing – Boating Operations

To avoid the introduction of exotic species, always clean the hull and propeller of a boat before transferring it from another body of water. Clean and inspect the boat trailer as well. Empty the bilge and live well as tiny invertebrates and larval organisms can survive and be transferred in the water.

Avoid using cleaners that contain phosphates and other toxic cleansers.

Note: In Canada, manufacturers do not have to substantiate such claims as “non polluting” and “fully biodegradable.” Remember that all detergents — even those that call themselves “environment friendly” or “green” — contain polluting phosphates and nitrates. The “Environmental Choice” logo indicates a degree of acceptability (DFO 1998).

Safe fuelling suggestions:

- When fuelling a boat, use extra caution and avoid any spills. Raw fuel is extremely harmful to the aquatic environment.
- Have a cloth at hand to deal with any spill quickly and effectively. Use one for the filler and one for the fuel tank vent. Pay attention!
- If you have portable fuel tanks, never fill them on board. Take them ashore where spills are less likely to occur. Fire regulations require that you fill portable fuel tanks off the boat.
- If you have engine-mounted tanks, it is best to take the motor ashore to refuel. Use a funnel and have an absorbent cloth at hand.
- If you have fixed or built-in tanks:
    - Know the capacity of your fuel tank.
    - Have an accurate fuel gauge.
    - Determine how much fuel you need.
    - Do not overfill. Excess fuel can escape through the vent line when the fuel expands as it warms, or when the waves are rough.
    - While you are filling the tank, use your hand to check for air escaping from the vent. When the tank is nearly full, you will feel a distinct increase in air flow. That is the signal to stop filling.
    - Install an anti-surge valve in the fuel vent line to prevent fuel from leaking overboard.

Where feasible use an electric motor when trolling. If electric motors are not available use four-stroke motors if feasible. If motors are going to be replaced, replace motors with four-stroke or electric motors.

5.1.6. Visitor Experience

5.1.6.1. Environmental Effects of All Guided Activities

The following effects apply to all guiding operations included in the scope of the Model Class Screening.

Commercial users have large impacts on the visitor experience of other park user groups. These impacts are of both a visual and auditory nature. Impacts are the result of guided-group sizes and perceptions by other user groups about guided activities (Glenfield 2002). On average, guided recreational users have larger group sizes than independent parties. Encounters with these large group sizes could diminish visitor experience, particularly at put-in, take-out, and rest locations.

Encountering groups participating in different activities can also diminish visitor experience. For example, rafting groups coming down the river may disturb people fishing. In Jasper, between 41 and 53% of river visitors who were not participating in rafting, thought that guided kayaking and rafting should be in separate areas (Wright et al.).

The visitor experience, for many people, is greatly enhanced by commercial guiding. People, who might not go exploring on their own, may be willing and enthusiastic to take

part in commercial guided activities in the national parks. Commercial guided activities take people into areas of the park that they might not explore on their own. They also provide interpretation and education about the surrounding ecosystem, enforce mitigation, and therefore increase the knowledge and respect that people have for the park.

5.1.6.2. Environmental Effects of Specific Activities

Boating
The noise, gas fumes, motion, and wave production of motorboats can be annoying to park visitors and detract from the wilderness experience.

Scuba Diving
Shelter tents on ice may distract from scenic view. The cutting of holes in the ice or on-site decompressors will produce a noise disturbance if other visitors are nearby. Non-commercially guided divers could use ice holes.

5.1.6.3. Mitigation for All Guided Activities

While not having a direct environmental impact, large size guided groups can have a negative effect on the perception of the environment and the visitor experience of other park users. Large group sizes and crowding at rest stops and viewpoints affects the aesthetic experience and feelings of solitude and remoteness that many backcountry visitors seek.

- Operators shall comply with group size restrictions as per business license stipulations, zoning and area management restrictions.
- Guided groups do not have precedence over other groups. Guides shall act in a courteous manner towards other user groups.
- Where possible guides should seek group consolidation, solitude and separation from other park users or groups at staging areas and rest stops.
- Guided groups should attempt to keep noise to a minimum.
- Where feasible, operators should try to minimize overcrowding by scheduling departure dates and times that avoid high use times. Guides should minimize overcrowding by managing the amount of time spent at high use sites.
- Guides should pick up garbage and take reasonable measures to restore impacted sites that are encountered during the course of an excursion.
- When requested, or when a perceived need arises, guides are expected to pass environmental management or interpretive information on to non-guided groups and to offer emergency or other assistance to non-guided groups when needed.

Campfire use can affect the experience of other visitors:

- Guides should use dry seasoned wood that burns cleanly to limit the amount of smoke from campfires.
- Guides shall refrain from burning food or garbage such as plastics that produces odours and harmful emissions. Partially burned items are not to be left in fire pits.
- Campfires shall be kept small and noise around the campfire shall be minimized in campsites shared with other users.

Vehicle use can negatively affect the visitor experience:

- Operators shall encourage car pooling or provide shuttle van pick-ups for clients when possible to reduce pollution and vehicle congestion at trailheads. Group transportation is required for scuba diving, rafting and voyageur canoes in Jasper.
- Operators shall make use of existing shuttle services where they exist.
- Operator vehicles shall be in good running order.
- Operators and guides shall minimize idling of vehicles at trailheads and pullouts.

5.1.6.4. Mitigation for Specific Activities

Scuba Diving and Fishing – Boating Operations
Guides must respect other park visitors and use the boat for travel to and from destinations, not for joy-riding.

Scuba Diving

- In winter, take shelter tents down after each weekend.
- Restrict access to one entry site and contain equipment in one localized area (preferably on a hardened surface) so as not to discourage use of the area by the general public and interfere with their enjoyment.

5.1.7. Malfunctions or Accidents

5.1.7.1. Environmental Effects of All Guided Activities

Guided recreational activities in the Canadian Rocky Mountains have seen substantial growth within the last 5 years (Glenfield 2002). Medical emergencies, aggressive wildlife encounters, and weather related emergencies are some of the public safety incidents that could arise from all types of guiding activities.

5.1.7.2. Environmental Effects of Specific Activities

Fishing
Fishing guides using gas motors may spill gas when refuelling or in the case of an accident.

5.1.7.3. Mitigation for All Guided Activities

- Public safety requirements will be addressed through the business licences.

5.1.7.4. Mitigation for Specific Activities

Fishing

- See mitigations under Aquatic Resources.

5.1.8. Effects of the Environment on All Guided Activities

Environmental Effects

Guided recreational activities in the Canadian Rocky Mountains have seen substantial growth within the last 5 years (Glenfield 2002b). Medical injuries and illness, aggressive wildlife encounters, group separation and lost people, and weather related emergencies

are public safety issues caused in part by environmental factors that may arise related to any guiding activity. Rugged terrain, difficult weather conditions and remote locations may compound the severity of public safety incidents and the difficulty of search and rescue efforts.

Mitigation for All Guided Activities

Guide training standards and certification requirements, including first aid certification, have been standardized by the mountain parks and are attached as conditions of the business licences. Guide/client ratios and other public safety requirements are also included as business licence stipulations. Parks Canada has a staff team dedicated to the identification and management of public safety issues. No additional mitigation is identified or required as part of this environmental assessment to address public safety concerns. However, guides and operators are responsible to ensure they operate in accordance with the standards and certification requirements identified in their business licence. Guides and operators are also responsible to ensure that guided groups have the appropriate safety equipment for the activity in question.

5.1.9. Effects of Changes to the Environment on Socio-Economic Conditions

Commercially guided activities contribute to the economy through employment, either directly or indirectly, accommodation for employees, and local purchases of supplies, equipment and support services. Often staff housing must be found within the limited housing offered in park communities. Most companies are local and only a few are based outside of Western Canada.

Impacts to the natural environment as a result of aquatic-based guiding activities are not expected to: negatively affect the demand for guiding services; affect the type or scope of other visitor services; affect the level of visitation by independent users; or affect the livelihood of people in or around the parks. No additional mitigation is identified or required as part of this environmental assessment to address the potential impacts of changes to the environment on socio-economic conditions in or around the Parks.

5.2. Site-Specific Analysis for All Activities

5.2.1. Introduction

Sensitive sites are evaluated in this section to identify unique environmental characteristics and issues that may not be adequately addressed through the implementation of standard activity-specific mitigation. Sensitive sites were identified and described in Section 3 by referring to management plans, ecological land classification information, and through consultation with Park Canada Field Unit staff. The discussion of site-specific environmental sensitivities is organized by park and subdivided by site. Ecologically sensitive features are identified and mitigations outlined for each sensitive site as appropriate. Mitigating measures for all sensitive sites are included as standard terms and conditions attached to every business licence. Site-specific mitigations were not identified for every sensitive site. For some sites, direction provided in Park management plans was considered adequate to mitigate the potential environmental impacts of commercial guiding activities and no additional mitigation was considered necessary.

5.2.2. Banff

Site 1207R, a precontact campsite, recorded on a fluvial terrace of the Spray about three to four metres above river level. This is a high use area and is the site where rafts are put into the Bow River. The site area is at least 300 sq. metres.

- Stay on the gravel beach when loading and unloading vehicles and equipment. Do not stray onto the undisturbed area of grass and trees.

Lake Minnewanka has a number of culturally significant sites under water.

- Do not drag anchors to locate sites.
- Follow guidelines described in the pamphlet "Diving Lake Minnewanka Submerged Cultural Resources Banff National Park" (Canadian Heritage Parks Canada 1997)

New and expanded business licence will be assessed for additional site-specific and cumulative effects on Site 1207R and Lake Minnewanka through the CSPR forms and business licence process. It is expected that the implementation of best management practices by guides and outfitters, in combination with overall human use management objectives implemented by Parks Canada, will effectively address the potential environmental impacts associated with commercial operations at other sites and in other areas of the park.

5.2.3. Jasper

Operation Habbakuk: W.W. II Vessel Prototype

- Anchor dragging should not be used to locate the site. The action of hooking onto remains of the vessel will tear the vessel remains and scattered components.
- No lines, screws or any other devices should be attached to any of the existing vessel remains.
- No vessel parts should be removed.

Old Fort Point

Improvements identified in the management plan for Old Fort Point include improvements to interpretation of the Athabasca River, parking, traffic flow and day-use. To facilitate the management of the many interests at this site a site plan is being developed. Elk calving and other wildlife issues will be addressed in this process.

- Comply with Superintendent's Order closing Old Fort Point for elk calving and site management plan when developed.

Maligne Lake Outlet ESS

The park management plan identified actions required by Parks Canada to preserve this ESS including: closing the outlet to all use during May and June to protect the harlequin duck "club site", closing the mid-Maligne River to in-stream use, rehabilitating the riparian willow and upland vegetation communities in the outlet area, and improving the presentation of the site's significance (Parks Canada 2000a). In addition, no boating is allowed on the lake within 100 m of the outlet or on the river. No additional mitigation has been identified in order to manage the potential impacts of commercial guiding use.

- Guides must comply with Superintendent's orders regulating use at the Maligne Lake Outlet.
- Guides are encouraged to avoid the Maligne River shoreline (any area within sight of the river) within 400 m of the outlet as recommended by the Voluntary Restriction to allow for rehabilitation of the riparian area.
- The Maligne Lake Outlet has been permanently closed to fishing.

