

**East Kootenay Integrated Lake
Management Partnership**

**Columbia Lake
Shoreline Management Guidelines
for Fish and Wildlife Habitats**



**Final
August 2010**

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East Kootenay Integrated Lake Management Partnership.

PROJECT TEAM:

Many people reviewed and contributed to drafts of this document, including staff from federal and provincial agencies, and local governments. This project team included:

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Jon Bisset and Jim Clarricoates, Canadian Columbia River Inter-Tribal Fishery Commission; and
Sharon Dailey, Integrated Land Management Bureau.

KEY REFERENCE:

Key references used in developing this document were the Windermere Lake Shoreline Management Guidelines for Fish and Wildlife Habitats (EKILMP and Interior Reforestation 2009)¹ which was developed using and the 2008 Ministry of Environment document - *High Value Habitat Maps and Associated Protocol for Works along the Foreshore of Large Lakes within the Okanagan (MOE Region 8)*. The Moyie Lake Shoreline Management Guidelines (Schleppe 2009)², followed with some improvements which were also incorporated into this document.

SUGGESTED CITATION:

East Kootenay Integrated Lake Management Partnership and Interior Reforestation Co. Ltd.³. 2010. Columbia Lake Shoreline Management Guidelines for Fish and Wildlife Habitats.

Cover Photo: Columbia Lake looking south east (Halverson).

¹ East Kootenay Integrated Lake Management Partnership (EKILMP) and Interior Reforestation. 2009. Windermere Lake Shoreline Management Guidelines for Fish and Wildlife Habitats.

² Schleppe, J. 2009. Moyie Lake Foreshore Inventory and Mapping. Ecoscape Environmental Consultants Ltd. Project File: 09-371. Prepared for: East Kootenay Integrated Lake Management Partnership.

³ Sherri McPherson and Darcy Hlushak, Interior Reforestation Co. Ltd.

Preface

This report provides Management Guidelines for the Shoreline of Columbia Lake. It should be used as an initial step when reviewing, planning for, or prescribing alterations along the shoreline. The Guidelines have been developed using the technical results of the Sensitive Habitat Inventory and Mapping report commissioned by EKILMP (McPherson *et. al.* 2010)¹. This report showed that the Columbia Lake shoreline has a diversity of important fish and wildlife habitats and species. The Guidelines are focused around the protection, conservation and restoration of important fish and wildlife values. EKILMP believes the Guidelines will help focus where new development could be located on the lake while sustaining priceless natural public assets and maintaining the economic viability of the area.

The spectacular setting, which includes the fish and wildlife values of Columbia Lake, draw many people to the area. Although these values remain high at Columbia Lake, current development pressures are considerable at southern interior lakes, and without appropriate guidance, the natural values of the area could quickly be eroded. EKILMP wishes to maintain the high environmental values of the lakeshore.

Guidance in this document is provided through shoreline mapping which outlines different color zones around the lake based on a Habitat Index Analysis. This approach provides a science-based assessment of areas of highest natural value requiring the highest level of on-going protection. There are four colour zones from red, which calls for the highest level of shoreline protection and are identified as conservation areas, to grey zones, where there is already significant impact from development and potential for redevelopment and restoration. The risks of selected development activities have been determined for each colour zone, identifying activities which require additional review or consideration. A flow chart has been developed based on activity risk, which outlines the review process at a broad scale.

This report only provides direction relating to fish and wildlife habitat values, and as such, does not consider other development factors (such as erosion hazards, drinking water quality or navigation considerations). Although some mention is made to potential permits required, the guidelines do not fully outline the regulatory agency permit planning process.

¹ McPherson S., D. Hlushak, I. Adams, and M. Polzin. 2010. Columbia Lake Sensitive Habitat Inventory and Mapping. Consultant report for the East Kootenay Integrated Lake Management Partnership. Prepared by Interior Reforestation Co. Ltd., Cranbrook, BC.

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1 Introduction

This document provides the Shoreline Management Guidelines (henceforth ‘the Guidelines’) for Columbia Lake that were developed based on fish and wildlife values. The Guidelines are intended to conserve fish and wildlife habitat. The Guidelines have been developed by the East Kootenay Integrated Lake Management Partnership (EKILMP). The partnership is comprised of federal, provincial and local governments, First Nations and non-profit organizations.

EKILMP was formed in 2006 for the purpose of creating lake management guidelines that balance development with environmental needs for the key lakes in the East Kootenay. Thus far, similar guidelines have been developed for Windermere Lake, Moyie and Munroe Lakes and are planned for many other lakes. The Guidelines include shoreline designation maps, risk rating for potential proposed activities and a flow chart that indicates selected preliminary approval procedures when making development applications. These are provided as tools to assist landowners and developers who want to propose shoreline development. Once these guidelines have been reviewed, landowners and developers should submit applications to the appropriate offices listed below.

FrontCounter BC

The one-window approach for permit applications offering over 80 different authorizations required by natural resource clients. All applications for government-related permits should be submitted through FrontCounter BC. Application forms are available online. Inquiries can be directed to:

1902 Theatre Road
Cranbrook, BC V1C 7G1
Phone: (250) 426-1766 Fax: (250) 426-1767

Service BC

Provides information and some additional permitting applications and information. The one particular application that Service BC provides pertinent to shoreline development is the Navigable Waters Act applications. Local contact information is:

625 - 4th Street, Box 265
Invermere, BC V0A 1K0
Phone: 250-342-4260 Fax: 250-342-4262

Regional District of East Kootenay

4956 Athalmer Road
Box 2319
Invermere, BC V0A 1K0
Phone: 250-342-0063 Fax: 250-342-0064

District of Invermere

914 – 8th Avenue
Box 339
Invermere, BC V0A 1K0
Phone: 250-342-9281 Fax: 250-342-2934

2 Definitions

Development

For the purposes of the Guidelines, unless otherwise stated, “development” is defined as follows (adopted from the Lake Windermere Official Community Plan (OCP)):

- a) Adding or removing fill;
- b) Construction or maintenance of retaining walls, bank protection installations, docks, marinas, boathouses, groynes or breakwaters, or other structures within the foreshore;
- c) Any activity that may alter, disrupt or destroy fish habitat;
- d) Removing foreshore or riparian vegetation; or
- e) Other significant works, including activities listed in the Activity Risk Rating Table (See Table 1).

Qualified Professional

An applied scientist or technologist, acting alone or together with another qualified environmental professional, if:

- (a) the individual is registered and in good standing in British Columbia with an appropriate professional organization constituted under an Act, acting under that association's code of ethics and subject to disciplinary action by that association;
- (b) the individual's area of expertise is recognized in the assessment methods as one that is acceptable for the purpose of providing all or part of an assessment report in respect of that development proposal, or;
- (c) the individual is acting within that individual's area of expertise.

