



SHORELINE MANAGEMENT GUIDELINES
For Fish and Fish Habitat
Slocan Lake

Prepared For:
Kootenay Lake Partnership
c/o Regional District of Central Kootenay

Prepared By:
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April, 2014
Project No.: 12-935

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1.0 PREFACE

The guidelines presented in this report are founded on the principle that it is possible and desirable to manage our lake shorelines and their natural surroundings in a sustainable manner. This is supported by the belief that sustainable foreshore management is the shared responsibility of all stakeholders, including proponents, environmental professionals and all levels of government. This guidance document provides risk-based management guidelines for fish habitat on the shorelines of Slocan Lake under which proponents and qualified environmental professionals can proceed with common, low-risk works under the existing approval process. This guidance document also provides information on additional specific, detailed design and assessment information that is required for higher-risk works.

These shoreline management guidelines are based on technical results of a shoreline inventory completed on the Slocan Lake system (Galena Environmental 2011). The inventory provides important background information for the community to gain an appreciation of the fish habitat and impacts caused by common development activities. These guidelines are intended to help protect and encourage restoration of important fish habitat values, consistent with the conservation and restoration goals of the Kootenay Lake Partnership and provides information to riparian landowners and others who may want to take steps to preserve and/or improve riparian areas and foreshore condition.

These guidelines do not address specific development risks to terrestrial species (e.g., reptiles, birds etc.), or riparian or upland ecosystems (e.g., provincially “red-listed” cottonwood riparian ecosystems on large river floodplains) as aquatic habitats are the focus of this work. Inventories completed to date only describe upland or upslope features located within 50 meters of the geodetic lake level; additional inventory and mapping projects such as Sensitive Ecosystem Inventory would be required to address concerns related to wildlife species and ecosystems along the shoreline.

A solid understanding of aquatic and riparian fish habitat values, common development activities, and the effects of these activities on fish habitat is required to identify and differentiate between low and high risk works. Foreshore Inventory and Mapping (FIM) is a standardized, spatially explicit shoreline inventory methodology that was employed to map the shoreline of Slocan Lake. This methodology has been used to map the shorelines of other BC lakes and provides a common basis for integrating environmental information into land use guidance documents.

Guidelines were defined using data collected during FIM surveys by Galena Environmental. The FIM data was then used to prepare an Aquatic Habitat Index (AHI). These shoreline management guidelines are the final step in an inventory and management framework that has been previously applied to other lakes in the Okanagan, Kootenay and Shuswap regions of BC. The framework is described below:

1. Shoreline Inventories were completed following the FIM methodology using data derived from numerous sources (Galena Environmental 2011). These baseline inventories provided an understanding of the current condition of foreshore areas of Slocan Lake.

2. An Aquatic Habitat Index (AHI) was generated using FIM data to determine the relative fish habitat value of mapped shoreline areas (Galena Environmental 2011). This index employed similar methods to previous AHI projects on Okanagan, Shuswap, Moyie, Monroe and other lakes mapped by the East Kootenay Integrated Lakes Management Partnership.
3. Shoreline management guidelines contained within this document have been prepared for mapped shorelines to clarify and streamline agency review processes for development activities that may impact fish and fish habitat. These shoreline management guidelines will better inform proponents, professionals and government agencies of the risks to fish and fish habitat from development activities that would alter the lake shoreline.

Key deliverables for this project include a map of the shoreline of Slocan Lake in which individual shoreline segments - or "vulnerability zones" - were colour-themed based on their current relative habitat value. Under this system, red shoreline segments represent the highest value fish habitat areas, receive the highest level of protection and require the most detailed project design and assessment information to support agency reviews. In contrast, grey shoreline segments represent areas of lower habitat value or areas that have been significantly impacted by past development where common, low-risk works may proceed under existing approval processes with less rigorous review. Application of current development guidelines to all shoreline segments is expected to maintain current fish habitat values in natural areas while encouraging the recovery of fish habitat values lost to past development impacts. This gradual recovery of fish habitat is required because of development-related impacts that have occurred in some areas where appropriate best management practices were not in place to mitigate these impacts (e.g., substrate modification due to groynes and boat basins, or removal of important riparian vegetation to create "landscaped" areas consisting predominantly of turf). Relative risks of common development activities were recorded in tabular format for the full range of relative habitat values and tables and flowcharts were developed to guide proponents, professionals and practitioners through project assessment, reviews and works. The availability of compliance and enforcement staff to follow up on these examples of potential non-compliance is limited. The intent of this document is to encourage landowners around the lake to look at using best management practices during development.

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LIST OF ACRONYMS

AHI	Aquatic Habitat Index
BMP	Best Management Practice
DFO	Fisheries and Oceans Canada
Ecoscape	Ecoscape Environmental Consultants Ltd.
FIM	Foreshore Inventory and Mapping
HADD	Harmful Alteration, Disruption and Destruction of Fish Habitat
KLP	Kootenay Lake Partnership
MFLNRO	Ministry of Forests, Lands and Natural Resource Operations
MoE	Ministry of Environment
OCP	Official Community Plan
QEP	Qualified Environmental Professional
RAR	Riparian Areas Regulation
RDCK	Regional District of Central Kootenay

1.0 INTRODUCTION

The Kootenay Lake Partnership (KLP) is a multi-agency group created in response to increasing development and recreation pressures not only on Kootenay Lake, but also other lakes within the Kootenays such as Slocan Lake. In recent years, issues such as cumulative foreshore impacts, degraded habitat, rapid large-scale development, recreational use conflicts, park capacity, threatened aquifers, and water quality impacts have necessitated a change in the way lakes within the Central Kootenays are managed. The purpose of the KLP is to bring together multiple agencies with government to establish a collaborative planning process for foreshore use on Slocan Lake. Strategic direction to KLP working groups is provided by a steering committee consisting of political and senior agency representatives. The Slocan Lake guidance document development process was endorsed by the KLP, who played a major role in guiding and directing project works. The majority of the recommendations in this Slocan Lake guidance document focus on improvements to coordinating mechanisms among agencies and government including:

- Providing information on foreshore values and use to the public and riparian land owners;
- The continued formation of inter-agency technical committees;
- Streamlining the development review processes;
- Developing a coordinated water quality monitoring and reporting program; and
- Delivering a proactive, coordinated education, compliance and enforcement program.