New and expanded business licences will be assessed for additional site-specific and cumulative effects on Operation Habbakuk, Old Fort Point, and Maligne Lake Outlet ESS through the CSPR forms and business licences process. No unique site-specific concerns that would require the implementation of mitigation measures beyond the standard best management practices were identified for other sensitive ecological or cultural sites in Jasper National Park.

5.2.4. Kootenay

It is expected that the implementation of best management practices by guides and outfitters, in combination with overall human use management objectives implemented by Parks Canada, will effectively address the potential environmental impacts associated with commercial operations for all sites in the park.

5.2.5. Yoho

Kicking Horse River
Based on results of preliminary monitoring and habitat assessment, commercial rafting at the present level and in the present location requires the following mitigation.

- Due to the sensitivity of harlequin ducks breeding along the river, and the limited availability of site specific data associated with this issue, commercial rafting will be limited to the section of the river downstream of Wapta Falls.

New and expanded business licences will be assessed for additional site-specific and cumulative effects on the Kicking Horse River through the CSPR forms and business licence process. No unique site-specific concerns that would require the implementation of mitigation measures beyond the standard best management practices were identified for other sensitive ecological or cultural sites in Yoho.

5.2.6. Waterton

Sunken *Gertrude* in Emerald Bay:

- No actual touching or grabbing onto the wreck for buoyancy control.
- No anchor dragging.

New and expanded business licence will be assessed for additional site-specific and cumulative effects on the *Gertrude* through the CSPR forms and business licence process. No unique site-specific concerns that would require the implementation of mitigation measures beyond the standard best management practices were identified for other sensitive ecological or cultural sites in Waterton National Park.

5.3. Residual Effects and Significance

This section evaluates the significance of negative environmental effects of a single project under the MCSR. As described in 3.3, ecological effects are considered significant if they threaten the continued existence of native species or biological communities. Effects to cultural resources are considered significant if the integrity or use of the resource is compromised by project activities. Effects to visitor experience are considered significant if overall visitor satisfaction would be decreased as a result of project activities.

Positive residual effects from commercial guided activities include the education and increased respect for environmental and cultural resources that clients gain from their guide. As a result of guide influence, clients are more likely to follow practices designed to mitigate negative environmental effects. Clients may also experience new activities in new locations that they would not experience on their own. The influence of professional guides in many cases is expected to result in improved resource protection and enhanced visitor safety and experience.

The criteria of magnitude, geographic extent, duration, frequency, and reversibility are used to evaluate the significance of potential negative environmental impacts (see Table 1 for definitions). Each VEC is evaluated for the significance of residual effects after mitigation, with the results summarized in Table 4. It should be noted that this section of the MCSR evaluates the significance of impacts that are likely to occur as a result of a single commercial operation. The cumulative impacts are evaluated separately through the CSPR and Business Licencing review process (see Section 4.4).

Terrestrial Wildlife

The impacts of individual commercial guiding operations to grizzly bears is expected to be limited in geographic extent, duration, and frequency. Human/grizzly encounters are likely to result in disturbance level impacts only. The activities of individual commercial guiding operations are not likely to threaten the continued existence of grizzlies in any location in the mountain parks.

The impacts of individual commercial guiding operations to harlequin ducks is expected to be limited in geographic extent and duration. Disturbances could be weekly in some locations for some operators. Encounters are likely to result in disturbance level impacts only. Operators are not allowed to operate during the times when harlequin ducks have congregated to breed; therefore, disturbance impacts of one commercial guiding operation are not likely to threaten the continued existence of harlequin ducks in any location in the mountain parks.

Wildlife species, other than the sensitive species mentioned above, may be impacted more frequently by a given commercial guiding operation. Some individual licences may operate daily in the same location and encounter the same small mammals or waterfowl. Individual operations are not likely to cause significant impacts to other species of wildlife as the geographic extent, magnitude and duration are expected to be negligible. Most human/wildlife encounters are expected to result in disturbance level impacts and some species that could be repeatedly exposed to disturbance are easily habituated,

reducing the impacts. The activities of individual commercial guiding operations are not considered likely to threaten the continued existence of wildlife species in any location in the mountain parks.

Soils and Vegetation

The impacts of individual commercial guiding operations to vegetation and soils are expected to be quite localized around areas of high use, and to result in disturbance or damage level impacts that may be considered to be reversible over time with vegetation re-growth. Impacts may occur relatively frequently for companies offering regular trips to the same locations. However, as the impacts of individual commercial guiding operations to vegetation and soils are quite limited in geographic extent, they are not likely to threaten the existence of native vegetation populations and as a result not likely to result in significant impacts to native vegetation.

The potential introduction and spread of new non–native plant species as a result of commercial guiding activities is considered unlikely after implementation of the standard mitigation measures. Reversing the effects related to the introduction of an invasive species may require active management over a significant period of time and may never be completely successful. Given the implementation of the standard mitigation, and invasive species control measures already put in place by Parks Canada, individual commercial guiding activities are unlikely to result in an introduction, or a further spread, of invasive species that would threaten the existence of native plant communities.

Aquatic Resources

The impacts of individual commercial guiding operations to bull trout and westslope cutthroat are expected to be limited in geographic extent, duration, and frequency. Although, the catch and release of these fish may cause damage to fish or kill fish occasionally, the activities of individual commercial guiding operations are not likely to threaten the continued existence of bull trout and westslope cutthroat in Banff and Waterton. The reversibility of impacts to westslope cutthroat in Jasper, Kootenay and Yoho will be minor to considerable depending on whether they are caught and released or kept. However fishing is regulated to protect the westslop cutthroat population; therefore, the activities of one commercial guiding operation are not likely to threaten the continued existence of this species.

The potential introduction and spread of new non–native aquatic species and diseases as a result of commercial guiding activities is considered unlikely after implementation of the standard mitigation measures. Reversing the effects of an introduction of an invasive species may require active management over a significant period of time and may never be completely successful. The introduction of new non-native aquatic species would result in disturbance level impacts to native species. However, if a new fish disease was introduced the impact could be fatal for some fish. Given the implementation of the standard mitigation, and invasive species control measures already put in place by Parks Canada, individual commercial guiding activities are unlikely to result in an introduction, or a further spread, of invasive species that would threaten the existence of aquatic communities.

Other aquatic species will be affected in varying ways. The impacts of individual commercial guiding operations on species that are not being fished are expected to be limited in geographic extent, duration, and magnitude. The frequency of impacts will vary depending on the activity, but is still likely to be minor. Fishing will result in the loss of individuals from the population. However fishing is regulated to protect populations; therefore, the activities of one commercial guiding operation are not likely to threaten the continued existence of any aquatic species.

The impacts of individual commercial guiding operations, not involving gas motors, on water quality are expected to be limited in geographic extent, duration, magnitude and frequency. Gas powered motorized activities are of short duration, although an individual operation's activities could be daily. Boats using gasoline powered motors are only allowed for these activities on Lake Minnewanka in Banff. Although more research could provide a more definitive assessment, decreases in water quality, compared to historical levels, are not evident. Impacts from regular operations after applying the mitigation are only expected to create disturbance level impacts. Given the implementation of standard mitigation measures, it is not expected that individual commercial guiding operations will have any significant effect on water quality.

Cultural Resources

Given the implementation of standard mitigation measures it is not expected that the impacts of individual commercial guiding operations will result in residual effects on the integrity or context of cultural resources or sites.

Visitor Experience

Given the implementation of standard mitigation measures, the impacts of individual commercial guiding operations are not likely to cause significant adverse impacts to levels of visitor satisfaction. Interactions between commercial groups and any given independent user are expected to be short in duration, infrequent and relatively minor in nature.

Accidents and Malfunctions

Given the implementation of standard mitigation measures and management measures already put in place by Parks Canada, accidents by individual commercial guiding operations which could have significant effects on ecological or cultural resources or on visitor safety and experience are not likely. Although a spill from a motorboat could destroy some individuals of a species, the probability of a spill is low and the possibility of severe damage is also low. If these events did occur, the effects would not impact the ecosystem or population. Accidental damage to underwater cultural resources by people learning to scuba dive could cause irreversible effects. However, with the implementation of the mitigation, the probability of accidental damage occurring is very low.

Table 4. Evaluation of the significance of adverse residual impacts on VECs before consideration of cumulative effects

(Neg. means negligible, N/A means not applicable, Con means considerable).

VEC	**Aspect**	**Geographic Extent**	**Duration**	**Frequency**	**Reversibility**	**Magnitude**	**Significance**
Wildlife	Grizzlies	Neg.	Neg.	Neg.	Neg.	Neg.	Not Significant
	Harlequin Ducks	Neg.	Neg.	Minor	Neg.	Neg.	Not Significant
	Other Wildlife	Neg.	Neg.	Minor-Considerable	Neg.	Neg.	Not Significant
Vegetation & Soils	Native Vegetation	Neg.	Neg.	Minor	Minor	Minor	Not Significant
	Non-native Vegetation	Neg.	N/A	Neg.	Considerable	Neg.	Not Significant
	Soils	Neg.	Neg.	Minor	Neg.	Neg.	Not Significant
Aquatic Resources	Bull Trout	Neg.	Neg.	Neg.	Neg.	Minor to con	Not Significant
	Westslope Cutthroat	Neg.	Neg.	Neg.	Minor to considerable	Minor to con	Not Significant
	Non-native aquatic species and diseases	Neg.	N/A	Neg.	Considerable	Neg. to Con	Not Significant
	Other aquatic species	Neg.	Neg.	Minor - Considerable	Neg.	Neg to con	Not Significant
	Water Quality	Neg.	Neg.	Neg. to Considerable	Neg.	N/A	Not Significant
Cultural Resources	--	Neg	Neg	Neg	Neg	Neg	Not Significant
Visitor Experience	Visitor Satisfaction	Neg.	Neg.	Neg.	N/A	Neg	Not Significant
Accidents & Malfunctions	--	Neg	Neg	Neg	Neg - Considerable	Neg - Minor	Not Significant

5.4. Cumulative Environmental Effects

Cumulative impacts can occur when more than one project affects an ecological component. These cumulative stresses can be from multiple projects within the park or from projects around the park or a combination of these. Cumulative impacts can be a concern for the following reasons:

- the combined impact of multiple actions on an ecosystem can be greater than the sum of the individual impacts of each action;
- activities can occur close together in time and/or space so that effects overlap and/or recovery is more difficult;
- the incremental effect of multiple actions can detrimentally affect the ecosystem (also called the "nibbling effect"); and,
- ecosystem responses can include time lags, space lags, thresholds of ecosystem tolerance and indirect effects which make predictions difficult.