Aquatic Habitat Index (AHI) Rankings

The Aquatic Habitat Index (AHI) estimates the environmental sensitivity or current ecological value of the shoreline. The AHI analysis was completed during the fish and wildlife assessment using fieldwork, literature review and professional consultation. The index incorporates physical and biological data into a model which analyses and ranks each segment. The index incorporates both positive habitat features such as natural areas that add to the habitat value of a segment, and negative habitat features such as marinas which decrease the habitat value. The index included four categories of parameters: 1) Biophysical, 2) Zones of Sensitivity, 3) Riparian and 4) Modifications., several habitats were identified as being highly important to fish and wildlife, and sensitive to development. The outcome of the AHI is a segment ranking of Very High, High, Moderate, Low or Very Low.

3 Shoreline Management Guidelines

To achieve the EKILMP goals and objectives, a colour scheme has been developed which delineates the shoreline based on habitat values determined through the AHI analysis in the Fish & Wildlife Habitat Assessment report. The scheme has coloured shoreline areas as red, orange, yellow or grey zones. These zones are defined in the following Section (Step 1) and have been mapped in Appendix A. The risks for specific activities in each color zone (See Step 2) and the associated review process (See Step 3) have also been outlined. The coloured zones, activity risk table and the process flow chart form the basis of the Guidelines. This approach has been adopted from the lake management protocols being developed by the Ministry of Environment in the Okanagan Region (BC MoE 2008)¹.

The How-to Guide below provides a step-wise process to help direct applicants/reviewers through the Guidelines (including the maps, risk table and flow chart):

How-to Guide for Development Planning in the Fish and Wildlife Shoreline Colour Zones

Step 1: Determine the colour zone that your application is situated in using the maps in Appendix A. Note that Red Zones are designated Conservation Areas. No development should be considered or approved in these zones.

Step 2: Determine what the risk is for your specific activity using the Activity Risk Table (Table 1). If your activity is not listed, assume high risk, and contact FrontCounter BC for advice.

Step 2a: If a species at risk has been identified in the area, the risk increases as identified in the Modifier Column of the Activity Risk Table.

Step 2b: If your activity is identified as being High risk, determine if you can move to a colour zone with less sensitive habitat (e.g., move to a yellow or grey zone) or select a lower risk activity.

Step 3: Use the Flow Chart to determine application review needs based on your given activities risk.

Step 1. Shoreline Color Zones

To determine the appropriate shoreline colour zone, the property or area that would be subject to application must be located on the maps found in Appendix A.

The AHI Values (or Current Ecological Value) as defined in the Fish and Wildlife Habitat Assessment were used to determine the color zone (red, orange, yellow and grey) of a

¹ BC Ministry of Environment. 2008. High Value Habitat Maps and Associated Protocol for Works along the Foreshore of Large Lakes within the Okanagan (MOE Region 8). Draft Version (03/04/2008).

shoreline area. The specific designation methods and guidelines for each color zone are provided below. With the methods utilized, fish and wildlife values and associated levels of sensitivity to development are highest in red and orange zones, lower in a yellow zone and lowest in a grey zone. Risks for specific activities have been identified for each colour zone and are provided in the subsequent section.

Red Shoreline

Defined by: Very High Current Ecological Values in the Aquatic Habitat Index.

Background:

These areas have been identified as essential for the long term maintenance of fish and/or wildlife values through the Habitat Index Analysis. This zone includes most creek mouths and wetland areas at Columbia Lake. These areas are essential for fish and/or wildlife populations.

EKILMP recommends that these areas be designated for conservation use, and that no development that can impact these sensitive communities occur within them. Low impact water access recreation and traditional First Nation uses are permissible in these areas, but permanent structures or alteration of existing habitats is not considered to be acceptable. Habitat restoration may be appropriate in these areas where warranted. Invasive aquatic plant removal is acceptable, provided there is an approved aquatic plant removal program including trained persons. Please contact a plant specialist if uncertain of a plant species. Red zones account for 26.8% of the total shoreline length of Columbia Lake.

Orange Shoreline

Defined by: High Current Ecological Values in the Aquatic Habitat Index.

Background:

These shoreline segments have been identified as High Value Habitat Areas for fish and/or wildlife through the AHI Analysis. These are made up of areas that are relatively natural; possessing high value areas for fish and/or wildlife. These areas are sensitive to development, continue to provide important habitat functions, but may be at risk from adjacent development pressures. Restoration opportunities potentially exist in these areas. Proponents should consider moving high risk activities to other areas if possible, or pursuing activities that have lower associated risks. Orange zones account for 35.1% of the total shoreline length of Columbia Lake.

Yellow Shoreline

Defined by: Moderate Current Ecological Values in the Aquatic Habitat Index.

Background:

These areas have experienced a moderate amount of development disturbance and pressures. At Columbia Lake the AHI found that although these areas have been impacted to some degree, they still contain sensitive areas for burbot rearing and are also important general living habitats for other fish and wildlife species. These values should be considered when changes to land uses are proposed.

Development is more appropriate on these shorelines than on red or orange coloured areas; however activities should incorporate protection of habitat features that remain, be well above the high water mark, and and/or be situated outside of the riparian area. Restoration may be an option in some areas that have experienced past developments. Development may proceed for low risk activities provided a Best Management Practice (BMP) or Regional Operating Statement (ROS) is followed. High risk activities without a BMP or ROS will require a report from a Qualified Professional (QP). Yellow zones account for 4.3% of the total shoreline length of Columbia Lake.

Grey Shoreline

Defined by: Low and Very Low Current Ecological Values in the Aquatic Habitat Index.

Background:

These are shorelines identified during the Habitat Index Analysis as having lower ecological value. However, they still may contain valuable habitats requiring some protection, such as in-lake wetlands, or gravel/cobble substrate areas.

Human development has been concentrated in these areas and has resulted in disturbances to the natural fish and wildlife habitat. In keeping with the objective of concentrating development in areas that are already disturbed or of low value, new developments may be considered in these areas. Redevelopment will also be considered. New developments or redevelopment proposals shall incorporate fish and wildlife habitat restoration or improvement features where feasible and practicable. Obtain advice from a QP for habitat restoration techniques. For example, a retaining wall redevelopment may be moved back from the HWM and/or incorporate re-vegetation or other fish and wildlife features in the design. Grey zones account for 34% of the total shoreline length of Columbia Lake.

Step 2. Activity Risk Analysis

Typical shoreline activities have been assigned risk ratings based on the potential level of risk that they may have on fish and wildlife habitat values (See Table 1). Recognizing that the different shore zones have different habitat values and levels of sensitivity, the risk of each activity has been identified for each shoreline colour zone. In the table, each colour zone/activity combination has been rated as either: Not Acceptable (NA), High (H) or Low (L). A species at risk modifier column has also been provided, which should be used if a species at risk has been identified in the project area.