Shoreline management guidelines are intended to clarify and streamline land use decisions between different agencies, government and stakeholders, as they relate to fish and fish habitat. It also provides information and tools to stakeholders who may wish to preserve and enhance foreshore areas for fish. This guidance document is based on other similar planning processes in the Shuswap for the Shuswap Lake Integrated Planning Process and for many lakes in the East Kootenays as part of the East Kootenay Integrated Lakes Management Partnership (EKILMP, 2008). Original authorship credit is given here for portions of this report that are similar to or amended from those planning processes; these documents will not be referenced further in order to improve readability of this report. Though these templates were utilized to promote consistency between different areas of the province, original authors should be credited for their contributions where appropriate.

2.0 MANAGEMENT GUIDELINES OVERVIEW

The guidelines that follow represent a risk-based approach to shoreline management. This approach includes mapping of shoreline vulnerability zones, assessing the risk posed by common development activities to fish habitat in these zones and recommending activity-specific design and assessment standards where available. In the absence of specific or endorsed standards, generic design and assessment standards and best practices should apply.

2.1 Shoreline Vulnerability Zones and Sensitive Habitat Types

Shoreline vulnerability zones correspond with the five classes of relative habitat value rankings of the Aquatic Habitat Index (AHI) completed for Slocan Lake (Galena Environmental 2011). Under this system, the AHI ranking for an individual shoreline segment represents its current fish habitat value relative to all other shoreline segments on Slocan Lake. The AHI ranking is based on biophysical characteristics, riparian condition, contribution to key salmonid life history stages and existing land use impacts. Though rankings range from Very Low to Very High, all shorelines provide fish habitat and even segments of Very Low relative habitat value contribute to overall fish production in Slocan Lake. A key assumption of this classification system is that the vulnerability of a shoreline segment to land use impacts, corresponds directly with its value as fish habitat (i.e., the risks to fish habitat are greatest in areas of greatest fish habitat value and therefore these are more vulnerable).

The AHI describes the relative habitat value of over 88 km of shoreline and incorporates data from a variety of sources and of differing quality (i.e., some data incorporated includes assessments from multiple years, whereas other data sets are not as well developed due to small sampling effort). In some shoreline areas, habitat degradation has occurred but high values have been documented indicating they contain a habitat attribute that is critical to the maintenance of healthy fish populations (e.g., disturbed areas near the mouth of creeks that support spawning). There are no records on salmonid shore spawning within Slocan Lake; however suitable substrate is present and any records or observations of shore spawning should be considered as part of the overall assessment and management of these key shoreline habitats. These areas have high fish habitat value and high sensitivity.

Shoreline vulnerability zones are best viewed graphically as they relate to specific shoreline areas. Shoreline vulnerability zones on Slocan Lake are illustrated in the attached Figure Binder (see Foreshore Inventory and Mapping (FIM) Figure Binder) and on the Community Mapping Network (see <http://www.cmnbc.ca>). Sensitive habitat types, including high-value rearing sites, vegetated foreshore areas and stream deltas, are also illustrated in the FIM Figure Binder and on the Community Mapping Network to direct the application of the design, assessment and review standards described below.

2.2 Development Activities, Associated Risk and Guidance

The following common development activities were identified using FIM survey data for Slocan Lake. As Slocan Lake is less developed than some of the other large lakes in the southern half of BC, information from other large lakes such as Shuswap and Mara Lake was used to supplement the list of common activities:

- Aquatic Vegetation Removal
- Dredging, Boat Basin construction, Infilling and Beach Creation
- Erosion Control and Foreshore Sediment Control Structures
- Boat Launches
- Buoys

- Docks
- Marinas
- Water Withdrawal and Use
- Construction of Pile-supported Structures below the natural boundary
- Land Development within 30 metres of the natural boundary

These activities were observed across a wide range of areas and scales. To address the diversity of observations, these activities were sub-categorized by location (e.g. above vs. below the natural boundary), scale (e.g. single family residential vs. commercial, industrial, strata or multi-family), type of work (e.g. new works or maintenance of existing works) and other factors related to the level of risk that could cause different design and assessment standards to be applied (see Table 1 on page 4).

An assessment of the relative risk to fish habitat posed by each common development activity in each shoreline vulnerability zone was initially completed by Ecoscape Environmental Consultants Ltd. (Ecoscape). This assessment was based upon similar assessments of risks to other lakes (e.g., Shuswap, Moyie, Monroe and Windermere). The initial risk ratings were refined by the KLP to make them specific for Slocan Lake. Activity risk ratings range from Low to Very High and vary depending upon the activity or habitat value present. As mentioned above, the risks to fish habitat are directly related to the habitat value present and therefore risk ratings increase from areas of Very Low to Very High shoreline vulnerability (see Table 1).