Park management plans are considered by Parks Canada to be the appropriate mechanism for the identification and management of cumulative environmental effects. Each park management plan establishes the context and vision for the park, guided by the *Canada National Parks Act*. Each management plan identifies major stressors affecting both natural and cultural resources from both inside and outside the park boundaries. Typical external stressors include mining and oil and gas activities, agriculture, and road developments. Strategic goals, objectives and actions are methodically developed to address the negative effects of identified stressors along with the identification of indicators of change. Each park management plan specifically addresses effective human use management and prescribes strategic goals, objectives and key actions to be implemented including actions to manage or restrict commercial recreation use where necessary. All park management plans are subject to strategic environmental assessment in accordance with the *1999 Cabinet Directive on the Environmental Assessment of Policy, Plan and Program Proposals* before the Minister signs off the plan. Strategic environmental assessments also focus on the cumulative effects of the key actions outlined in management plans to determine if the plan moves the state of the park towards, or away from, a state of ecological and cultural integrity.

Cumulative effects assessment (CEA) includes past, present and future projects that may impact the same VECs as identified in this MCSR. The VECs selected for environmental assessment as part of the MCSR were selected from the indicators outlined in the park management plans and as a result already reflect the stressors which may have the potential to cause cumulative environmental effects (see Section 3.1). With the CEA incorporating and focusing on the indicators and stressors identified in the Park Management Plans, further identification or analysis of potential cumulative effects stressors either inside or outside the park is not re-considered within the MCSR.

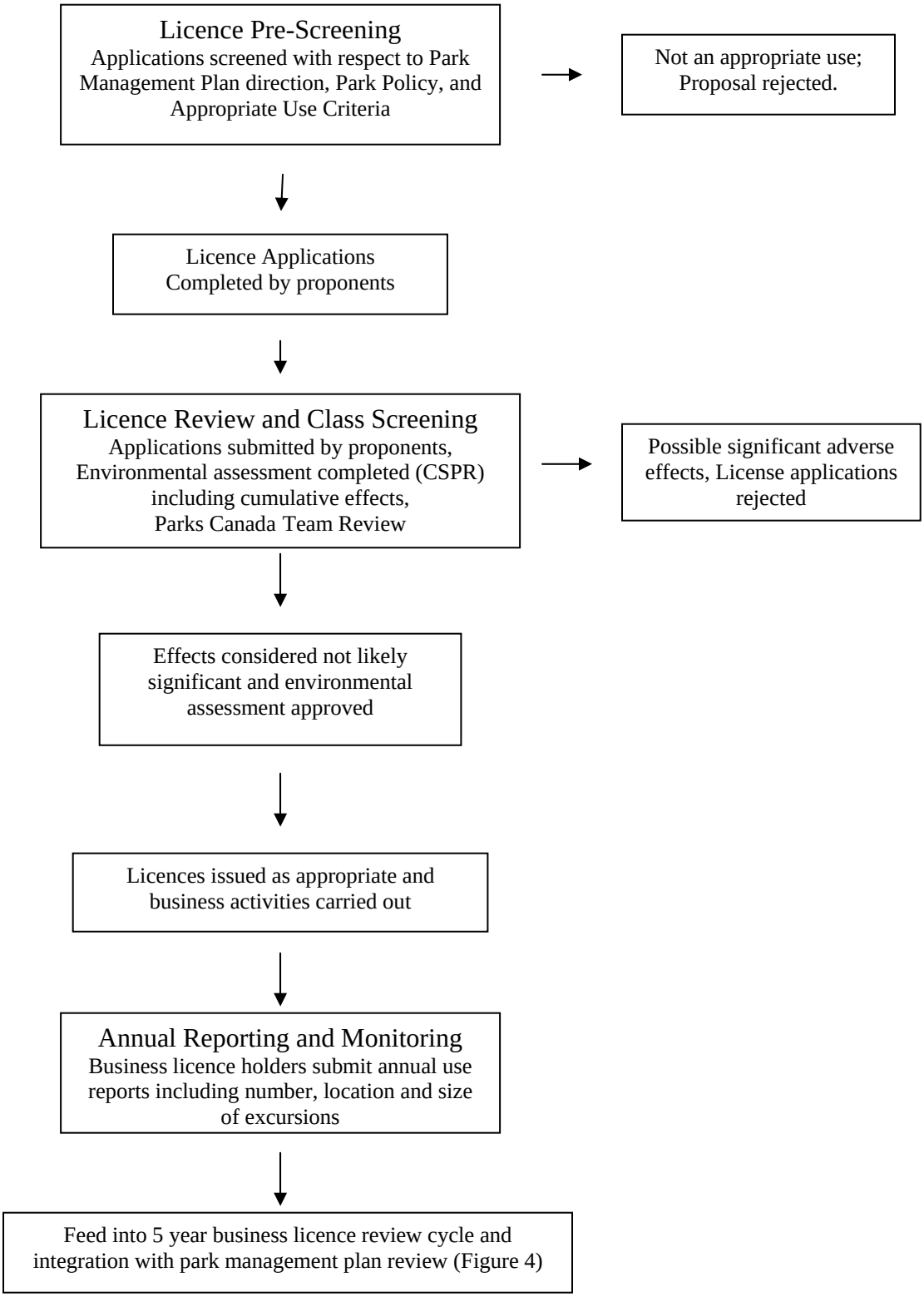
A two-tiered assessment process has been developed within the CSPR forms for evaluating the cumulative effects of aquatic-based commercial guiding activities focusing on the same VECs as identified from the stressors and indicators identified in the park management plans. The first level of assessment integrates cumulative effects assessment with the annual business licencing process and facilitates Parks Canada's ability to make a determination of the significance of cumulative effects on a project specific basis as

required by the *Canadian Environmental Assessment Act*. Project specific cumulative effects assessment is facilitated through the class screening project report process.

The second level of assessment integrates cumulative effects assessment with the park management five year review process and facilitates Parks Canada's ability to ensure that decisions on commercial guiding use are consistent with management plan direction. The integration of CEA with park management plan review processes provides the focus for follow-up and reporting activities related to commercial guiding operations.

Figure 4 outlines the annual business licencing and class screening process for proposed new or modified business licence applications. A pre-screening process ensures the activity is considered appropriate for a national park before the application is further evaluated. In the spring of every year applicants fill out the business licence application forms a which time a Parks Canada review team evaluates the applications and completes the CSPR evaluations for potential environmental effects, including cumulative effects. The results of the class screening process conducted by the review team are documented in the CSPR forms.

Figure 4: Annual Business Licence and Class Screening Review Process



5.4.1.1. Assessment of Cumulative Effects

Vulnerability to cumulative effects varies across the mountain parks depending on ecological and wildlife habitat characteristics, levels and type of independent and commercial visitor use, and other incidental park use e.g., use of transportation and utility corridors, and the presence of built infrastructure. Local variations in activities and sensitivities make assessing cumulative effects at a broad scale impractical. Furthermore, the aquatic activities in this class screening occur in known and restricted locations. Therefore the analysis of cumulative effects must be applied for the specific waterbody where the commercial activity will occur. The CSPR and business licence review process serve as the tools for Parks Canada to identify and evaluate impacts to VECs in and around each waterbody.

5.4.1.2. Cumulative Impacts to Wildlife

Cumulative impacts to wildlife are assessed by focusing on species of concern. Cumulative disturbances and other impacts to grizzly bears can decrease the effectiveness of their habitat and reduce movement between areas. Potential impacts to grizzly bears serve as the indicator of cumulative effects to wildlife for the summer season. Cumulative impacts of frequent disturbance on harlequin ducks could reduce breeding success. Potential impacts to other sensitive wildlife species serve as the indicator of cumulative effects to wildlife on a site-specific basis. Specific cumulative effects indicators related to the selected components of the wildlife VEC to be assessed through the CSPR and Business Licence Review Process include:

- Increase in Human-bear interactions that may lead to habituation or human injury
- Increase in Human caused displacement of grizzly bears from prime food sources
- Decrease in grizzly bear habitat effectiveness
- Disruption of other wildlife during sensitive seasons including nesting, denning, rearing or breeding seasons
- Disruption of harlequins during sensitive seasons including nesting and rearing seasons

5.4.1.3. Cumulative Impacts to Vegetation and Soils

Repeated use of a given site will likely result in an increase in the magnitude of environmental effect. Loss of vegetation cover and soil erosion may occur at heavily used sites, particularly in riparian areas. However the geographic extent of such impacts is still unlikely to result in significant adverse effects that threaten the existence of species or biological communities at an ecosystem scale.

The extent of non-native vegetation is one of the indicators of ecological integrity identified in park management plans. Despite implementation of the mitigation, non-native species may be introduced into the park or spread further through the park. Non-native species can compete with native species and change natural ecosystems. These impacts would affect the ecological integrity of the parks.

In order to focus the CEA on the issues and areas of greatest concern cumulative impacts to vegetation and soils are assessed by focusing on sensitive species and seasonal timing,

and on the potential for the introduction and spread of non-native vegetation. Specific cumulative effects indicators related to the selected components of the vegetation and soils VEC to be assessed through the CSPR and Business Licence Review Process include:

- Introduction or spread of invasive non-native plant species into new areas of the parks
- Introduction or spread of new non-native species that are a particular threat
- Impacts to known locations of rare or endangered plant species
- Impacts to areas of native vegetation at sensitive times or in riparian areas.

5.4.1.4. Cumulative Impacts to Aquatic Resources

Removal of native fish species from the population accidentally occurs despite catch and release procedures. Furthermore the removal of other fish species alters the ecosystem and population dynamics, therefore impacting native fish species and other aquatic organisms. The cumulative effect of these actions by people fishing with or without commercial guides will vary from waterbody to waterbody.

The extent of non-native aquatic species and fish diseases is one of the indicators of ecological integrity identified in park management plans. Despite implementation of the mitigation, non-native species and fish diseases may be introduced into the park or spread further through the park.

Other aquatic species, other than sport fish species, are not likely to be directly affected by cumulative impacts. The remaining fish species are all introduced species. While sport fishing does remove individuals from a population and could impact the ecological integrity of a system or population, the evaluation of whether or not to allow fishing is part of the separate Parks Canada park management planning process. Ensuring fish populations are maintained at sustainable levels requires the management of public fishing as well as commercial guided fishing. Accordingly, management plans for the national parks and the *General Fishing Regulations* of the *Canada National Parks Act* are the appropriate tools to regulate fishing and protect ecological integrity of the affected aquatic ecosystems. Further evaluation of the cumulative effects of fishing on non-native fish species is not required in the MCSR or through the CSPR process as all non-native fish species are most appropriately regulated through the *General Fishing Regulations.*

Cumulative impacts to water quality are greater from other sources; however, commercial guiding could contribute to these impacts. The impacts vary over time and between waterbodies and need to be evaluated at a more specific level.

Specific cumulative effects indicators related to the selected components of the aquatic resources VEC to be assessed through the CSPR and Business Licence Review Process include:

- Decreased bull trout populations
- Decreased westslope cutthroat populations
- Introduction or spread of new non-native species that are a particular threat
- Introduction or spread of new fish diseases that are a particular threat
- Increase accumulation of contaminants that could decrease water quality

5.4.1.5. Cumulative Impacts to Cultural Resources

Repeated use of a given site will likely result in an increase in the magnitude of environmental effects to cultural resources. Loss of vegetation cover and soil erosion may occur at heavily used sites and in turn result in exposure or inadvertent impacts to buried resources. Under water repeated use can damage cultural resources. In order to focus the CEA on the issues and areas of greatest concern cumulative impacts to cultural resources will focus on the sites identified in Section 3.2.5. Specific cumulative effects indicators related to the cultural resources VEC to be assessed through the CSPR and Business Licence Review Process include:

- Impacts to the integrity or context of cultural resources.