Please be aware that where several activities with differing risk factors occur on a site, then the combined risk may increase and move the activity into a higher risk category. A Qualified Professional may be required to determine if the overall risk has increased. If your activity is not listed, contact FrontCounter BC for advice. Note also, that the Activity Risk Table often distinguishes between activities above the high water mark (HWM) and below the HWM. The HWM as opposed to the 'natural lake boundary' is the standard practice used by Fisheries and Oceans Canada when considering impacts to fish and wildlife values.

Risk Rating Descriptors

This section provides background, description and examples for the Activity Risk Ratings. Overall, the risk ratings reflect the potential impacts on fish and wildlife, with a Not Acceptable or High activity risk rating posing the greatest potential concern and the Low risk rating a lower level of possible concern. This process recognizes that there is a greater possibility that High Risk activities may not be approved by regulators. The process also identifies that important habitats do exist in degraded and developed areas and that at least minimal standards are required to protect fish and wildlife habitat in the grey zone areas.

Not Acceptable Activities

Several activities have been rated as not acceptable. These activities are primarily in Red and Orange zones that have very high or high ecological ratings. The activities listed are known to have significant negative impacts to fish and wildlife habitats and are extremely difficult or impossible to mitigate or compensate. Applications for these types of development in the zones identified will not be considered.

High Risk Activities

Proposals within the High Risk category are known to have significant challenges related to providing adequate mitigation or compensation to address the loss of fish and/or wildlife habitat values. Acceptable mitigation measures would likely be very costly to implement. In addition, there is a high likelihood that a request for a Harmful Alteration, Disruption or Disturbance of Fish Habitat (HADD) authorization under the *Fisheries Act* would be triggered. Applicants are thus encouraged to avoid activities with a High Risk, consider activities that are a lower risk, or relocate the activity to an area where the environmental sensitivity is less. If the applicant wishes to proceed with a High Risk activity, a qualified professional should be retained to determine if there is a HADD &/or other environmental impacts which can be mitigated through design and relocation. The application will be reviewed by the applicable agencies. As identified in the Activity Risk Table, certain activities are rated High Risk for all shore colour zones and should be avoided if at all possible.

Low Risk Activities

With appropriate design and planning, Low Risk activities could be incorporated along the foreshore with minimal impacts on fish and wildlife habitat values. These activities are to follow BMP/ROS (See Appendix D), where available. Where BMP/ROS are not available, or a deviation to the BMP/ROS is proposed, a QP is to be hired to determine if there is a HADD and design the project to minimize environmental impacts. The application will be reviewed by the applicable agencies. Examples of activities which have Low risk along most/all of the shoreline are: maintenance dredging (previously approved) and erosion protection (soft-bioengineered).

Step 3. Decision Process Flow Chart

A flow chart is provided which outlines the decision-making process for the High and Low risk activities. The chart is a tool to help depict the Guideline requirements outlined in the previous sections. Note that this process provides Guidelines on only the initial planning stages of development. There are other legal requirements that are not covered through this process (such as approvals/notifications through RDEK, Transport Canada, BC *Water Act*, BC *Lands Act*), which are the responsibility of the applicant. Additional potential legal requirement listings are provided in Appendix C. If these Guidelines are followed, the intent is that the subsequent permitting process(es) should be more streamlined for the applicant.

Contact FrontCounter BC to determine which permits, approvals or authorizations you need, in addition to fish and wildlife habitat authorizations.

Table 1. Activity Risk Table (NA = Not Acceptable, High = H, Low = L).

Activity	Shore Zone Colour and Activity Risk				Modifier
	Red	Orange	Yellow	Grey	Zone has Species at Risk
Over water piled structure (i.e. building, house, etc.)	NA	NA	NA	NA	NA
Boat house (below HWM) ¹	NA	NA	NA	NA	NA
Dredging (new proposals)	NA	NA	NA	NA	NA
Beach creation above HWM	NA	NA	H	H	H
Beach creation below HWM	NA	NA	H	H	H
Aquatic vegetation removal	NA	NA	H	H	H
Upland vegetation removal	NA	NA	H	H	H
Marina ²	NA	H	H	H	H
Breakwater	NA	H	H	H	H
Boat launch upgrade	NA	H	H	H	H
New boat launch	NA	H	H	H	H
Infill	NA	H	H	H	H
Groynes	NA	H	H	H	H
Fuel facility ³	NA	H	H	H	H
Boat house (above HWM with vegetation removal) ¹	NA	H	H	H	H
Mooring Buoys	NA	H	H	H	H
Waterline trenched	NA	H	H	L	H
Erosion protection hard-joint planted	NA	H	H	L	H
Erosion protection vertical wall or retaining wall ⁴	NA	H	H	L	H
Milfoil & invasive weed removal	H	H	H	L	H
Boat house (above HWM without vegetation removal) ¹	NA	H	L	L	H
Permanent rail launch system	NA	H	L	L	H
Removable rail launch system	NA	H	L	L	H
Dock ¹	NA	H	L	L	H
Erosion protection (soft-bioengineered)	NA	H	L	L	H
Elevated boardwalk below HWM	NA	H	L	L	H
Maintenance dredging (previously approved)	NA	H	L	L	H
Boat lift - temporary	NA	H	L	L	H
Geothermal loops - open ⁵	NA	H	L	L	L
Geothermal loops - closed	NA	H	L	L	L
Habitat restoration ⁶	H	H	L	L	H
Public beach maintenance	NA	L	L	L	H
Waterline drilled	NA	L	L	L	L

¹ These Guidelines are to be used in the initial development planning stage and do not cover all legislative requirements. Docks and boathouses are an example of an activity that could require additional approval process through Transportation Canada or Ministry of Agriculture and Lands.

² Marinas or marina expansions in orange zones may not be acceptable depending on the habitat attributes.