Table 1: Slovan Lake Activity Risk Matrix						
Activity	Activity Risk by Known Shore Spawning Location and AHI Rank ¹					
	Observed Shore Spawning Locations ¹	Very High	High	Moderate	Low	Very Low
	UNKNOWN	11.5% of total shore length	45.7% of total shore length	34.3% of total shore length	8.2% of total shore length	0.3% of total shore length
Aquatic Vegetation Removal						
Removing native aquatic vegetation	VH	VH	VH	VH	H	H
Removing non-native/invasive aquatic vegetation	VH	VH	H	M	M	M
Dredging, Infilling and Beach Creation						
Dredging (new proposals)	VH	VH	VH	VH	VH	VH
Dredging (maintenance of previously dredged areas only) ⁴	Contact DFO for Federal Requirements ²					
Lake infilling (e.g. extension of upland landscaping)	VH	VH	VH	VH	VH	VH
Beach creation below 537.5 m asl	VH	VH	VH	VH	VH	H
Beach creation above 537.5 m asl	Reference Central Kootenay Regional District Bylaws ³ and Contact DFO for Federal Requirements ²					
Erosion Control and Foreshore Sediment Control Structures						
New groyne construction or maintenance of existing groyne	VH	VH	VH	VH	H	H
Erosion control (e.g. concrete, rip rap, vegetation, etc.)	Design and Assessment Flow Chart for Lakeshore Erosion Control on the Slovan Lake System					
Boat Launches						
Construction of new hard surface boat launch or repair/upgrade of existing hard surface boat launch without land tenure	VH	VH	VH	H	H	H
Upgrade/repair of existing hard surface boat launch with land tenure and within existing footprint	VH	H	H	M	M	M
Construction of new boat rail launch or repair/upgrade of existing boat rail launch without land tenure	VH	VH	H	M	M	M
Upgrade/repair of existing boat rail launch with land tenure and within existing footprint	H	H	M	M	M	M
Buoys						
Placement of 1-2 mooring buoys (helical screw anchors only)	H	M	M	M	L	L
Docks						
Design and Assessment Flow Chart for Private Moorage on the Slovan Lake System						
Marinas						
Design and Assessment Flow Chart for Commercial and Strata Moorage on the Slovan Lake System						
Water Withdrawal and Use						
Waterline - directional drilling ⁴	H	H	M	M	L	L
Waterline - open excavation	VH	VH	VH	H	M	L
Geothermal heating/cooling - commercial, industrial, strata or multi-family - open or closed loop	VH	VH	VH	H	H	H
Geothermal heating/cooling - single family residence - open loop	VH	VH	H	M	M	M
Geothermal heating/cooling - single family residence - closed loop	VH	VH	H	M	L	L
Pile-supported Structures below 537.5 m asl						
Overwater piled structure (e.g. building, deck, etc.)	VH	VH	VH	VH	VH	H
Elevated boardwalk located offshore of 537.5 m asl.	VH	VH	H	H	H	M
Land development within 30 m of 537.5 m asl						
Regional District of Central Kootenay Bylaws ³						
Notes:	<p>1. There is a lack of information on shore spawning activity within Slovan Lake although there are suitable shore spawning substrates present along the shoreline. Any areas where shore spawning is observed or known to occur must be managed as a higher sensitivity area.</p> <p>2. Information on Fisheries and Oceans Canada requirements can be found at http://www.dfo-mpo.gc.ca/prnw-pppe/index-eng.html</p> <p>3. Reference the Regional District of Central Kootenay Official Community Plan (OCP) and other Bylaws for guidance on development within 30 m of the 537.5 m asl jurisdictional boundary on Slovan Lake. Although the Riparian Areas Regulation was not adopted by jurisdictions surrounding Slovan Lake the Riparian Areas Regulation can be used as guidance for development proposals on Slovan Lake. Information regarding the BC Fish Protection Act, Riparian Areas Regulation can be viewed, printed and downloaded from the BC Ministry of Environment Riparian Areas Regulation website at http://www.env.gov.bc.ca/habitat/fish_protection_act/riparian/riparian_areas.html.</p> <p>4. Installation of waterlines by experienced contractors using open excavation (i.e. trenching) techniques in shoreline segments of Very Low AHI rank is recommended because harm to fish habitat can be avoided in these areas by following Operational Best Practices detailed in the BC Ministry of Environment document <i>Best Management Practices for Installation and Maintenance of Water Line Intakes</i> (see http://www.env.gov.bc.ca/wd/BMP/bmpintro.html)</p>					

The following guidelines were developed to clarify and streamline review processes for common Low, Moderate, High and Very High risk development activities that may impact fish and fish habitat, but lack existing or endorsed standards. Applicable best management practices (BMPs), plus guidance and review standards referenced within each activity description are provided in subsequent sections of this document.

Low Risk Activities
<ul style="list-style-type: none">• Highlighted grey in Table 1.• Pose low risk of harm to fish and/or fish habitat.• Harm to fish habitat can usually be prevented if experienced contractors complete works following endorsed BMPs.• Supervision of works by a qualified environmental professional (QEP) is recommended to reduce risk of harm to fish habitat.• All applicable federal, provincial and municipal BMPs and legislative requirements must be adhered to.• Fisheries and Oceans Canada (DFO) review is <u>not</u> required if the waterbody where works are proposed is not one where DFO review is required or if the project activity involves works where DFO review is not required. More information on this is available from DFO's website at www.dfo-mpo.gc.ca/pnw-ppe/index-eng.html. In all cases "Serious harm to fish" must be avoided.• Project proponents are responsible for ensuring that they comply with the <i>Fisheries Act</i>. Of particular relevance, are the new fisheries protection provisions, sub-sections 35(1) and (2).• If a proponent or QEP is uncertain if planned activities will result in "Serious harm to fish" they should consult DFO's website for further guidance. See www.dfo-mpo.gc.ca/pnw-ppe/index-eng.html.