5.4.1.6. Cumulative Impacts to Visitor Experience

The management plans and human use strategies for the parks identify management approaches for addressing cumulative effects to visitor experience. The dynamic nature of the relationship between independent use, commercial use, and overall human use management objectives and actions means that the potential for cumulative effects will change over time. The cumulative impacts of commercial guiding on the quality of visitor experience should be evaluated based on current surveys and visitor use information. Cumulative effects indicators related to the Visitor Experience VEC to be assessed through the CSPR and Business Licence Review Process include:

- Conflicts between user groups
- Decrease in visitor satisfaction.

5.4.2. Integration of CEA, Class Screening and Park Management Plan Review Process

Commercially guided activities make up a low proportion of visitor use and are anticipated to have relatively minor impacts on the selected VECs compared to the influence of other projects and activities including park management activities, transportation and utility corridors, park communities, independent visitor use and activities outside the park boundaries. As a result, the contribution of commercial guiding activities to cumulative effects are most effectively identified and managed at a landscape scale in concert with other projects and activities. The park management planning process is the appropriate tool to facilitate cumulative effects assessment across the mountain parks. The MCSR for commercial guiding activities establishes the process for integrating consideration of the impacts of commercial guiding activities into the five year park management planning process.

There are four main steps to the integration of cumulative effects assessment and the Class Screening process with the park management planning process as illustrated in Figure 4:

- Summary reporting on commercial guiding activity
- State of the Parks Report
- Five Year parks management plan review
- Amendments to the Class Screening process.

Summary Reporting on Commercial Guiding Activity

The submission of annual activity reports is a standard stipulation of a business licence for commercial guiding operations. Reports include information on the number, timing and location of trips and the number of participants. Annual report information is stored in an electronic database and can be queried by water body or land management unit. In preparation for the five year management plan review, report information will be summarized to establish the locations and trends in commercial use. The same Parks Canada review team that reviews the annual business licence applications will be responsible for reviewing this information and identifying trends and issues of relevance to the management planning process.

State of the Parks Report

The summary and evaluation of commercial guiding activity is one piece of information that will be used by Parks Canada to write the State of the Parks Report every five years. Other information contributing to the State of the Parks Report includes ecological integrity indicator monitoring, implementation of park management activities and other ecological or social research. The State of the Parks report will provide an evaluation of ecological integrity and cumulative effects at the park scale. This information is then used to guide changes in the five year park management plan review.

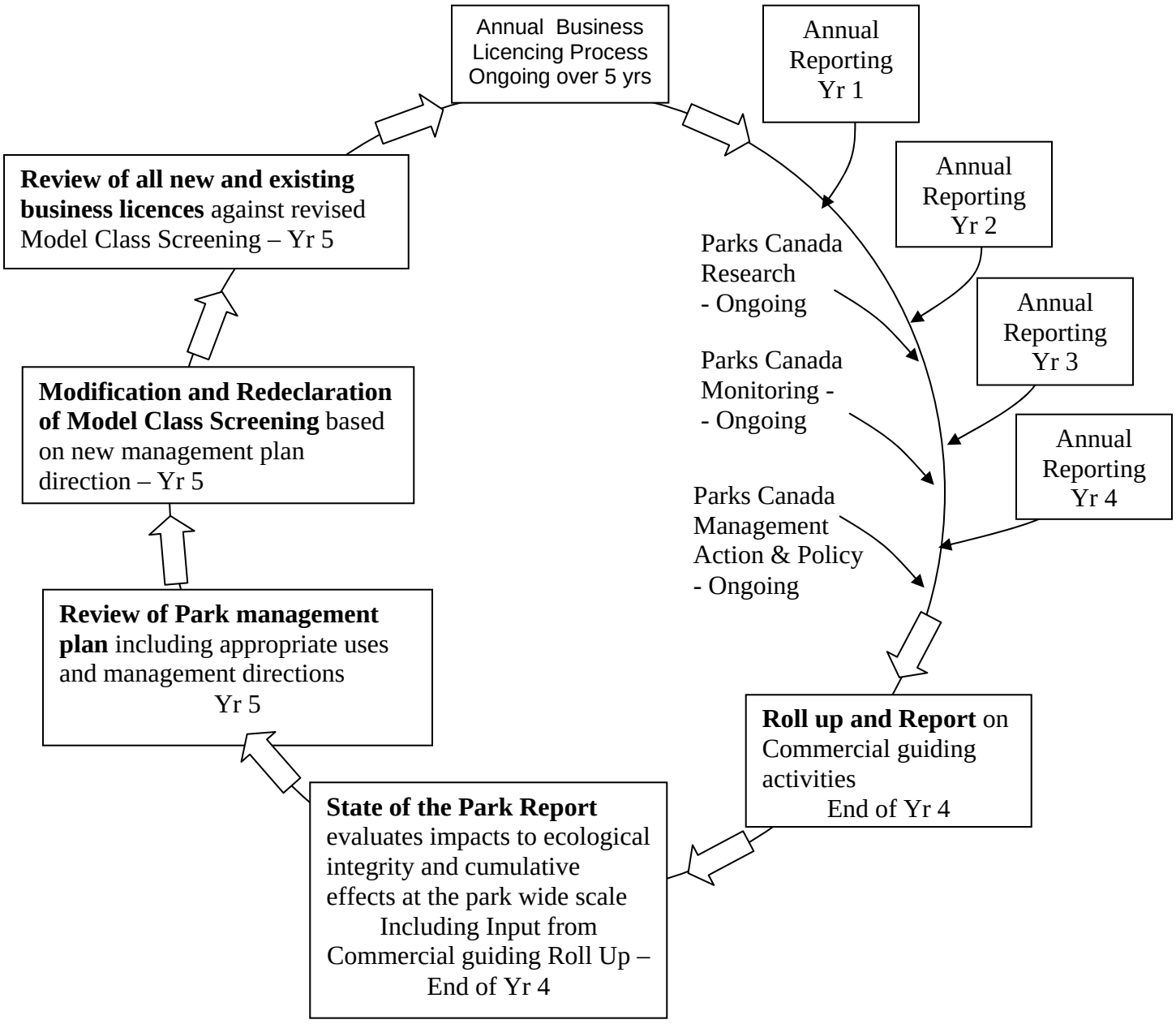
Five Year Park Management Plan Review

In order to address cumulative impacts, management plans for the parks identify indicators of ecological integrity that are responsive to change and reflect overall ecosystem health. The cumulative effect of all activities on indicators is monitored over the 5 year term of the management plan and the results of monitoring and information gained through the model class screening process are used as input into the state of the parks report. The five year management plan review re-evaluates the state of ecological integrity indicators and updates management actions in response to the state of the parks report (Parks Canada 2000a; Parks Canada 2000b; Parks Canada 2000c; Parks Canada 2000d). (Parks Canada 2000a; Parks Canada 2000b; Parks Canada 2000c; Parks Canada 2000d). Management plan actions related to commercial guided activities would be prescribed for areas where the level of overall human use impacts are considered unacceptable and where limitations to commercial use would have a discernable benefit. Potential actions could include a wide range of measures including: lake or reach closures, timing restrictions, allocation limits or restrictions on new licences.

Amendments to the Class Screening Process

The updated park management plans are expected to provide direction as necessary related to the management of cumulative effects with respect to commercial guiding activities. Direction provided in the management plan will be used to update and modify the Class Screening and business licence processes. All business licences will then be reviewed using the new model class screening to ensure that mitigation and licence stipulations are appropriate and up-to-date.

Figure 5: Five Year Business Licence Review Process



5.5. Surveillance

Surveillance of commercial guiding activities is on-going and ensures that required mitigation is implemented and restrictions or stipulations are complied with. Surveillance also provides the opportunity to react to unpredicted environmental effects in a timely manner. Park wardens routinely monitor conditions and will be able to evaluate whether commercial operators are implementing required mitigation. Park Wardens, in cooperation with Park managers, are also able to identify and enforce any site-specific or short-term mitigation to respond to unpredicted environmental effects. Commercial guides need to stay informed about park policies and management directions to ensure they are in compliance.

5.6. Follow-Up

According to the *Act*, follow-up is "a program to confirm the accuracy of the environmental assessment of the project and to determine the effectiveness of mitigation measures". Follow-up monitoring is designed to verify the accuracy of the environmental assessment and the proposed mitigation. Follow-up monitoring is also used to identify and record potential cumulative impacts.

The end-of-season reports and monitoring by Parks Canada are part of an adaptive management and cumulative effects assessment process. Reporting requirements are part of the business licensing and review process and are adapted into the park management planning process as outlined in Section 4.4. Parks Canada is responsible for on-going monitoring of ecological integrity indicators, visitor experience and facility conditions. Therefore, the appropriate follow-up monitoring programs are identified through the management planning and business planning processes. Examples of ongoing monitoring programs include: fish creel surveys and other population assessments, number of interactions between wildlife and people, water quality and the indicators chosen for the cumulative effects analysis in the CSPR (Sections 5.4.1.2, 5.4.1.3, 5.4.1.4, 5.4.1.5, and 5.4.1.6). No specific monitoring of commercial guiding activities is required as a result of this assessment.

6. Consultation

6.1. Public Consultation Process

Public consultation took place at two stages during the development of the Class Screening process; consultation conducted by Parks Canada as part of the development of the MCSR, and consultation at the declaration stage conducted by the CEAA. The intent of consultation during the development of the MCSR was to create awareness of the proposed Model Class Screening process, to offer the opportunity to review both the draft MCSR and draft CSPR forms, and to provide comments and suggestions to Parks Canada prior to their submission to the CEAA for declaration. Subsequently, the Canadian Environmental Assessment Agency offered the public the opportunity to review the proposed Model Class Screening as part of the declaration process.

Three stakeholder groups were considered most likely to have an interest in the class screening process: guiding business operators, guiding and tourism organizations and environmental groups. Commercial operators and tourism organizations could be concerned with the potential for additional restrictions and operational requirements that may be applied as mitigation. In the past some environmental groups have expressed concern over the approach used for assessing guided hiking. As a result of these concerns, additional opportunities for consultation were offered through the MCSR development process to allow for early identification of issues.

The initial stage of the consultation process identified potential stakeholder concerns and issues with the environmental assessment process and determined the level of interest among stakeholder groups as well as the need for, and requirements of, any further consultation.

6.1.1. Objectives of Consultations During MCSR Development

The proposed objectives for consultations with identified stakeholders were to:

- Inform stakeholders of Parks Canada's intention to create a Model Class Screening, including the intended outcome, the benefits and how it will affect business licence proponents
- Identify the opportunities to be involved in the process of developing the Model Class Screening
- Explain how to obtain additional information and who to contact
- Offer interested individuals and organizations the chance to review and comment on the draft Model Class Screening Report and the Class Screening Project Report Form prior to submission of the documents to the CEAA for declaration.