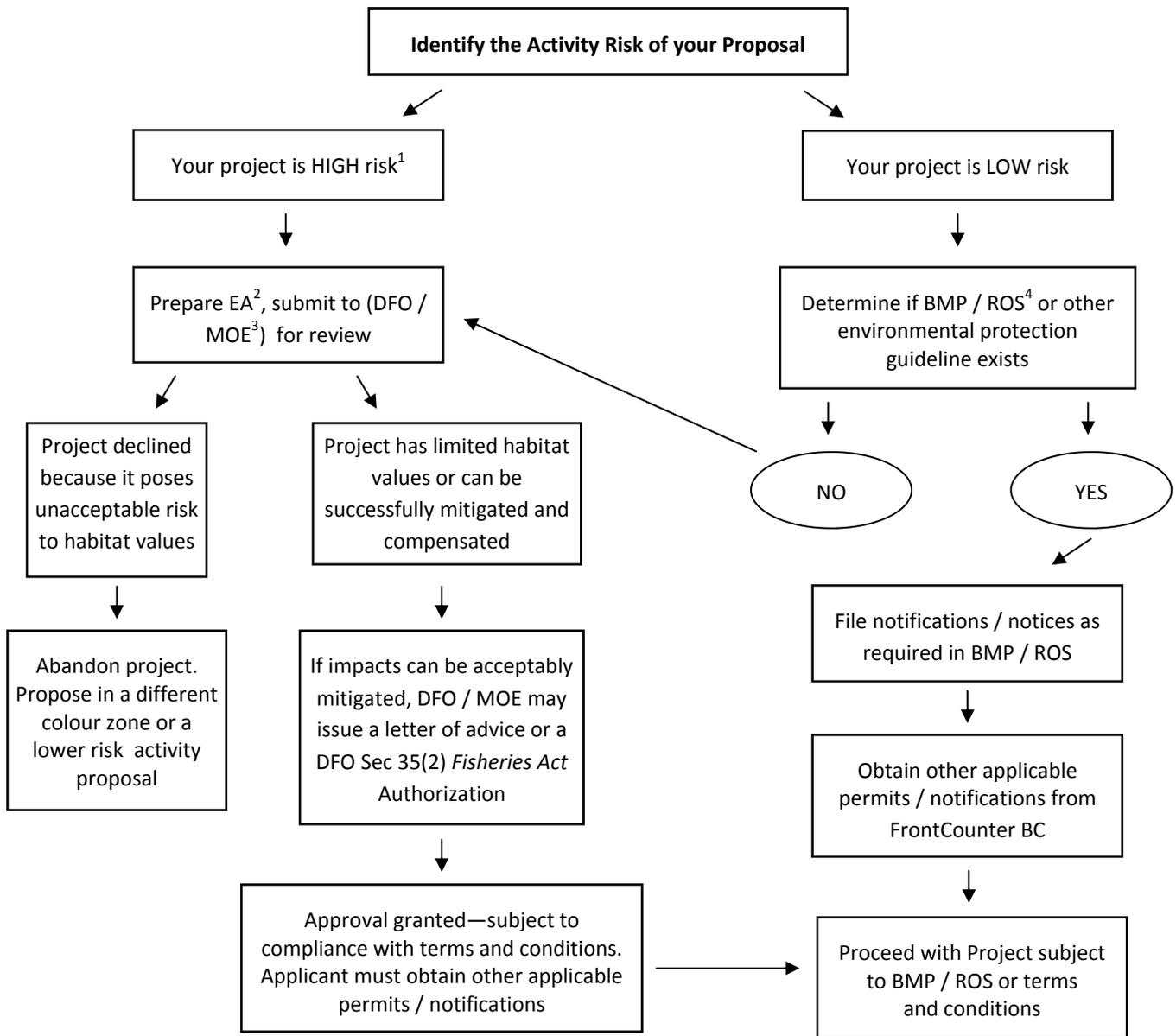
³ Fuel facilities are inherently high risk, and if approved will be subject to all other regulations.

⁴ Retaining wall redevelopment should be designed to restore fish and wildlife values where feasible and practical.

⁵ Geothermal loops open (water) versus closed (glycol) and associated risk must also be assessed and ranked for physical habitat and water quality aspects.

⁶ Habitat restoration proposals are listed as high risk in red and orange zones because individual objectives and proposals must be reviewed.

Flow Chart: Decision-making process for High and Low Risk Activities for Fish and/or Wildlife Habitat authorizations



¹ Activities within the High Risk category raise significant concerns. These activities have significant challenges related to providing adequate mitigation or compensation to address the loss of fish and/or wildlife habitat values and could be costly to implement acceptable mitigation measures. With High Risk activities, there is a high likelihood that a request for a Harmful Alteration Disruption or Destruction of fish habitat (HADD) authorization under Sec 35(2) of the *Fisheries Act* would be triggered. Proponents are encouraged to avoid activities with a High risk, revise activities to a lower risk option, or relocate the activity to a less sensitive colour zone.

² Environmental Assessment

³ DFO- Fisheries and Oceans Canada; MOE- Ministry of Environment

⁴ BMP – Best Management Practice; ROS – Fisheries and Oceans Canada Regional Operating Statement

4 Other Considerations

4.1 Mitigation and Compensation Considerations

In order to assess impacts of a proposed project, it may be necessary to retain a Qualified Professional who could assess habitat values and sensitivities in the area. The Columbia Lake Fish & Wildlife Habitat Assessment Report is a tool available to help with this task; however, further studies may be necessary, due to limitations of currently available information. The Fisheries and Oceans Canada principle of “no net loss” within the Policy for the Management of Fish Habitat (1986) applies to all proposals where there is the potential for a Harmful Alteration Disruption or Destruction of fish habitat (HADD) under Section 35(2) of the federal *Fisheries Act*. This involves following a sequence of mitigation alternatives. Mitigation is a process for achieving conservation through the application of a hierarchical progression of alternatives, which include: (1) avoidance of impacts; (2) minimization of unavoidable impacts; and (3) compensation for residual impacts that cannot be minimized. These alternatives are described as follows:

1. Avoidance of Impacts

The first step, avoidance, involves the prevention of impacts, either by choosing an alternate project, alternate design or alternate site for development. It is the first and best choice of mitigation alternatives. Because it involves prevention, the decision to avoid a high value area or to redesign a project so that it does not affect a high value area must be taken very early in the planning process. It may be the most efficient, cost effective way of conserving important habitats because it does not involve minimization, compensation or monitoring costs. Avoidance may include a decision of not to proceed with the project.

2. Minimization of Unavoidable Impacts

Minimization should only be considered once the decision has been made that a project must proceed, that there are no reasonable alternatives to the project, and that there are no reasonable alternatives to locating the project within high value habitats. Minimization involves the reduction of adverse effects of development on the functions and values of the habitat at all project stages (including planning, design, implementation and monitoring), to the smallest practicable degree. Considering any planning efforts, Fisheries and Oceans Canada must deem a HADD to be acceptable before work can commence.