Moderate Risk Activities

- Highlighted yellow in Table 1.
- Pose moderate risk of harm to fish and/or fish habitat.
- Some works may require authorization under section 35(2) of the *Fisheries Act* to legally proceed.
- “Serious harm to fish” and associated fish habitat can usually be prevented if appropriate relocation, redesign and mitigation measures are implemented.
- Planning by a QEP and assessment is required; costs to the proponent may be high.
- Mitigation and offsetting costs to the proponent may be high.
- DFO review is not required if a QEP certifies and documents that “Serious harm to fish” will not occur if works proceed as planned.
- If a proponent or QEP is uncertain if planned activities will result in “Serious harm to fish” under the DFO Projects Near Water guidance process, they should consult DFO’s web-site for further guidance. See www.dfo-mpo.gc.ca/pnw-ppe/index-eng.html.
- DFO review is required if a QEP cannot certify and document that “Serious harm to fish” will not occur if works proceed as planned. In these situations the proponent must reference DFO’s project review and authorization processes (<http://www.dfo-mpo.gc.ca/pnw-ppe/index-eng.html>).
- All applicable federal, provincial and municipal BMPs and legislative requirements must be adhered to.

High Risk Activities

- Highlighted orange in Table 1.
- Pose high risk of harm to fish and/or fish habitat.
- Works are likely to require DFO review and authorization under sub-section 35(2)(b) of the *Fisheries Act* to legally proceed. See www.dfo-mpo.gc.ca/pnw-ppe/index-eng.html.
- Include significant challenges to prevention of harm through relocation, redesign and mitigation measures or to offsetting “Serious harm to fish” and their associated habitat that may occur.
- Professional planning and assessment is required; costs to the proponent may be high.
- Mitigation and offsetting costs to the proponent may be high.
- All applicable federal, provincial and municipal BMPs and legislative requirements must be adhered to.

Very High Risk Activities

- Highlighted red in Table 1.
- Pose very high risk of “Serious harm to fish” and their associated habitats.
- Many works will require authorization under sub-section 35(2)(b) of the *Fisheries Act* to legally proceed.
- Include significant challenges to prevent “Serious harm to fish” through relocation, redesign and mitigation and/or offsetting “Serious harm to fish” and habitat losses that may occur.
- Professional planning and assessment is required; costs to the proponent may be high.
- Mitigation and offsetting costs to the proponent may be high.
- DFO review is required: DFO project review and authorization process should be referenced. See www.dfo-mpo.gc.ca/pnw-ppe/index-eng.html.
- If DFO determines that the project impacts will result in unacceptable “Serious harm to fish”, a sub-section 35(2)(b) authorization may not be granted.
- All applicable federal, provincial and municipal BMPs and legislative requirements must be adhered to.

In cases where multiple activities with differing risk are proposed, the combined risk to fish habitat may increase. In these cases, proponents should default to the highest risk identified and retain a QEP to determine whether the overall risk to fish habitat has increased. For development activities not listed in Table 1, proponents are recommended to apply design, assessment and review standards for High risk activities unless advised of a Very High risk by a qualified environmental professional.

2.3 Design and Assessment Standards, Guidance and Best Management Practices

The following section provides information on the most common BMPs and guidance available from some of the key agencies involved in the management of Slocan Lake and its associated habitats. This section does not provide an exhaustive list of BMPs and guidance but provides some key sources of information that should be considered during the development process.

2.3.1 Local or Regional

The Regional District of Central Kootenay (RDCK) Official Community Plan (OCP) provides guidelines for watercourse development permit areas triggered at the time of building application for structures within riparian areas. The designated jurisdictional boundary for Slocan Lake is the geodetic lake level of 537.5 m asl; this is the upper limit of *Water Act* jurisdiction. In addition, the Floodplain Bylaw provides direction on minimum building setbacks and elevations within the floodplain of Slocan Lake. These requirements are only applicable to private land and are referenced within the Slocan Lake Activity Risk Matrix (Table 1).

2.3.2 Provincial

BC Ministry of Environment (MoE) and Ministry of Forests, Lands and Natural Resource Operations (MFLNRO) BMP documents are characteristic of “results based” management regimes. These BMPs facilitate project compliance with environmental legislation, regulations and policy by informing proponents of their responsibilities, describing design and operational best practices applicable to their projects and recommending the retention of QEPs to plan, advise, carry out and/or monitor works. Despite the availability and use of these documents, the Slocan Lake FIM identified recent fish habitat impacts related to construction of retaining walls, boat launches, docks, marinas and related works that were not compliant with standard BMPs. Accordingly, these BMPs were reinterpreted in flowchart form to clarify design and assessment standards and specify thresholds for project review by QEPs, proponents, and/or municipal, provincial or federal agencies. As flowcharts for Lakeshore Erosion Control (Figure 2), Private Moorage (Figure 3) and Commercial and Strata Moorage (Figure 4) address the full range of activity risks, they were substituted for all applicable risk ratings in Table 1.

Activity-specific design and assessment standards already exist for a number of the common development activities listed in Table 1 and had been endorsed by different agencies for the Slocan Lake system. These included:

1. **Dredging, Infilling and Beach Creation** (Beach creation above the geodetic lake level of 537.5 m asl)
BC Fish Protection Act, Riparian Areas Regulation (reference; see http://www.env.gov.bc.ca/habitat/fish_protection_act/riparian/riparian_areas.html)
2. **Erosion Control and Foreshore Sediment Control Structures**
BC Ministry of Environment *Best Management Practices for Lakeshore Stabilization* (reference; see http://www.env.gov.bc.ca/wld/documents/bmp/BMPLakeshoreStabilization_WorkingDraft.pdf)
3. **Boat Launches**
BC Ministry of Environment *Best Management Practices for Boat Launch Construction and Maintenance on Lakes* (reference; see http://www.env.gov.bc.ca/wld/documents/bmp/BMPBoat_LaunchDraft.pdf)
4. **Docks and Marinas**
BC Ministry of Environment *Best Management Practices for Small Boat Moorage on Lakes* (reference; see http://www.env.gov.bc.ca/wld/documents/bmp/BMPSmallBoatMoorage_WorkingDraft.pdf)