6.1.2. MCSR Development Consultation Approach

A cover letter and information backgrounder was developed and mailed out to all identified stakeholders through the respective Superintendents offices. The information provided the background and objectives of the proposed Model Class Screening for Guided Activities in the Mountain Parks. This package outlined the key elements of the

Model Class Screening; the process leading to the formal declaration of a Model Class Screening; how additional information could be obtained; opportunities to review the proposed Model Class Screening documents; and all relevant Parks Canada contacts.

Parks Canada staff followed up directly with a representative group of key stakeholders to assess the preliminary reaction to the Class Screening proposal and determine if there was interest in reviewing the draft proposal and providing feedback. Follow-up was carried out over the phone or through one-on-one meetings. Written feedback from business groups and environmental groups was coordinated through the Parks Canada Western Canada Service Centre office. Parks staff coordinated one-on-one feedback from individual operators. Comments and suggestions were considered or incorporated into the environmental assessment process where appropriate. Responses to comments or suggestions not incorporated were recorded. The need for further consultation or stakeholder review and the process for further review were determined. Opportunity to review the draft Screening documents was offered to interested stakeholders.

The draft Class Screening was distributed for review and comment to interested stakeholders. Comments received were recorded, considered and incorporated into the Model Class Screening as appropriate. Public comments received on the Draft Model Class Screening Report for Aquatic-based Commercial Guiding Activities were summarized focusing on the identification and discussion of main themes and issues. The majority of comments have resulted in changes to the format and content of the Model Class Screening Report, or in changes to the Class Screening process itself. The summary of public comments is found in Appendix 4.

6.2. CEAA Consultation

Following the submission of the MCSR to the Canadian Environmental Assessment Agency, it underwent a formal 30 day public review prior to declaration. As with the consultation on the development of the MCSR, comments received were recorded, considered and incorporated into the Model Class Screening Report as appropriate.

6.3. Federal Coordination Regulations

Class screenings are not subject to the *Federal Coordination Regulations*. However, as part of due diligence, Parks Canada has reviewed whether there are other federal authorities that may (a) exercise a power in respect of the project; or (b) be in possession of specialist or expert information necessary to conduct the environmental assessment of the project.

No Federal Authorities were identified that would exercise a power in respect of the project or act as a Responsible Authority under the *Act*. Federal Authorities with specialist or expert information that may contribute to the environmental assessment were identified through consultation with regional CEAA representatives in Alberta and British Columbia.

6.3.1. Federal Departments

Parks Canada has sole authority over all lands affected by aquatic-based commercial guiding in the National Parks of Canada and is the sole authority for enforcement of the Canada National Parks Act. Under the Species at Risk Act (SARA) the Minister of Canadian Heritage is responsible for all species at risk in national protected heritage areas administered by Parks Canada including national parks and national historic sites. Department of Fisheries and Oceans was given an opportunity to comment on the class screening. Issues related to aquatic-based commercial guiding activities are not expected to affect other environmental issues that involve the jurisdiction or interest of other Federal departments.

6.3.2. Provincial Departments

No provincial departments were identified that would have an interest in the Model Class Screening. Commercial guiding business licences issues by Parks Canada are expected to have negligible impacts on lands or resources within provincial jurisdiction.

6.3.3. Other Expert Consultations

Appropriate experts within Parks Canada including environmental assessment specialists, wildlife and conservation biology specialists, cultural resource specialists, planners and the warden service reviewed the Model Class Screening Report.

The inclusion of guiding and tourism associations and environmental groups in the consultation process was felt to have addressed the need for additional expert consultation related to business and environmental issues. No other experts with an interest or expertise related to the Class Screening process were identified.

6.4. Canadian Environmental Assessment Registry

The purpose of the Canadian Environmental Assessment Registry (the Registry) is to facilitate public access to records relating to environmental assessments and to provide notice in a timely manner of assessments. The Registry consists of two components – an Internet site and a project file.

The Internet site is administered by the Agency. The responsible authority and the Agency are required to post specific records to the Internet site in relation to a class screening report and any related class screening project reports.

Upon declaration of the class screening report, the Act requires responsible authorities to post on the Internet site of the Registry, at least every three months, a statement of projects for which a model class screening report was used. The statement should be in the form of a list of projects, and will include:

- the title of each project for which the model class screening report was used;
- the location of each project; and
- the date of the environmental assessment decision for each project and;
- a contact name.

The project file component is a file maintained by the responsible authority during an environmental assessment. The project file must include all records produced, collected or submitted with respect to the environmental assessment of projects, including class screening project reports and all records included on the Internet site. The responsible authority must maintain the file, ensure convenient public access, and respond to information requests in a timely manner.

Further information regarding the Registry can be found in "The Canadian Environmental Assessment Registry", prepared by the Agency.

7. Amending the Model Class Screening Report

7.1. Amendment Procedures

The purpose of an amending procedure is to allow the modification of the MCSR after experience has been gained with its operation and effectiveness. The reasons for such modification may include:

- clarification of ambiguous areas of document and procedures;
- streamlining or modifying the planning process in areas where problems may have arisen;
- minor modifications and revisions to the scope of assessment to reflect new or changed regulatory requirements, policies or standards; and
- new procedures and environmental mitigation practices that have been developed over time.

The responsible authority will notify the Agency in writing of its interest to amend the MCSR. It will discuss the proposed amendments with the Agency and affected federal government departments and may invite comment from stakeholders and the public on the proposed changes. The responsible authority will then submit the amended MCSR to the Agency, along with a request that the Agency amend the MCSR and a statement providing a rationale for the amendment.

The Agency may amend the MCSR without changing the declaration period if the changes:

- are minor;
- represent editorial changes intended to clarify or improve the screening process;
- do not materially alter either the scope of the projects subject to the MCSR or the scope of the assessment required for these projects; and
- do not reflect new or changed regulatory requirements, policies or standards.

The Agency may initiate a new declaration for the MCSR for the remaining balance of the original declaration period or for a new declaration period if the changes:

- are considered to be substantial; or
- represent modifications to the scope of the projects subject to the class or the scope of the assessment required for these projects.

7.2. Term of Application

Review of, and amendments to, the Class Screening will be coordinated with the five year Mountain Park Management Plan review. The coordination of the park management plan review and the review of the Class Screening process will provide the policy and human use strategy context for managing commercial guiding activities over the subsequent five year management planning period. Unless otherwise amended in coordination with the management plan review, the declaration period is valid until May 3, 2013.

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Appendix 1

Class Screening Project Report
for
Aquatic-based Commercial Guiding Activities
in the
Mountain National Parks of Canada

Class Screening Project Report for Aquatic-based Commercial Guiding Activities in the Mountain National Parks of Canada

Introduction

This Class Screening Project Report is based on information provided in the *Model Class Screening Report for Aquatic-based Commercial Guiding Activities in the Mountain National Parks of Canada*.

The Class Screening Project Report is to be completed in its entirety by Parks Canada staff and is to be based on information provided by the applicant through the approved Business Licence Application Process.

Section 1 – Applicant Information

Company Name		
Business License Application Reference #		
Purpose of Application Check One		New Business licence – environmental assessment required
		Change or Expansion of Existing Business License – environmental assessment required
		Renewal of Existing Business License – no environmental assessment required – **Do Not Continue with the CSPR**

Section 2 – Application of the Class Screening

This section determines whether the Model Class Screening process applies to the proposed project.

Part A	Yes	No
Does the proposed activity require a business licence from Parks Canada under Section 3 of the *National Parks Businesses Regulations 1998?*		
Is the business licence for operation in Banff, Kootenay, Yoho, Jasper, or Waterton Lakes National Parks of Canada?		
Is the business licence for guided rafting, guided scuba diving, or guided fishing activities as described in the subclasses of the MCSR?		

If "yes" to all of the above continue on.
If "no" to any of the above
Do Not Continue with the CSPR
Contact Parks Canada Environmental Assessment Specialist
for information about environmental assessment requirements.

Part B	Yes	No
Is the business licence for operating a one-time, occasional or annual special event such as military exercise, sporting event, or festival?		
Does the business require or currently hold a lease and licence of occupation?		

If "no" to all continue on.
If "yes" to any of the above.
Do Not Continue with the CSPR
Contact Parks Canada Environmental Assessment Specialist
for information about environmental assessment requirements.

Section 3 – Standard Environmental Effects and Mitigation

This section identifies three levels of standard mitigation measures to be applied to the proposed commercial guiding operation as a condition of the business licence.

Generic Commercial Guiding mitigation

The generic commercial guiding mitigations apply to all commercial guiding operations and must be attached as a condition of all business licences.

Activity Specific Mitigation

Activity specific mitigation applies for all parks included as part of the proposed business operation. Please check all activity specific mitigation categories that apply.		
Activity Specific Mitigation	Rafting Includes day and overnight trips; also includes large voyageur canoe trips	
	Scuba Diving Includes summer and winter diving	
	Fishing Includes fly fishing, spin-fishing and boat rentals associated with fishing,	
	Canoeing/Kayaking Includes canoeing, whitewater kayaking and kayak touring as well as potential overnight use	

Sensitive Sites Mitigation

Sensitive Sites mitigation applies for all parks included as part of the proposed business operation. Please check all sensitive sites mitigation categories that apply.		
Sensitive Sites Mitigation	Jasper	
	Banff	
	Yoho	
	Kootenay	
	Waterton	

The generic commercial guiding mitigations as well as the activity specific and site specific mitigation measures that have been checked off above are to be attached as conditions of the business licence under; *Business Licence Schedule A) Section 3) "Environmental Stewardship"*.

Section 4 – Additional Environmental Effects

This section evaluates additional project activities and site-specific environmental effects that may not be addressed through the application of standard mitigation measures identified in Section 3.

Part A: Check all areas of concern proposed for use as part of the business licence application. For each area checked off, also indicate if there are potential environmental effects that are not adequately addressed through the application of the three levels of standard mitigation as identified in Section 3. For assistance please refer to section 5 in the MCSR for site sensitivities and predicted environmental effects related to the following areas of concern.

Table 4A

Additional Potential Environmental Effects ↓			**Additional Potential Environmental Effects** ↓		
Areas Affected by proposed operations ↓			**Areas Affected by proposed operations** ↓		
Banff			**Waterton**		
Near the bridge where the Golf Course Loop Road crosses the Spray, Sites 1204R, 1207R			Gertrude in Emerald Bay and site on Emerald Bay beach (570R, or DgPl-3)		
Underwater cultural resources in Lake Minnewanka			Upper Waterton Lake		
Lake Minnewanka			Middle Waterton Lake		
Two Jack Lake			Cameron Lake		
Bow River			**Kootenay**		
Jasper			Kootenay/Vermillion Rivers		
Operation Habbakuk			**Yoho**		
Maligne Lake			Kicking Horse River		
Medicine Lake					
Pyramid Lake					
Talbot Lake					
Moab Lake					
Beaver Lake					
Cabin Lake					
Lake Edith					
Lake Annette					
Lac Beauvert					
Lake Patricia					

Part B: With respect to additional potential environmental effects as described above, is additional information required in order to assess these effects or to make an environmental assessment determination? If yes, specify and attach required information.

Table 4B

Describe information requirements and list attachments: Enter NA if not applicable
1.
2.
3.