3. Compensation

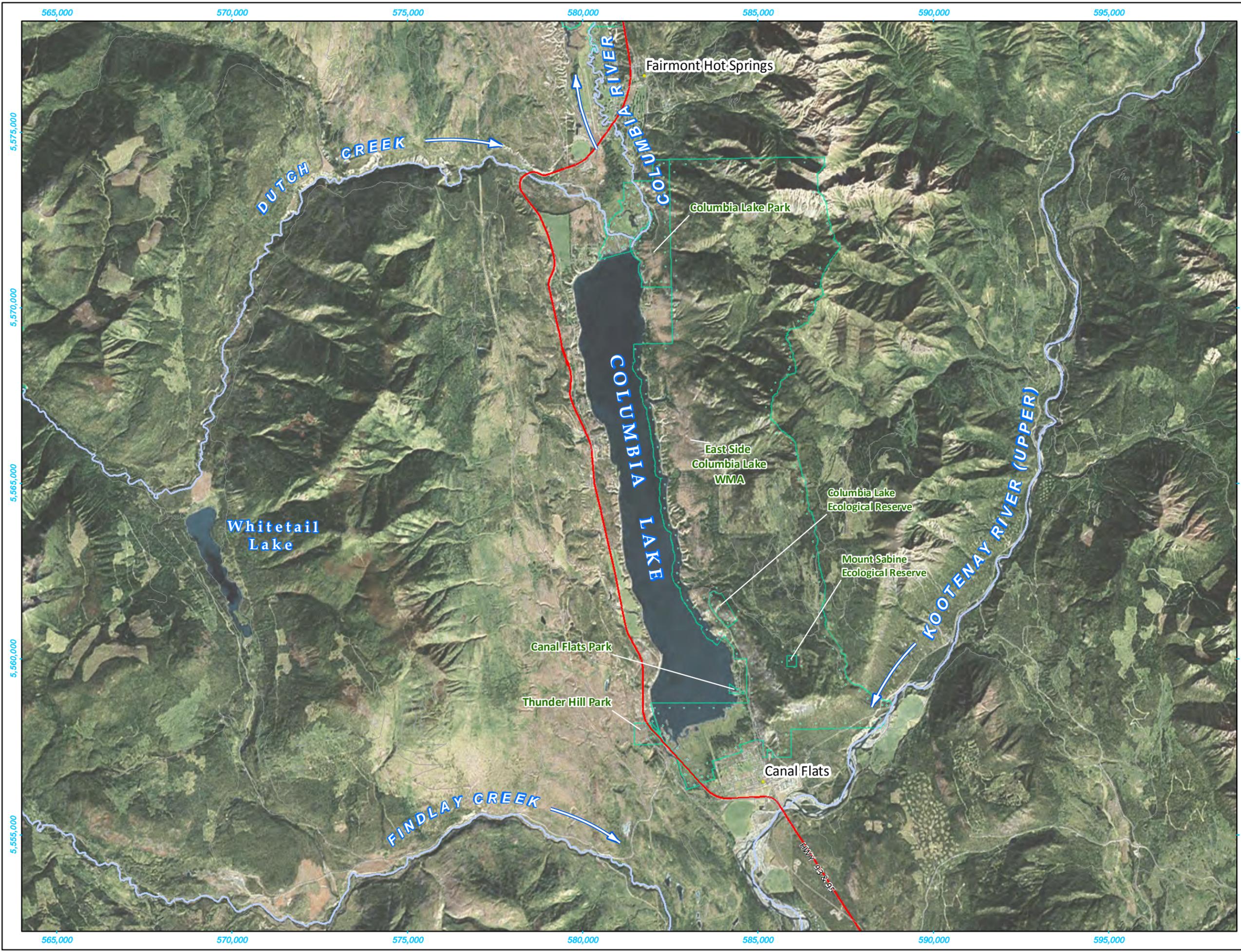
Compensation is the last resort in the mitigation process, an indication of failure in the two earlier steps. It should only be considered for residual effects that were impossible to minimize. Compensation refers to a variety of alternatives that attempt to replace the loss of, or damage to habitat functions and values. Habitat compensation may be an option for achieving “no-net-loss” when residual impacts of projects on habitat productive capacity are deemed harmful after relocation, redesign, or mitigation options have been implemented. After reviewing the project proposal and the potential impacts to fish habitat, Fisheries and Oceans Canada may determine that the impacts are not acceptable if the habitat to be affected is critical habitat or compensation is not feasible. In addition, compensation for deposit of a deleterious substance into water frequented by fish is not acceptable. Habitat compensation involves replacing the loss of fish habitat with newly created habitat or improving the productive capacity of some other natural habitat. Depending on the nature and scope of the compensatory works, habitat compensation may require, but not be limited to, several years of post-construction

monitoring and remediation or redevelopment of the compensation works in the event the habitat is not meeting the compensation objectives. There is no guarantee that projects in high value fish habitats that result in HADD will be authorized under Section 35(2) if application is submitted.

4.2 Restoration Techniques

A variety of techniques have been developed to restore productive habitat (aquatic and terrestrial) and maintain/enhance productivity and biodiversity. There are a variety of groups' currently leading/undertaking restoration activities within the East Kootenay, using proven restoration techniques and concepts. For information contact local environmental groups, local government, or provincial government offices.

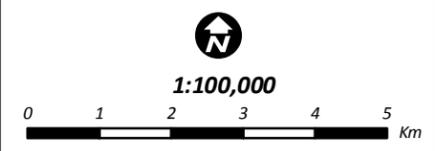
Appendix A. Shoreline Designation Maps



COLUMBIA LAKE - 2010 FORESHORE INVENTORY AND MAPPING

Appendix A - Overview Map

- Features**
- Community
 - Highway
 - Major Road
 - Local road
 - Stream Network (50k)



Data Sources
50k Stream Network derived from CWB - Macrorreach, GeoBC Main/Overview Base Map provided by Bing Maps licence.

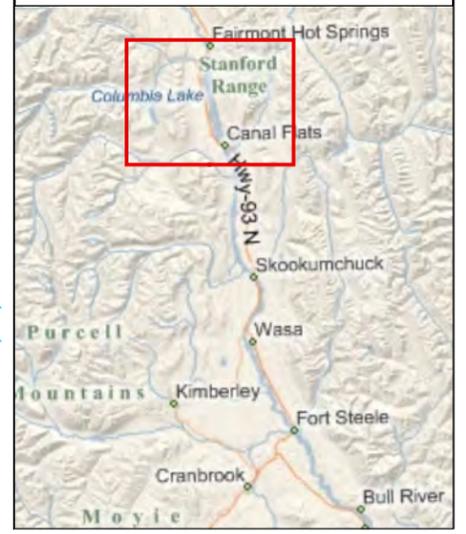
Map Information	Cartographic Information
Map Projection: UTM 11 Map Datum: NAD 1983 Scale: 1:100,000 Issue Date: May 11, 2010	Created By: D.Hlushak Reviewed By: S.McPherson Map Document: 10WILD6A\ MXD_Data\App1_Overview

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Created by: INTERIOR REFORESTATION CO. LTD.

Overview Map



COLUMBIA LAKE - 2010 FORESHORE INVENTORY AND MAPPING

Appendix A - Columbia Lake North

- Features**
- Sample Site
 - Wetlands
 - Park/Protected Area
 - Legal Boundaries
- Shoreline Colour Zone**
- Red
 - Orange
 - Yellow
 - Gray
- Zones of Sensitivity**
- Biologically Productive
 - Wildlife
 - Burbot Spawning
 - Emergent Vegetation
 - Burbot Rearing