- 5. Land Development within 30 Metres of the the geodetic lake level of 537.5 m asl**
Land Development Guidelines for the Protection of Aquatic Habitat (document prepared jointly by DFO and BC Ministry of Environment, Lands and Parks – reference; see <http://www.dfo-mpo.gc.ca/Library/165353.pdf>)

BC Fish Protection Act, Riparian Areas Regulation (reference; see http://www.env.gov.bc.ca/habitat/fish_protection_act/riparian/riparian_areas.html)

6. Water Withdrawal and Use

BC Ministry of Environment *Best Management Practices for Installation and Maintenance of Water Line Intakes* (reference; see http://www.env.gov.bc.ca/wld/documents/bmp/BMPIntakes_WorkingDraft.pdf)

The BC Ministry of Environment document *Best Management Practices for Installation and Maintenance of Water Line Intakes* is referenced directly in Table 1 for installation of waterlines using open excavation techniques in shoreline segments of Very Low AHI rank. This is based on observations by DFO staff that experienced contractors can install waterlines in low vulnerability shoreline segments by trenching without causing harm to fish habitat provided that they follow operational best practices detailed in that document.

7. General Guidance for Instream and Upland Works Near Water

Standards and Best Management Practices for Instream Works (reference see; <http://www.env.gov.bc.ca/wld/instreamworks/index.htm>)

Land Development Guidelines for the Protection of Aquatic Habitat (document prepared jointly by DFO and BC Ministry of Environment, Lands and Parks – reference; see <http://www.dfo-mpo.gc.ca/Library/165353.pdf>)

2.3.3 Federal

DFO Operational Statements that were referenced in other shoreline management documents no longer exist. Instead proponents and QEPs are encouraged to consult DFO's website (<http://www.dfo-mpo.gc.ca/pnw-ppe/index-eng.html>) for more information on DFO's Projects Near Water review process guidance as well as information on changes to the *Fisheries Act* in 2013. The key trigger under the new federal review process is "Serious harm to fish" and their associated habitat.

2.3.4 Other

In addition to the references provided above there are numerous other sources of information and BMPs related to development along shoreline and littoral areas. QEPs and proponents are encouraged to seek out this information where it is consistent with the BMPs and guidance provided above and incorporate it into project plans and assessments.

2.4 Review and Permitting

Decision-making for activities on Slocan Lake that pose risk of harm to fish habitat will be streamlined if proponents proceed in a stepwise fashion through the flowchart process illustrated in Figure 1. The flowchart process has also been prepared to clarify and streamline interagency referral processes to provide a more efficient approach to management. This process has been developed to help reduce the number of referrals reviewed by agency assessors by having proponents and QEPs certify that no fish or fish habitat review is required due, as applicable, to compliance of proposed works or activities with:

- The BC Fish Protection Act, *Riparian Areas Regulation*;
- DFO's new streamlined process for federal review (see: <http://www.dfo-mpo.gc.ca/pnw-ppe/changes-changements/index-eng.html>);
- A design and assessment flowchart pathway indicating “No fish or fish habitat review required”; and/or,
- For Moderate activity risks, a QEP's environmental impact assessment certifying that proposed works will not cause “Serious harm to fish” and their associated habitat.

Any submission for review will require the proponent and/or QEP familiarize themselves with the agency application/review requirements. Information contained in this guidance document and the FIM and AHI reports will assist qualified environmental professionals in their work, but additional studies may be required to address site specific issues and limitations of currently available information.

2.4.1 Local Government Requirements (Regional District of Central Kootenay)

There are various types of development proposals that trigger application or review requirements such as floodplain setbacks and riparian considerations. The following links provide information on RDCK's local planning contacts, process and applicable bylaws. The RDCK should be contacted directly for additional information on what level of review, is required.

Land Use & Planning Contacts

<http://www.rdck.ca/EN/main/services/land-use-planning.html>

Floodplain Management

http://www.rdck.ca/assets/Government/Bylaws/Land~Use-Planning/2080_Floodplain-2.pdf

Land Development Applications

http://www.rdck.ca/assets/Government/Bylaws/Land~Use-Planning/2238_Procedures%20Bylaw-1.pdf

2.4.2 Provincial Government Requirements (Ministry of Forests, Lands and Natural Resource Operations)

For works below the geodetic lake level of 537.5 m asl, along shoreline segments having an AHI rank of Moderate, High or Very High, proponents will require the services of a QEP. The QEP will consult MFLNRO on guidance for works permitted under Section 9 of the *Water Act* and should provide an environmental assessment for the proposed works. Fish and possibly mussel salvage may be required in some cases. Finally, Front Counter BC is the designated agency responsible for permitting requirements for the Province.

The following links provide information on provincial requirements.

Water Act and Associated Requirements:

http://www.env.gov.bc.ca/wsd/water_rights/licence_application/section9/

Fish and Mussel Salvage:

http://www.env.gov.bc.ca/pasb/applications/process/scientific_fish_collect.html

Timing Windows for Working Near Water and Habitat Officer's Terms and Conditions for the Kootenay Region:

http://www.env.gov.bc.ca/wsd/regions/kor/wateract/terms_conditions.html

Works within a riparian area in jurisdictions that have adopted the Riparian Areas Regulation (RAR) require an assessment. Although RDCK has not universally adopted RAR, the guidelines are referenced in the Area H north OCP under Watercourse Development Permit Areas. RAR is a provincial statute, enabled by section 12 of the *Fish Protection Act*. In the past, DFO has stated that, by conscientiously following the assessment procedure set out in this regulation, QEPs and land developers will have applied due diligence in avoiding harmful alteration, disruption or destruction (HADD) of fish habitat. Although the term HADD no longer exists, the intent of this provincial regulation still applies. The RAR guidelines are included as a standard to achieve and a reference to guide development within 30 m of the geodetic lake level of 537.5 m asl of Slokan Lake.