Part C: Using Table 4C:

- only enter the areas of concern identified in Part A that are indicated to have additional potential environmental effects
- describe any additional environmental effects related to the proposed project, that may not be addressed through the application of the three levels of standard mitigation
- identify any additional mitigation measures required to address additional environmental effects.

Additional mitigation measures as described in Part C are to be attached as conditions of the business licence under;
Business Licence Schedule A) Section 3) "Environmental Stewardship".

Table 4C

Area of Concern:	
Environmental Effects	Mitigation
Area of Concern:	
Environmental Effects	Mitigation
Area of Concern:	
Environmental Effects	Mitigation
Area of Concern:	
Environmental Effects	Mitigation

Part D: For each area of concern identified in Table 4C, indicate the level of residual adverse environmental effects following mitigation using Table 4D. Choose one of the following levels of effects based on Table 1 of the MCSR:

- Negligible Effects – not likely to affect ecological or cultural integrity
- Minor Adverse Effects – insignificant impacts to ecological or cultural integrity
- Considerable Adverse Effects – there is potential for significant impacts to ecological or cultural integrity
- The effects of the proposed licenced activities are not adequately assessed through the CSPR process

Table 4D

Area of Concern	**Level of Effects**

If the level of effect is rated as considerable, or if the environmental effects of the proposed activities are not adequately addressed through the CSPR process;

DO NOT proceed with the Class Screening.

Contact Parks Canada Environmental Assessment Specialist
for advice on environmental assessment requirements.

Section 5 – Cumulative Effects Assessment

This section is used to evaluate the cumulative impacts of the proposed commercial operation.

Factors to be considered in the cumulative effects assessment should include:

- The nature of the proposed operation including the type of activity and the intensity and timing of use;
- The sensitivity of the areas of concern affected by the proposed operation;
- Direction provided in park management plans, state of the parks reports and other monitoring information;
- Spatial and temporal overlap of activities, additive or repetitive impacts, and synergistic effects
- The relative contribution of the proposed operation to cumulative visitor use impacts

In addition to the factors above, cumulative environmental effects on areas of concern affected by the proposed operation are assessed against established indicators of ecological integrity for each area of concern (Table 5A), as identified in the Model Class Screening Report. Note: if any species at risk are affected, the MCSR is not applicable (see Section 6 below).

Table 5A

VEC	Cumulative Effects Indicators
Wildlife	Increase in human-bear interactions that may lead to habituation or human injury
Wildlife	Increase in human caused displacement of grizzly bears from prime food sources
Wildlife	Decrease in grizzly bear habitat effectiveness
Wildlife	Disruption of other wildlife during sensitive seasons including nesting, denning, rearing or breeding seasons
Wildlife	Disruption of harlequins during sensitive seasons including nesting and rearing seasons
Vegetation	Introduction or spread of invasive non-native plant species into new areas of the parks
Vegetation	Introduction or spread of new non-native species that are a particular threat
Vegetation	Impacts to known locations of rare or endangered plant species
Vegetation	Impacts to areas of native vegetation at sensitive times, particularly riparian areas.
Aquatic R	Decrease bull trout populations
Aquatic R	Decrease westslope cutthroat populations
Aquatic R	Introduction or spread of new non-native species that are a particular threat
Aquatic R	Introduction or spread of new fish diseases that are a particular threat
Aquatic R	Increase accumulation of contaminants that could decrease water quality
Cultural R	Impacts to the integrity or context of cultural resources
Visitor exp	Increased conflicts between user groups
Visitor exp	Decrease in visitor satisfaction

Part A: Consistent with Section 4, Part A, check all areas of concern proposed for use as part of the business licence application. For each area checked off, also indicate if the proposed project has the potential to contribute to adverse effects on any of the cumulative effects indicators identified in Table 5A.

Table 5B

Potential Adverse Effects on CE Indicators ↓			**Potential Adverse Effects on CE Indicators** ↓		
Areas Affected by proposed operations ↓			**Areas Affected by proposed operations** ↓		
Banff			**Waterton**		
Near the bridge where the Golf Course Loop Road crosses the Spray, Sites 1204R, 1207R			Gertrude in Emerald Bay and site on Emerald Bay beach (570R, or DgPl-3)		
Underwater cultural resources in Lake Minnewanka			Upper Waterton Lake		
Lake Minnewanka			Middle Waterton Lake		
Two Jack Lake			Cameron Lake		
Bow River			**Kootenay**		
Jasper			Kootenay/Vermillion Rivers		
Operation Habbakuk			**Yoho**		
Maligne Lake			Kicking Horse River		
Medicine Lake					
Pyramid Lake					
Talbot Lake					
Moab Lake					
Beaver Lake					
Cabin Lake					
Lake Edith					
Lake Annette					
Lac Beauvert					
Lake Patricia					

Part B:

Using Table 5C:

- only enter the areas of concern identified in Table 5B that are indicated to have the potential to contribute to adverse effects on the cumulative effects indicators
- identify the cumulative effects indicators that may be affected by the proposed project
- identify any additional operator-specific cumulative effects mitigation measures required to address cumulative environmental effects.

Additional operator-specific cumulative effects mitigation measures, restrictions or conditions as described above are to be attached as conditions of the business licence under;

Business Licence Schedule A) Section 3) "Environmental Stewardship".

Table 5C

Area of Concern:	
Cumulative Effects Indicators	Mitigation
Area of Concern:	
Cumulative Effects Indicators	Mitigation
Area of Concern:	
Cumulative Effects Indicators	Mitigation
Area of Concern:	
Cumulative Effects Indicators	Mitigation

Part C: For each area of concern identified in Table 5C, indicate the level of residual adverse cumulative environmental effects following mitigation using Table 5D. Choose one of the following levels of effects based on Table 1 of the MCSR:
Negligible Effects – not likely to affect ecological or cultural integrity

- Minor Adverse Effects – insignificant impacts to ecological or cultural integrity
- Considerable Adverse Effects – there is potential for significant impacts to ecological or cultural integrity
- The effects of the proposed licenced activities are not adequately assessed through the CSPR process.

Table 5D

Area of Concern for Cumulative Effects	Level of Effects

If the level of effect is rated as considerable, or if the environmental effects of the proposed activities are not adequately addressed through the CSPR process;

DO NOT proceed with the Class Screening.

Contact Parks Canada Environmental Assessment Specialist
for advice on environmental assessment requirements.

Section 6 – Species at Risk Act

Is the proposed project likely to adversely affect a species at risk, which includes:

- species identified on the List of Wildlife Species at Risk set out in Schedule 1 of the *Species at Risk Act (SARA*), and including the critical habitat or the residences of individuals of that species, as those terms are defined in subsection 2(1) of the *Species at Risk Act.*
- species that have been recognized as "at risk" by COSEWIC or by provincial or territorial authorities.
  Yes ___
  No ___

If Answering Yes, Do Not Continue with the CSPR
Contact Parks Canada Environmental Assessment Specialist
for information about environmental assessment requirements.

Section 7 – Monitoring and Follow-up

Compliance monitoring, monitoring of impacts and follow-up activities related to most commercial guiding operations will be generally carried out as part of the regular duties of the warden service and as indicated in Sections 3.6 and 3.7 of the Model Class Screening Report.

If considered necessary, describe any special requirements for compliance or environmental impact monitoring in relation to the proposed commercial guiding operation. Attach additional information as required.

Section 8 – Decision Statement

☐ Business License may be issued as the proposed activities are not likely to cause significant adverse environmental effects.

☐ Business License should not be issued because the proposed activities are likely to cause significant adverse environmental effects.

_____ _____

Applicant Date

_____ _____

Environmental Assessment Reviewer Date

_____ _____

Field Unit Superintendent Date

Appendix 2

Standard Activity-Specific and Site-Specific Best Management Practices

Generic Best Management Practices for All Guiding Activities

The following best management practices apply to all guiding operations included in the scope of the Model Class Screening. "Operator" refers to the company offering the service. "Guide" refers to the individuals actually in the park leading the visitors.

General

In addition to the measures outlined in the Model Class Screening, business operators and guides are expected to comply with any local park regulations, policies, guidelines, travel restrictions, area closures, established reservation systems or other directives issued by Parks Canada for the purpose of mitigating environmental effects or ensuring public safety. Posted voluntary restrictions on trails should be considered as mandatory restrictions by commercial operators and remain in effect until acceptable trail conditions exist and closures/restrictions are lifted unless, through consultation with Parks Canada, special permission is granted.

Guides are expected to act as stewards, set proper examples for trail etiquette, and educate guests on the importance of keeping areas pristine. Guides are expected to monitor client actions and ensure that minimal impact practices are implemented.

Wildlife

- As part of a pre-trip briefing, operators and guides shall ensure clients are aware of wildlife sensitivities and potential hazards, National Parks regulations on feeding, enticing or disturbing wildlife and understand wildlife viewing and safety procedures.
- Wildlife viewing and safety procedures should be based upon the guidelines presented in Parks Canada brochure "Keep the Wild in Wildlife". The brochure describes appropriate behaviour when encountering habituated wildlife, safe distances for viewing and photographing wildlife, avoiding encounters and limiting attractants while travelling in the backcountry, and specific precautions for bears, elk and cougars. This brochure can be found on the Banff National Park of Canada internet site (http://www.worldweb.com/parkscanada-banff/visinfo.html). Other safety information regarding wildlife in the mountain parks is available on the internet at http://www.worldweb.com/parkscanada-banff/pubsafe.html. Where practical, operators should recommend these websites to clients during the time of booking.
- Guides shall manage groups during wildlife viewing opportunities such that the animal's normal behaviour is not disturbed – do not approach wildlife, keep lines of escape open for the animal and clients, and keep groups close together. Use binoculars in situations where it is desirable to enhance viewing opportunities.
- Guides shall maintain a distance of at least 100 metres from raptors, waterfowl and wading birds, or move to the opposite side of the river, stay in the boat, and remain quiet when appropriate.
- Guides shall maintain a distance of at least 100 metres from bears and a distance of at least 30 metres from Elk and other large wildlife species, or move to the opposite side of the river, stay in the boat, and remain quiet when appropriate.

- Guides shall maintain a distance of at least 300 metres from known wildlife den sites and nesting birds, or roosting birds, or young wildlife.
- Guides shall leave the area immediately in the event that dens, nests or young animals are accidentally encountered.
- Operators should discourage clients from bringing dogs on guided excursions. In the event that it is necessary to bring a dog, they are to be kept on leash at all times and must not be left unattended.
- Guides and operators are asked to report wildlife sightings, unusual wildlife behaviour, encounters with wildlife, injured animals and carcasses to Parks Canada. Marked animals (radio collars, ear tags, leg bands on birds, neck bands on swans) and injured animals should also be reported.
- Operators and guides and operators shall implement alternate trip or route plans as required in order to avoid close encounters with wildlife.