1:25,000



Data Sources

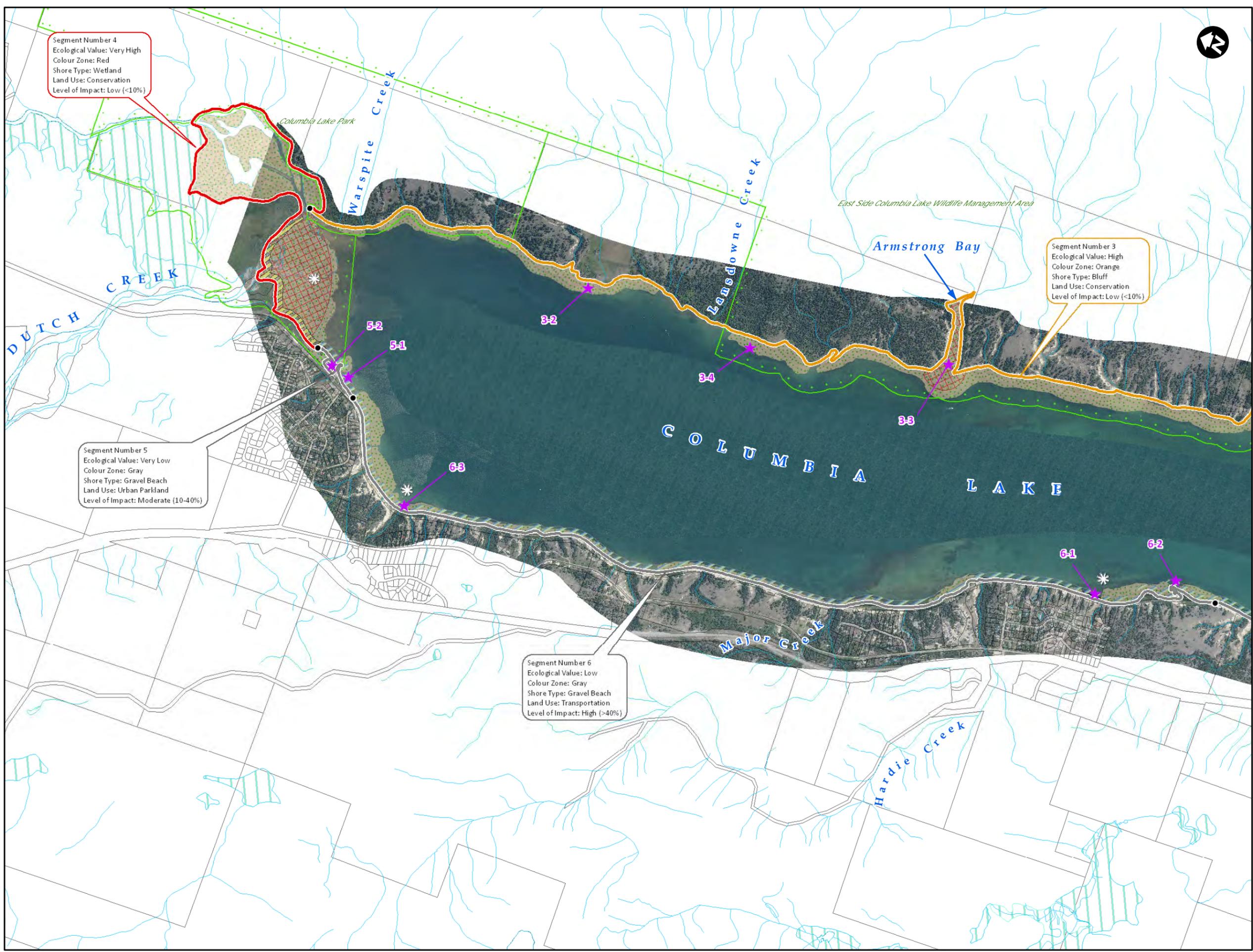
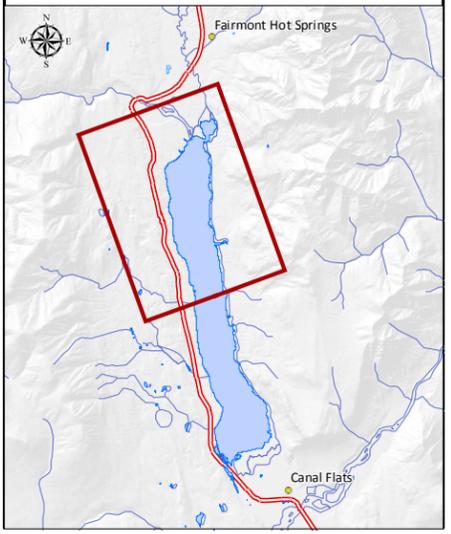
- Regional District Base Map and Legal Plans: Regional District of East Kootenay (Accuracy +/- 10 meters)
- Columbia Lake 2008 Orthophoto: Provided by RDEK (20 cm res.)
- Parks/Protected Areas: GeoBC, Province of BC
- Shoreline Segments: Modified from TRIM Lake data (1:20,000)
- CWB Wetlands: GeoBC, Province of BC
- Emergent Vegetation: Digitized from 2008 Orthophoto (20 cm res.) in conjunction with Field verification/GPS mapping - March 2009

Map Information	Cartographic Information
Map Projection: UTM 11	Created By: D.Hlushak
Map Datum: NAD 1983	Reviewed By: S.McPherson
Scale: 1:25,000	Map Document: 10WILD6A\
Issue Date: June 01, 2010	MXD_Data\AppA_FIM_N.mxd

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Overview Map



Segment Number 4
 Ecological Value: Very High
 Colour Zone: Red
 Shore Type: Wetland
 Land Use: Conservation
 Level of Impact: Low (<10%)

Segment Number 3
 Ecological Value: High
 Colour Zone: Orange
 Shore Type: Bluff
 Land Use: Conservation
 Level of Impact: Low (<10%)

Segment Number 5
 Ecological Value: Very Low
 Colour Zone: Gray
 Shore Type: Gravel Beach
 Land Use: Urban Parkland
 Level of Impact: Moderate (10-40%)

Segment Number 6
 Ecological Value: Low
 Colour Zone: Gray
 Shore Type: Gravel Beach
 Land Use: Transportation
 Level of Impact: High (>40%)

COLUMBIA LAKE - 2010 FORESHORE INVENTORY AND MAPPING

Appendix A - Columbia Lake South

Features

- Sample Site
- Wetlands
- Park/Protected Area
- Legal Boundaries

Shoreline Colour Zone

- Red
- Orange
- Yellow
- Gray

Zones of Sensitivity

- Biologically Productive
- Wildlife
- Burbot Spawning
- Emergent Vegetation
- Burbot Rearing