BC Fish Protection Act, *Riparian Areas Regulation (RAR)*

http://www.env.gov.bc.ca/habitat/fish_protection_act/riparian/riparian_areas.html

2.4.3 Federal Government Requirements (Fisheries and Oceans Canada)

Changes to the *Fisheries Act* in 2013 have influenced the way works are reviewed federally. For works located along shoreline segments having an AHI rank of Moderate, High or Very High, DFO review in the form of a completed Request for Review form or Authorization application form and aquatic effects assessment may be required. The new regulatory review and referral process implemented by DFO is in its early stages and may be subject to changes from time to time; as a result, proponents are encouraged to solicit

information on minimum information requirements directly from the DFO Projects Near Water website.

DFO Projects Near Water information:

<http://www.dfo-mpo.gc.ca/pnw-ppe/reviews-revues/index-eng.html>

<http://www.dfo-mpo.gc.ca/pnw-ppe/index-eng.html>.

In some cases a permit from DFO may be required to salvage certain fish species including fish listed under the *Species at Risk Act*. Proponents should contact DFO for more information on this process.

2.4.3.1 Serious Harm to Fish

Proponents are encouraged to eliminate or reduce residual impacts involving “Serious harm to fish” that are part of or support commercial, recreational or Aboriginal fisheries. DFO’s Fisheries Protection Policy Statement indicates that “Serious harm to fish” can include:

- the death of fish;
- a permanent alteration to fish habitat of a spatial scale, duration or intensity that limits or diminishes the ability of fish to use such habitats as spawning grounds, or as nursery, rearing, or food supply areas, or as a migration corridor, or any other area in order to carry out one or more of their life processes;
- the destruction of fish habitat of a spatial scale, duration, or intensity that fish can no longer rely upon such habitats for use as spawning grounds, or as nursery, rearing, or food supply areas, or as a migration corridor, or any other area in order to carry out one or more of their life processes.

See the Fisheries Protection Policy Statement (<http://www.dfo-mpo.gc.ca/pnw-ppe/pol/index-eng.html>) for further information on avoiding “Serious harm to fish”.

2.4.3.2 Avoidance, Mitigation and Offsetting

Proponents and QEPs are encouraged to consider measures and standards that avoid, mitigate and offset “Serious harm to fish”. The following information is a direct excerpt from DFO’s Fisheries Protection Policy Statement (<http://www.dfo-mpo.gc.ca/pnw-ppe/pol/index-eng.html>) and provides the policy interpretation of the terms avoidance, mitigation and offsetting. The Fisheries Protection Policy Statement should be referenced directly for additional information on these terms and policies.

Avoidance

Avoidance is the undertaking of measures to completely prevent “Serious harm to fish”. Avoidance measures may include locating infrastructure or designing a project or one or more of its components to avoid “Serious harm to fish”. Careful timing of certain activities may also avoid harm to fish and fish habitat.

For some projects, “Serious harm to fish” may be fully avoided while for others, serious harm to fish may only be partially avoided. When “Serious harm to fish” cannot be fully avoided, mitigation measures should be undertaken.

Mitigation

Mitigation is a measure to reduce the spatial scale, duration, or intensity of “Serious harm to fish” that cannot be completely avoided. The best available mitigation measures or standards should be implemented by proponents as much as is practically feasible.

Mitigation measures include the implementation of best management practices during the construction, maintenance, operation and decommissioning of a project.

Offsetting

After efforts have been made to avoid and mitigate impacts, any residual “Serious harm to fish” should be addressed by offsetting. An offset measure is one that counterbalances unavoidable “Serious harm to fish” resulting from a project with the goal of maintaining or improving the productivity of the commercial, recreational or Aboriginal fishery. Offset measures should support available fisheries management objectives and local restoration priorities.

The Fisheries Protection Policy Statement (<http://www.dfo-mpo.gc.ca/pnw-ppe/pol/index-eng.html>) should be consulted for additional information on offsetting.

2.4.4 Requirements of Other Agencies

Proposed works may be subject to other requirements such as BC *Land Act* tenures, licenses or permissions, federal *Species at Risk Act* legislation or *Navigable Waters Protection Act* approvals and local government zoning or permitting. Legislation and regulations commonly associated with lakeshore development are referenced in Appendix A. This appendix does not include an exhaustive list of laws and regulations that may be relevant. It remains the responsibility of the project proponent to verify this information and meet all regulatory requirements that may apply to their project. If the guidelines presented in this document are applied during the initial stages of development planning, then subsequent permitting processes should be more streamlined for the proponent.

The use of these guidelines by other regulatory agencies to define and communicate design, assessment and review standards for protection of fish habitat on the Slocan Lake system is encouraged. It is recognized that local governments and other agencies may limit works or activities for reasons other than risk of “Serious harm to fish” (e.g. limiting construction of elevated fixed decks and ramps with floating docks to commercial and strata marinas in rural settlement areas for aesthetic or other reasons), provided that design, assessment and review standards for activities that are supported meet or exceed the minimum described in this report.

2.5 Existing Works

The Slocan Lake FIM project (Galena Environmental 2011) identified impacts from existing structures along the foreshore of Slocan Lake. In carrying out this survey, it was identified that many works had proceeded without appropriate permits or approvals in place and that these activities were often not compliant with standard BMPs. Proponents should expect to demonstrate that they are applying current BMPs to existing infrastructure as part of their application. Existing infrastructure should be improved to meet current BMPs as part of mitigation planning for *all* applications. Further, including other mitigative practices such as landscape restoration (i.e., planting native riparian vegetation), improving historic substrate modification (i.e., removal of existing groynes, etc.), and other habitat improvements should all be considered during application planning by proponents and QEPs.