Operators and guides shall ensure that food and food smells are managed to avoid enticing wildlife:

- All garbage and food waste must be packed out. Garbage or food waste shall not be burned or buried or otherwise disposed of in the backcountry.
- If necessary, store all food in special caches provided, or hang it between two trees at least 4 metres above the ground.
- If camping, cooking, eating and supply areas shall be set up at least 100 metres from tenting areas. Designated backcountry campsites may already be arranged this way.
- All dishes and food utensils shall be washed and stored immediately after use. Strain food particles from dish-water and store with garbage. Dump dishwater in designated areas, or at least 100 metres from your sleeping area.
- Guides shall ensure that staging areas and facilities are kept clean to minimise the high percentage of animal mortality that occurs near human infrastructure (Parks Canada 2002a)

Vegetation and Soils

- Operators and guides shall ensure that all clients are aware of National Parks regulations on picking or removing vegetation. Clients should be briefed on travel procedures including potential impacts to vegetation and soils prior to departure from staging areas.
- Guides should request that clients check for, remove and dispose of into garbage containers any bur-like seedpods or mud from boots, clothing and pets prior to departure from staging areas to reduce the risk of new weed infestations.

Operators and guides should make use of existing designated put-ins, take-outs, parking lots, trailheads, access trails and other established facilities where appropriate and available:

- Groups should be assembled on hardened surfaces such as parking lots and docks for activities or instruction.

- Ensure that clients have proper footwear for the ground and weather conditions including waterproof boots if conditions warrant. Soft sole shoes should be preferentially selected when ground conditions are wet.
- Avoid using access trails that have extensive wet areas or snow patches until later in the season when soils are dry and trails are clear of snow.
- When using access trails, groups should stay to the middle of the trail even when conditions are wet to avoid widening or braiding of trails.
- Pass on wide parts of access trails to reduce trampling and trail widening.
- Where a maze of multiple trails exist, travel on those trails most heavily used, with the most durable surface and the least potential for erosion.
- Do not use shortcuts or cut switchbacks and inform clients of the associated environmental impacts including vegetation damage, soil erosion, and damage to trail infrastructure.
- Avoid the use of markers or cairns except where they would encourage proper use; never blaze trees or otherwise damage vegetation to mark a location or route.
- Concentrate lunch and other rest stops in areas that are established for these purposes, on hardened surfaces, or that are already impacted.
- Guides and operators are asked to report adverse trail and facility conditions, vandalism, and user group conflicts to Parks Canada.

It is recognized that guides may at times decide to move off-trail or utilize areas that are not within the bounds of established facilities. Use of non-developed areas may under certain circumstances be an appropriate means of reducing the intensity of environmental impacts in and around heavily used areas and may be used to enhance visitor experience and reduce visitor conflicts for both commercial and private users. Care and discretion is required in order to ensure that the benefits of using non-developed areas are realized without causing additional environmental damage:

- Guides should choose routes or locations that follow or utilise the most durable surfaces whenever possible. Rock, talus, gravel and sand are considered to be the most durable surfaces. Snow is also a durable preferred travel surface provided that groups are equipped for comfort and safety.
- Guides should choose routes or locations that minimise impacts to vegetation and soils. Areas of naturally sparse vegetation are preferred routes as trampling can be easily avoided. Dry vegetation and soils are more durable than wet vegetation or soils.
- Guides should use discretion in the management of group travel and select the appropriate technique depending on the circumstances. When travelling through areas of undisturbed vegetation groups should spread out laterally to avoid repeated trampling and the creation of informal paths. In circumstances where travel is on durable surfaces it may be preferable to concentrate the group in one area or along one route.
- In general guides should avoid concentrating use in sensitive areas such as wet meadows, steep slopes and riparian areas or other undisturbed vegetated areas close to water.

Campfires are a traditional use that may enhance the visitor experience for many clients; however, operators and guides should discourage unrestricted use of fires. Operators should use gas stoves and lanterns as the primary sources of heat and light. Operators and guides shall ensure that they are aware of and comply with Park regulations, restrictions and bans pertaining to the use of campfires. Operators and guides should note that updates to restrictions and bans might occur frequently and with little notice. The National Park Fire Regulations limit campfires in the parks to certain types of facilities or equipment:

> 4(1) No person shall start or maintain any fire in a park except
> a) in a fireplace on private property;
> b) in a fireplace provided by the supt;
> c) in a portable stove, hibachi or barbecue; or
> d) when in possession of a permit issued under subsection (3).

As a result commercial guides and operators are not permitted to build or use informal fire sites.

When using fires guides should educate clients on the environmental effects of campfire use including damage to vegetation and aesthetic impacts and best management practices as outlined below. Guides shall ensure that damage to vegetation, ground cover or soils is minimized when using campfires in permitted locations.

- Portable stoves, hibachis, or barbeques should be set up on durable, heat resistant surfaces and away from vegetation or litter wherever possible.
- Supplied wood should be used wherever available
- Where supplied wood is not available use fallen deadwood found on the ground for firewood; small standing deadwood under 2” in diameter is also suitable firewood.
- Select wood of a size that may be broken or felled by hand; avoid the use of saws or axes except for splitting supplied wood at established campgrounds.
- Avoid breaking off the lower dead branches of trees; if required remove the branch at the trunk ensuring that no unsightly or dangerous splinters remain.
- Guides should ensure that fires are completely extinguished, including all embers and coals and are cool to the touch.

Cultural Resources

- Educate clients about the value of cultural resources when at a cultural site.
- Guides are responsible to ensure that clients do not remove any items from cultural sites nor vandalize the sites.
- Guides are responsible to ensure that clients do not deface or write on rocks, outcrops, trees, logs or park infrastructure.
- Do not rearrange cairns or add rocks to existing cairns.
- Limit foot traffic to hardened trails in the area if cultural sites are exposed as a result of trail braiding or the development of informal trails.
- Report the discovery of an artifact or cultural site to Parks Canada – do not remove or otherwise disturb the site.

Culturally Sensitive Sites

- Encourage operators to convey the message that parks are mandated to preserve and protect both natural and cultural resources.
- Advise all operators that historic or prehistoric artifacts should not be removed.
- Report any significant historic or prehistoric artifacts to the Warden Service.
- Report any disturbance of cultural resource sites to the Warden Service.

Aquatic Resources

Operators and guides should be aware that riparian areas are often susceptible to damage through trampling due to wet soil conditions and the associated impacts they can have on the health of aquatic ecosystems. Avoid any fish spawning grounds.

- Guides should advise clients to bring their own water where feasible.
- When group water sources must be refilled in the field guides should select access points on durable materials or using crossing structures wherever possible.
- Guides should avoid deviating from established trails and rest stops adjacent to streams and lakes unless durable surfaces or dry surfaces are used.
- Use bridges where available to minimize damage to stream banks at water crossings.

Operators and guides should ensure that human waste is minimized and handled appropriately in the field to avoid visual and aesthetic impacts as well as to protect water sources from contamination.

- Encourage clients to use outhouse facilities where available at staging areas prior to the start of the excursion .
- Where available, schedule rest stops where toilet facilities exist.
- Where rest stop facilities do not exist, guides should carry a small spade, toilet paper, hand wipes, and plastic garbage bags to ensure proper disposal of human waste and garbage.
- Bury solid human waste when possible at least 60m (200 feet) from watercourses in a cathole covered with between 10-15cm (4-6 inches) of mineral soil.
- In areas where no active soil exists solid human waste should be covered but left near the surface to facilitate desication and dispersal.
- Pack out toilet paper, hand tissues or any other personal human waste products.

Operators and guides should take measures to prevent and minimize potential water contamination associated with human activities such as washing, bathing, and cooking.

- Never deposit garbage, food wastes or wastewater refuse in streams or lakes.
- Use biodegradable soaps for dishwashing and bathing when soap is necessary.
- Bathe or wash away from water sources and avoid durable surfaces that lead directly to the water so that gray water may be absorbed and filtered by vegetation and soils before reaching any body of water.
- Dispose of gray water by screening and/or removing all food particles, then dispersing at least 50m (200 feet) away from watercourses and sleeping areas.

- Manage large amounts of wastewater by concentrating it in a sump hole; sumps should be at least 25-30cm (10-12 inches) deep and 70m (250 feet) from water sources.
- Treat drinking water by filtering, boiling or use of iodine to prevent disease.
- Store fuel in leak proof containers and use a funnel when pouring fuel from a container into a stove to reduce spillage.
- Guides shall not dispose of excess fuel, food or materials anywhere in the backcountry – any excess food fuels or materials must be packed out and disposed of at an approved facility.

Visitor Experience

While not having a direct environmental impact, large size guided groups can have a negative effect on the perception of the environment and the visitor experience of other park users. Large group sizes and crowding at rest stops and viewpoints affects the aesthetic experience and feelings of solitude and remoteness that many backcountry visitors seek.

- Operators shall comply with group size restrictions as per business license stipulations, zoning and area management restrictions.
- Guided groups do not have precedence over other groups. Guides shall act in a courteous manner towards other user groups.
- Where possible guides should seek group consolidation, solitude and separation from other park users or groups at staging areas and rest stops.
- Guided groups should attempt to keep noise to a minimum.
- Where feasible, operators should try to minimize overcrowding by scheduling departure dates and times that avoid high use times. Guides should minimize overcrowding by managing the amount of time spent at high use sites.
- Guides should pick up garbage and take reasonable measures to restore impacted sites that are encountered during the course of an excursion.
- When requested, or when a perceived need arises, guides are expected to pass environmental management or interpretive information on to non-guided groups and to offer emergency or other assistance to non-guided groups when needed.

Campfire use can affect the experience of other visitors:

- Guides should use dry seasoned wood that burns cleanly to limit the amount of smoke from campfires.
- Guides shall refrain from burning food or garbage such as plastics that produces odours and harmful emissions. Partially burned items are not to be left in fire pits.
- Campfires shall be kept small and noise around the campfire shall be minimized in campsites shared with other users.

Vehicle use can negatively affect the visitor experience:

- Operators shall encourage car pooling or provide shuttle van pick-ups for clients when possible to reduce pollution and vehicle congestion at trailheads. Group transportation is required for scuba diving, rafting and voyageur canoes in Jasper.

- Operators shall make use of existing shuttle services where they exist.
- Operator vehicles shall be in good running order.
- Operators and guides shall minimize idling of vehicles at trailheads and pullouts.

Best Management Practices for Specific Guiding Activities

Guided Fishing

Wildlife

Fish Cleaning

Dispose of entrails properly to reduce the risk of attracting bears and creating a safety hazard for visitors (Parks Canada 2002b). Use fish cleaning and disposal facilities where provided. In backcountry areas where bear-proof garbage bins are not accessible, dispose of entrails by puncturing the swim bladder (this allows entrails to sink) and deposit into deep water, using a boat if available (Parks Canada 2002b). Always clean your catch well away (300 m) from campsites, picnic sites, docks or other facilities.

Vegetation and Soils

Avoid producing a wake that disturbs the shoreline and can cause erosion.

To avoid the introduction of exotic species, always clean the hull and propeller of a boat before transferring it from another body of water. Clean and inspect the boat trailer as well. Remove all dangling or attached pieces of vegetation.