1:25,000

Data Sources

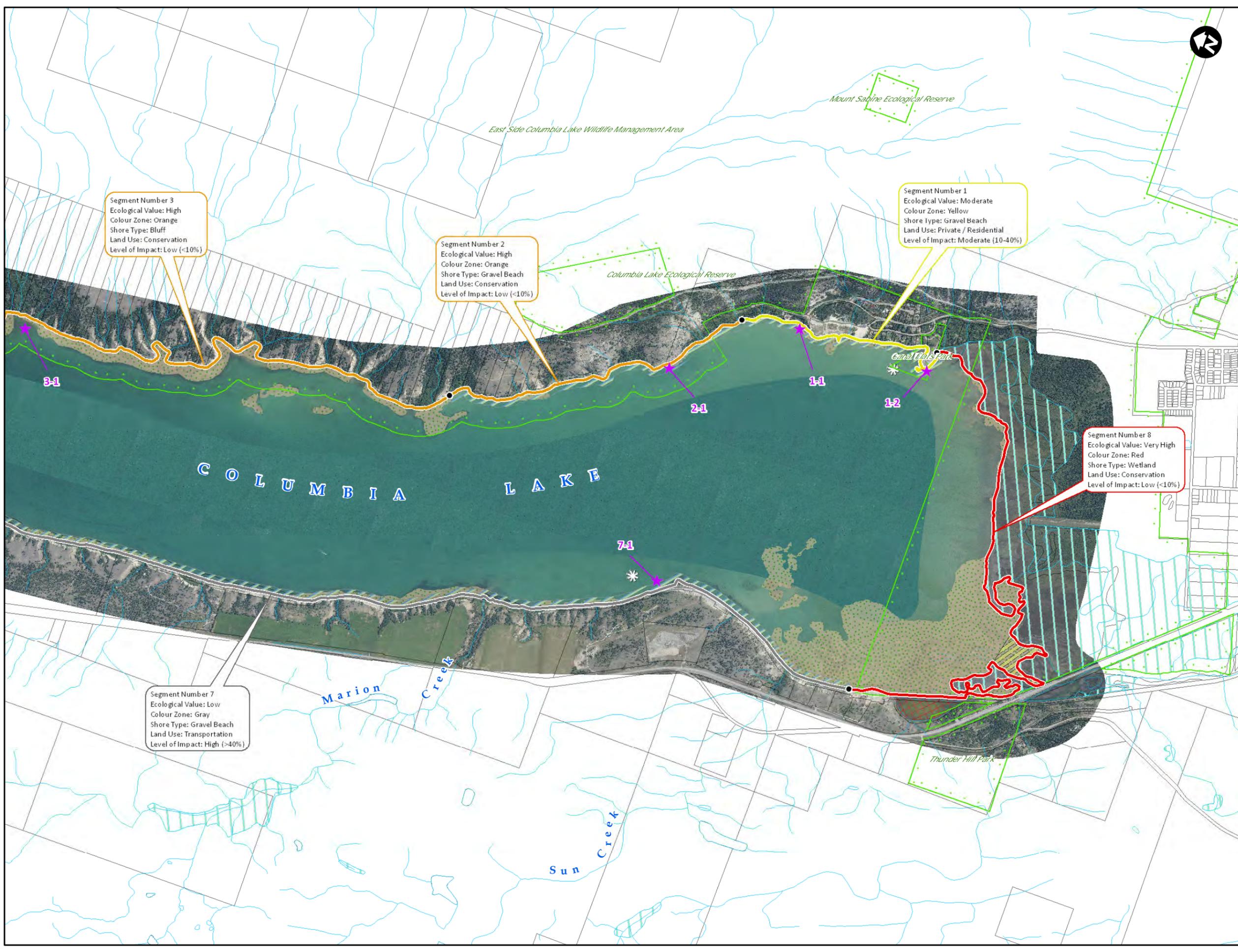
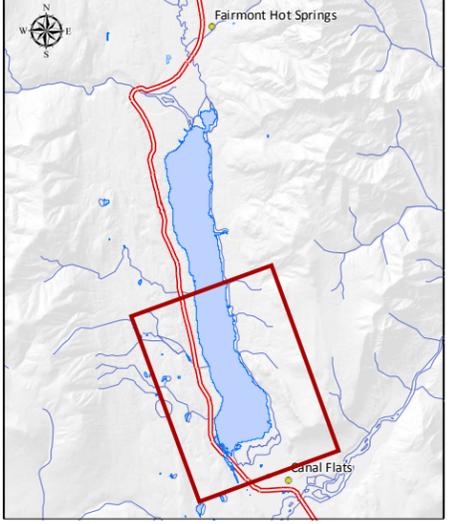
- Regional District Base Map and Legal Plans: Regional District of East Kootenay (Accuracy +/- 10 meters)
- Columbia Lake 2008 Orthophoto: Provided by RDEK (20 cm res.)
- Parks/Protected Areas: GeoBC, Province of BC
- Shoreline Segments: Modified from TRIM Lake data (1:20,000)
- CWB Wetlands: GeoBC, Province of BC
- Emergent Vegetation: Digitized from 2008 Orthophoto (20 cm res.) in conjunction with Field verification/GPS mapping - March 2009

Map Information	Cartographic Information
Map Projection: UTM 11	Created By: D.Hlushak
Map Datum: NAD 1983	Reviewed By: S.McPherson
Scale: 1:25,000	Map Document: 10WILD6A\
Issue Date: June 01, 2010	MXD_Data\AppA_FIM_S.mxd

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Created for:	Created by:
EAST KOOTENAY INTEGRATED LAKE MANAGEMENT PARTNERSHIP	INTERIOR REFORESTATION CO. LTD.

Overview Map



Segment Number 3
 Ecological Value: High
 Colour Zone: Orange
 Shore Type: Bluff
 Land Use: Conservation
 Level of Impact: Low (<10%)

Segment Number 2
 Ecological Value: High
 Colour Zone: Orange
 Shore Type: Gravel Beach
 Land Use: Conservation
 Level of Impact: Low (<10%)

Segment Number 1
 Ecological Value: Moderate
 Colour Zone: Yellow
 Shore Type: Gravel Beach
 Land Use: Private / Residential
 Level of Impact: Moderate (10-40%)

Segment Number 8
 Ecological Value: Very High
 Colour Zone: Red
 Shore Type: Wetland
 Land Use: Conservation
 Level of Impact: Low (<10%)

Segment Number 7
 Ecological Value: Low
 Colour Zone: Gray
 Shore Type: Gravel Beach
 Land Use: Transportation
 Level of Impact: High (>40%)

Appendix B. Glossary of Terms

BMP	Best Management Practices
DFO	Fisheries and Oceans Canada
DOI	District of Invermere
EA	Environmental Assessment
EKILMP	East Kootenay Integrated Lake Management Partnership
FCBC	FrontCounter BC
HADD	Harmful Alteration Disruption or Destruction of fish habitat
HWM	High Water Mark
MOE	Ministry of Environment
OCP	Official Community Plan
QP	Qualified Professional
RDEK	Regional District of East Kootenay
ROS	Regional Operating Statement
ZOS	Zones of Sensitivity

Appendix C. Legal Requirements

Laws and regulations provide the regulatory ‘teeth’ to uphold environmental protection and management. Applicable legislative requirements must be met for a project to be in compliance with the law. Legal requirements have been presented here in the following categories: Federal, Provincial, Regional District and District of Invermere. For each of these jurisdictions, a list of pertinent legislation bylaws and/or plans; and contact information (web site links) has been provided. The reader is cautioned that other legislation (not listed) may apply to their development, and they are encouraged to consult with the appropriate agency prior to proceeding with any proposed works.