2.6 Monitoring and Adaptive Management

The management guidelines presented in this report represent an assumption of risk in regards to achievement or maintenance of the sustainability and ongoing productivity of Slocan Lake aquatic habitat. However, they also provide an opportunity to shift the regulatory process from a reactive position that solicits referrals, offers advice/authorizations and tracks program outputs, to a proactive position that delivers results-based standards, monitors/audits compliance and reports on the status of fish habitat through periodic updates to FIM survey data. Ultimately, whether or not this change achieves sustainability of fisheries will depend on the ability of the partnership to deliver meaningful and relevant guidance and on the diligent efforts of developers and QEPs to understand and apply the guidance provided. Standards, guidance and legislation are all subject to change and this document may need to be adapted and modified to coincide with practical application of new guidance and standards as these changes occur. These guidelines are meant to be a living document that can be amended as needed to keep up with new information and guidance.

2.7 Professional Reliance, the Regulatory Framework and Risk

Specific sources of risk to the long term protection and conservation of fish and fish habitat on Slocan Lake can include, but are not limited to:

- The ability of agencies to deliver clear, timely and relevant guidance within the regulatory framework;
- The ability of QEP's to understand and apply the guidance; and
- The ability of the proponent, QEP and proposed development to ensure that the proposed works will not result in residual impacts and/or "Serious harm to fish" and their associated habitats on Slocan Lake. The presence of residual impacts and "Serious harm to fish" and fish habitat in this context would be evaluated after avoidance and mitigation have been considered and after relevant guidance contained within this document, legislation and other appropriate assessments or management plans, has been followed.

The guidelines set out in this document outline circumstances where low risk works that will not cause substantial impacts or “Serious harm to fish” can proceed with a less rigorous review provided they are within a shoreline segment having an AHI ranking of Very Low, Low or Moderate (in some cases) and provided a QEP has certified that the works will not cause “Serious harm to fish” or their associated habitats within Slocan Lake.

Professional reliance is the practice of accepting and relying upon the decisions and advice of environmental professionals who accept responsibility and can be held accountable for the decisions they make and the advice that they give (Professional Reliance Working Group, 2008). Professional accountability is acknowledgement and assumption of obligations under professional legislation and accompanying bylaws, including the potential for investigations and discipline to be imposed by the profession (Professional Reliance Working Group, 2008).

3.0 REFERENCES

East Kootenay Integrated Lakes Management Partnership [EKILMP], 2008. Windermere Lake Shoreline Management Guidelines for Fish and Wildlife Habitats. January, 2008.

Galena Environmental Ltd. 2011. Slokan Lake Foreshore Fish and Wildlife Habitat Assessment Including Foreshore Inventory and Mapping (FIM) Aquatic Habitat Index (AHI).

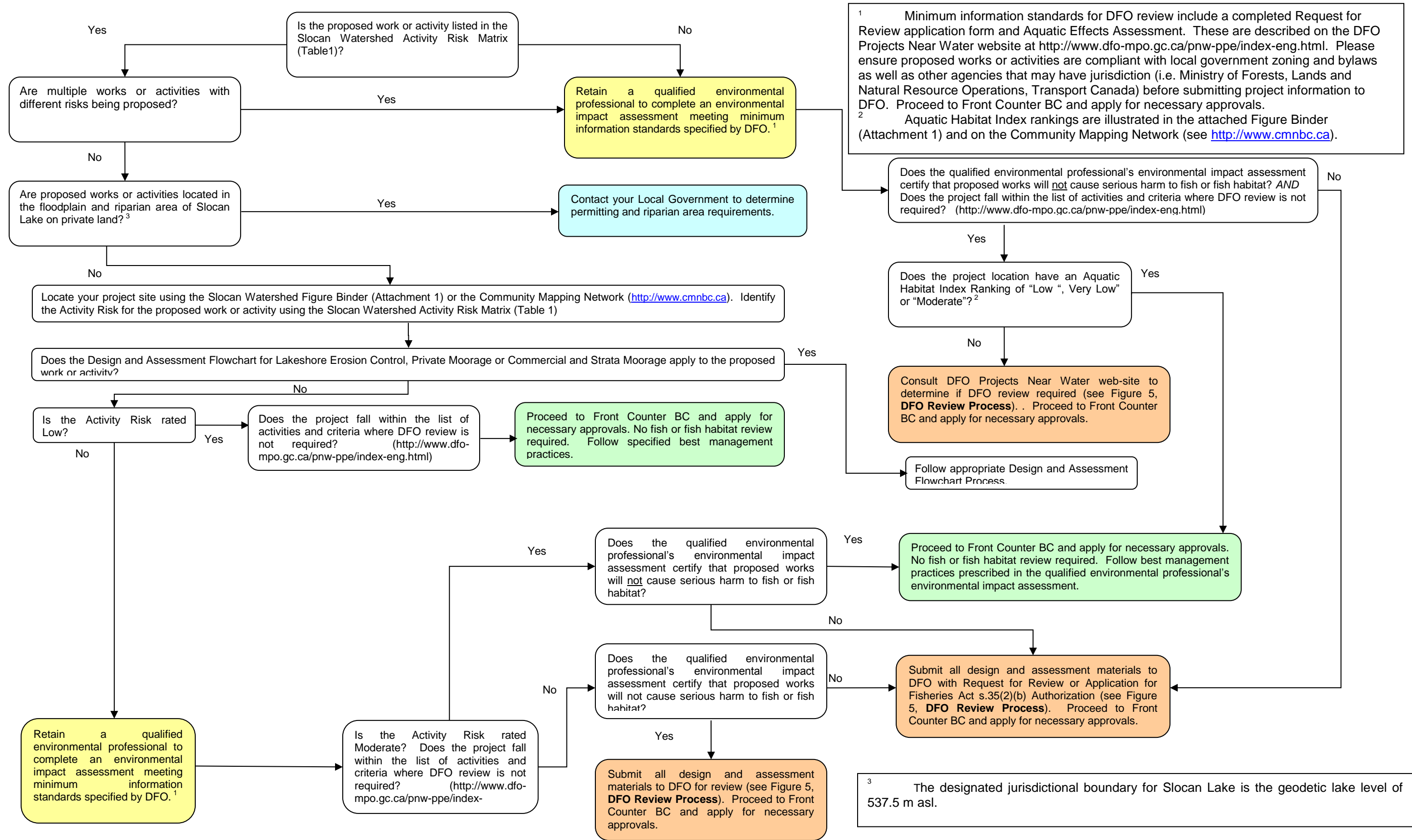
Professional Reliance Working Group. 2008. Applying Professional Reliance under FRPA, April 2008. Association of BC Forest Professionals Web site 3 April 2011. <http://www.abcfp.ca/publications_forms/publications/documents/report_PR_Workgroup.pdf>