Aquatic Resources

A National Park fishing licence must be purchased and Park fishing regulations must be followed. The regulations include guidelines for catch-and-release practices (Claggett 2002) which include:

11. **Don't play fish to exhaustion.** Instead, use a landing net to bring fish under control before they're played out.
12. **Wet your hands when handling fish.** Dry hands and gloves will remove the protective mucous coating and scales.
13. **Handle fish in the net.** Grasp them across the back and head for firm but gentle control.
14. **Turn fish belly up while removing hooks.** This disorients fish momentarily for easier, quicker handling.
15. **Don't remove swallowed hooks.** Just cut the line next to the fish's mouth.
16. **Don't keep fish out of the water more than 10-15 seconds.** Fragile gills are damaged after that, especially in cold weather.
17. **Revive the fish before releasing (The Catch and Release Foundation 2001).** Hold it under the belly and by the tail, keep it in an upright position underwater. If you are fishing in a river or stream, hold the fish facing the current. Be patient and give the fish as much time as it needs to recover and swim away on its own.
18. **Bring a fish up slowly from depths 30 feet or greater (The Catch and Release Foundation 2001).** This can allow the fish to decompress and increase survival chances. Pause while reeling the fish in and allow the air or gas from the fishes swim bladder to rise to the surface.

19. **Don't cull fish.** Decide quickly whether to keep the fish or not. Do not retain fish on stringers or in live wells, only to be set free when a larger fish is caught. This practice results in an increased mortality of released fish.
20. **Do not continue to angle in waters over 18^0C.** Continuing to angle in waters greater than 18^0C reduces the ability of fish to survive the catch and release process.

Guides must educate clients about the importance of non-sport fish to prevent the destruction of these species when they are accidentally caught (Mayhood 1992). Avoid wading in rivers, creeks or steams when fish are spawning in that particular area. This requires knowledge of species diversity in the different streams, rivers and creeks as well as their biology. Retrieve as many snagged hooks and lines as possible. Always rinse all mud and debris from all waders and gear that will enter the water to avoid introducing exotic species. If waders or equipment is known to come from an area heavily affected by whirling disease, disinfect the equipment with bleach (1 part chlorine to 9 parts water for 10 minutes), rinse and let dry in the shade (The Whirling Disease Foundation). Fish entrails should be sunk in the middle of the lake after puncturing the swim bladder or packed out.

To avoid the introduction of exotic species, always clean the hull and propeller of a boat before transferring it from another body of water. Clean and inspect the boat trailer as well. Empty the bilge and live well as tiny invertebrates and larval organisms can survive and be transferred in the water.

Avoid using cleaners that contain phosphates and other toxic cleansers.

Note: In Canada, manufacturers do not have to substantiate such claims as "non polluting" and "fully biodegradable." Remember that all detergents — even those that call themselves "environment friendly" or "green" — contain polluting phosphates and nitrates. The "Environmental Choice" logo indicates a degree of acceptability (DFO 1998).

Safe fuelling suggestions:

- When fuelling a boat, use extra caution and avoid any spills. Raw fuel is extremely harmful to the aquatic environment.
- Have a cloth at hand to deal with any spill quickly and effectively. Use one for the filler and one for the fuel tank vent. Pay attention!
- If you have portable fuel tanks, never fill them on board. Take them ashore where spills are less likely to occur. Fire regulations require that you fill portable fuel tanks off the boat.
- If you have engine-mounted tanks, it is best to take the motor ashore to refuel. Use a funnel and have an absorbent cloth at hand.
- If you have fixed or built-in tanks:
    - know the capacity of your fuel tank.
    - have an accurate fuel gauge.
    - determine how much fuel you need.

- do not overfill. Excess fuel can escape through the vent line when the fuel expands as it warms, or when the waves are rough.
- while you are filling the tank, use your hand to check for air escaping from the vent. When the tank is nearly full, you will feel a distinct increase in air flow. That is the signal to stop filling.
- install an anti-surge valve in the fuel vent line to prevent fuel from leaking overboard.

Where feasible use an electric motor when trolling. If electric motors are not available use four-stroke motors if feasible. If motors are going to be replaced, replace motors with four-stroke or electric motors.

Visitor Experience
Guides must respect other park visitors and use the boat for travel to and from destinations, not for joy-riding.

Scuba Diving

Vegetation and Soils
Avoid producing a wake that disturbs the shoreline and can cause erosion.
To avoid the introduction of exotic species, always clean the hull and propeller of a boat before transferring it from another body of water. Clean and inspect the boat trailer as well. Remove all dangling or attached pieces of vegetation.

Cultural Resources

- Divers must avoid touching underwater artifacts and cultural resources in any manner.
- Buoyancy must be controlled to avoid accidentally bumping into artifacts.
- Removal of artifacts is forbidden.
- Do not use anchor dragging to locate the site. The action of hooking onto remains of the structure could tear the structure remains and scattered components.
- Do not attach dive flags, lines, screws or any other devises to vessels.
- Do not build underwater cairns.

Aquatic Resources

- When diving from shore, choose sites with coarse substrates and little vegetation growth to minimize damage to the riparian area when entering the water. Restrict access to one entry site and contain equipment in one localized area (preferably on a hardened surface) to prevent compaction, erosion and so as not to discourage use of the area by the general public.
- In winter:
  - Refuel and maintain all equipment off ice, in areas with impermeable surfaces, a minimum of 30 m from water.
  - Use biodegradable chain oils if possible, in ice cutting equipment.
  - Use heating stoves or equipment must use fuel in spill proof containers.
  - No vehicles are permitted on the ice.

- When cutting a hole in the ice, push the freed piece of ice to the side underwater so that it can be used to plug the hole when diving is finished. (Several 2 x 2 boards placed between these ice sheets prevent them from freezing together). Holes in the ice must be no larger than 4 m in diameter, (usually a triangle is cut). All open holes must be constantly supervised by persons at the hole. Holes completely covered by a tent may be left unsupervised overnight, for a maximum of two nights, if the name of the person responsible, the company offering the course and a contact phone number are affixed to the tent. No overnight camping is permitted.
- Generators are permitted but must only be run during diving activities. Place generators on a waterproof base to eliminate spilling during refuelling and oil leakage. Place generators at least 3 m from the ice hole, and berm snow to prevent seepage into the water in the event of a fuel spill or leak.
- Remove all garbage (each day) and equipment brought onto the ice.
- When the site is vacated, slide the ice "plug" back into place, and mark the corners of the hole with flagging tape and wands, for a period of 4-10 days. Remove these markings within 2 weeks.
- Use washroom facilities located on shore or directly deposit human waste in a container and remove (Duane 2001).

Boating Operations

To avoid the introduction of exotic species, always clean the hull and propeller of a boat before transferring it from another body of water. Clean and inspect the boat trailer as well. Empty the bilge and live well as tiny invertebrates and larval organisms can survive and be transferred in the water.

Avoid using cleaners that contain phosphates and other toxic cleansers.

Note: In Canada, manufacturers do not have to substantiate such claims as "non polluting" and "fully biodegradable." Remember that all detergents — even those that call themselves "environment friendly" or "green" — contain polluting phosphates and nitrates. The "Environmental Choice" logo indicates a degree of acceptability (DFO 1998).

Safe fuelling suggestions:

- When fuelling a boat, use extra caution and avoid any spills. Raw fuel is extremely harmful to the aquatic environment.
- Have a cloth at hand to deal with any spill quickly and effectively. Use one for the filler and one for the fuel tank vent. Pay attention!
- If you have portable fuel tanks, never fill them on board. Take them ashore where spills are less likely to occur. Fire regulations require that you fill portable fuel tanks off the boat.
- If you have engine-mounted tanks, it is best to take the motor ashore to refuel. Use a funnel and have an absorbent cloth at hand.

- If you have fixed or built-in tanks:
    - know the capacity of your fuel tank.
    - have an accurate fuel gauge.
    - determine how much fuel you need.
    - do not overfill. Excess fuel can escape through the vent line when the fuel expands as it warms, or when the waves are rough.
    - while you are filling the tank, use your hand to check for air escaping from the vent. When the tank is nearly full, you will feel a distinct increase in air flow. That is the signal to stop filling.
    - install an anti-surge valve in the fuel vent line to prevent fuel from leaking overboard.

Where feasible use an electric motor when trolling. If electric motors are not available use four-stroke motors if feasible. If motors are going to be replaced, replace motors with four-stroke or electric motors.

Visitor Experience

- In winter, take shelter tents down after each weekend.
- Restrict access to one entry site and contain equipment in one localized area (preferably on a hardened surface) so as not to discourage use of the area by the general public and interfere with their enjoyment.
- Guides must respect other park visitors and use the boat for travel to and from destinations, not for joy-riding.

Site Specific Best Management Practices

Banff

Site 1207R, a precontact campsite, recorded on a fluvial terrace of the Spray about three to four m above river level. This is a high use area and is the site rafts are put in the Bow River. The site area is at least 300 sq. metres.

- Stay on the gravel beach when loading and unloading vehicles and equipment. Do not stray onto the undisturbed area of grass and trees.

Lake Minnewanka has a number of culturally significant sites under water.

- Do not drag anchors to locate sites.
- Follow guidelines described in the pamphlet “Diving Lake Minnewanka Submerged Cultural Resources Banff National Park” (Canadian Heritage Parks Canada 1997)

Jasper

Operation Habbakuk: W.W. II Vessel Prototype

- Anchor dragging should not be used to locate the site. The action of hooking onto remains of the vessel will tear the vessel remains and scattered components.

- No lines, screws or any other devices should be attached to any of the existing vessel remains.
- No vessel parts should be removed.

Old Fort Point
Improvements identified in the management plan for Old Fort Point include improvements to interpretation of the Athabasca River, parking, traffic flow and day-use. To facilitate the management of the many interests at this site a site plan is being developed. Elk calving and other wildlife issues will be addressed in this process.

- Comply with Superintendent's Order closing Old Fort Point for elk calving and site management plan when developed.

Maligne Lake Outlet ESS
The park management plan identified actions required by Parks Canada to preserve this ESS including: closing the outlet to all use during May and June to protect the harlequin duck "club site", closing the mid-Maligne River to in-stream use, rehabilitating the riparian willow and upland vegetation communities in the outlet area, restricting access to specific locations until restoration is complete, and improving the presentation of the site's significance(Parks Canada 2000a). Currently a superintendent's order prohibits fishing on the lake within 100m of outlet and on the first 400 m of the river downstream from the lake. In addition, no boating is allowed on the lake within 100 m of the outlet or on the river. No additional mitigation has been identified in order to manage the potential impacts of commercial guiding use.

- Guides must comply with Superintendent's orders regulating use at the Maligne Lake Outlet.
- Guides are encouraged to avoid the Maligne River shoreline (any area within sight of the river) within 400 m of the outlet as recommended by the Voluntary Restriction to allow for rehabilitation of the riparian area.

Yoho

Kicking Horse River
Based on results of preliminary monitoring and habitat assessment, commercial rafting at the present level and in the present location requires the following mitigation.

- Due to the sensitivity of harlequin ducks breeding along the river, and the limited availability of site specific data associated with this issue, commercial rafting will be limited to the section of the river downstream of Wapta Falls.

Waterton

Sunken *Gertrude* in Emerald Bay:

- No actual touching or grabbing onto the wreck for buoyancy control.
- No anchor dragging.