1. Federal Legislation

All federal legislation is administered by the parliament of Canada (federal government).

Canada Migratory Birds Convention Act

This Act implements an internationally recognized Convention between Canada and the United States to protect various species of migratory game birds, migratory insectivorous birds and migratory non-game birds including herons. The taking of nests or eggs of these birds is prohibited, except for permitted scientific or propagating purposes.

Fisheries Act

The *Fisheries Act* is administered by the federal Department of Fisheries and Oceans and is one of the most important pieces of legislation for managing aquatic resources in Canada. The fish habitat provisions of this Act enable the federal government to protect marine and freshwater habitats supporting those species that sustain fisheries, namely fish, shellfish, crustaceans and marine mammals.

Navigable Waters Protection Act

This act is administered by Transport Canada and is primarily applicable to protecting, maintaining, and developing opportunities for the public to access and use waterbodies for navigation and recreation. Any activities that may affect movement of people or goods, near or on water are affected (i.e. dock/marina construction, dredging, shoreline development).

Pesticides Act

The *Pesticides Act* is intended to 1) prevent and mitigate harmful effects to the environment and human health, and 2) rationalize and reduce the use of pesticides. The Act promotes the analysis, assessment and control of the effects of the use of pesticides through specific activities intended to widen knowledge about these products (environmental monitoring, for example).

Species at Risk Act

This act prevents Canadian indigenous species, subspecies and distinct populations from becoming extirpated or extinct, provides for the recovery of endangered or threatened species and encourages the management of other species to prevent them from becoming at risk.

Appendix C. Legal Requirements *cont...*

Canadian Environmental Assessment Act (CEAA)

The CEAA requires federal departments to conduct environmental assessments (EA) for prescribed projects and activities before providing federal approval or financial support. The EA is a planning tool used to identify potential effects of projects or activities on the environment. This includes the air, water, land and living organisms, including humans.

Indian Act

The *Indian Act* provides legislation relating to Indians and Lands Reserved for Indians. The Indian Act is administered by the Minister of Indian Affairs and Northern Development.

2. Provincial Legislation

All provincial government legislation within BC is administered by the legislative assembly of British Columbia (provincial government).

Land Act

The *Land Act* is the main legislation governing the disposition of provincial Crown (i.e. public) land in British Columbia. Crown land is any land owned by the Province, including land that is covered by water, such as the foreshore and the beds of lakes, rivers and streams. The *Land Act* is administered by the Ministry of Sustainable Resource Management.

Wildlife Act

The provincial Ministry of Environment administers the *Wildlife Act*, which includes legislation relating to the conservation and management of wildlife populations and habitat, issuing licenses and permits for fishing, game hunting, and trapping. A provision of the Wildlife Act, which may be pertinent to shoreline development is the prohibition, to take, injure, molest, or destroy a) a bird or its egg; b) the nest of an eagle, peregrine falcon, gyrfalcon, osprey, heron, or burrowing owl; c) or the nest of any other bird species when the nest is occupied by a bird or its egg.

Water Act

The *Water Act* is the primary provincial statute regulating water resources. Under the Water Act, a stream is defined as “a natural watercourse or source of water supply, whether usually containing water or not, and a lake, river, creek, spring, ravine, swamp and gulch.” Section 9 of the *Water Act* requires that a person may only make “changes in and about a stream” under an Approval or Notification where required; or under a Water License or Order.

Weed Control Act

The B.C. *Weed Control Act* imposes a duty on all land occupiers to control designated noxious plants. The purpose of the Act is to protect our natural resources and industry from the negative impacts of foreign weeds.

Appendix C. Legal Requirements *cont...*

3. Regional District of East Kootenay

The Regional District of East Kootenay (RDEK) provides local government services to rural areas outside municipal boundaries. The RDEK functions as a partnership of the municipalities and electoral areas (unincorporated areas) within its boundaries. These local governments work together through the RDEK to provide and coordinate services in both urban and rural areas. Regional districts are governed by the *Local Government Act* and other provincial legislation.

Fairmont Hot Springs Area Official Community Plan (OCP), Bylaw No. 1734, 2004

The OCP is a long term strategic planning document intended to guide and direct decision making with respect to the change or conservation of land uses. The OCP includes the northern portions of the lake and much of the west and east sides.

Upper Columbia Valley Zoning Consolidation, Bylaw No. 900, 2009.

This bylaw provides regulations on zoning. Zoning is concerned with use of land, density of use, siting, size and dimensions of buildings and structures and area, shape and dimensions of parcels of land.

4. Village of Canal Flats

The Village of Canal Flats provides local government services to the Village of Canal Flats. The village is located at the south end of Columbia Lake.

Village of Canal Flats OCP, Bylaw No. 50, 2005

The Official Community Plan serves as a guide to municipal Councils when making decisions regarding zoning, development and servicing requirements to accommodate growth.

Appendix D. Best Management Practices and Regional Operating Statements

Many provincial and federal agencies have developed Best Management Practices (BMP) in order to provide consistent direction to the public on acceptable development methods. The BMPs provide information to help ensure that proposed development activities are planned and carried out in compliance with the various applicable legislation, regulations, and policies. The range of activities that associate BMPs is broad.

The province of BC has, over a period of many years, developed a series of BMPs. These have evolved into “Develop with Care: Environmental Guidelines for Urban and Rural Land Development in British Columbia.” The Develop with Care Guidelines have links to several provincial BMPs related to shoreline development activities. Examples are as follows:

- ◆ Standards and Best Management Practices for Instream Works;
- ◆ Best Management Practices for Small Boat moorage on Lakes
- ◆ Timing and Terms and Conditions for Changes In and About a Stream Specified by MOE Habitat Officers, Kootenay Region
- ◆ Small Boat Moorage
- ◆ Boat Launch Construction and Maintenance on Lakes
- ◆ Lakeshore Stabilization
- ◆ Installation and Maintenance of Water Line Intakes
- ◆ Best Management Practices for Raptor Conservation during Urban and Rural Land Development in British Columbia
- ◆ Best Management Practices for Amphibians and Reptiles in Urban and rural Environments in BC

The Regional Operating Statements (ROS) developed by DFO, provide information regarding several low risk activities associated with shoreline development, including but not limited to:

- ◆ Aquatic Vegetation Removal in Lakes
- ◆ Bridge & Culvert Maintenance
- ◆ Dock and Boathouse Construction in Freshwater Systems
- ◆ Routine Maintenance Dredging for Navigation
- ◆ Public Beach Maintenance
- ◆ Clear Span Bridges
- ◆ Culvert Maintenance
- ◆ Directional Drilling
- ◆ Small Moorings
- ◆ Underwater Cables in Freshwater Systems
- ◆ Overhead Line Construction
- ◆ Maintenance of Riparian Vegetation in Existing Rights of Ways
- ◆ Dry Open Cut Stream Crossing
- ◆ Isolated Ponds