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

Schleppe, J., 2009b. Shuswap and Mara Lake Foreshore Inventory and Mapping. Ecoscape Environmental Consultants Ltd. Project File: 08-329. April, 2009. Prepared for: Fisheries and Oceans Canada and Columbia Shuswap Regional District

FLOWCHARTS

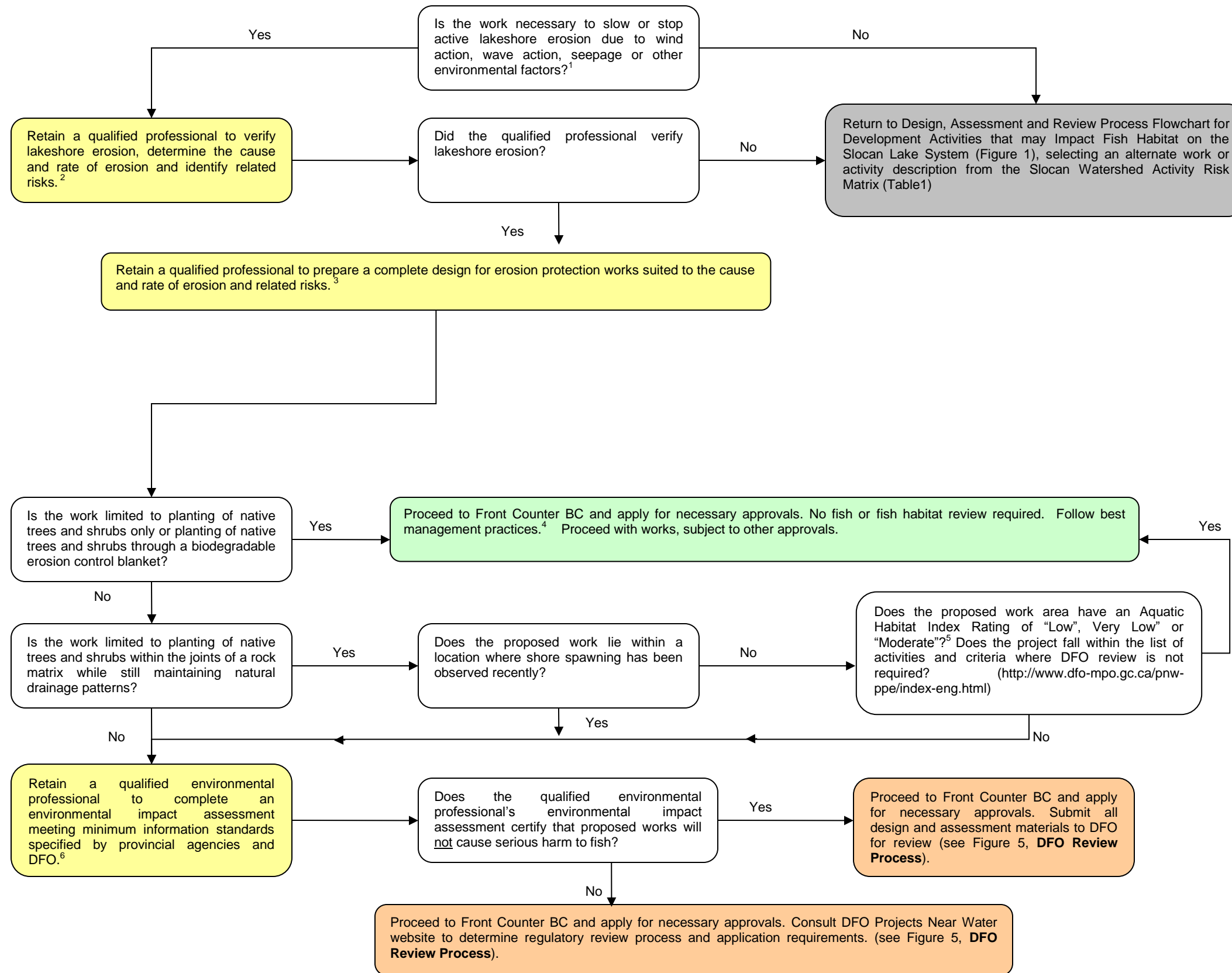
Figure 1 Design, Assessment and Review Process Flowchart for Development Activities that May Impact Fish Habitat on the Slocan Lake System



¹ Minimum information standards for DFO review include a completed Request for Review application form and Aquatic Effects Assessment. These are described on the DFO Projects Near Water website at <http://www.dfo-mpo.gc.ca/pnw-ppe/index-eng.html>. Please ensure proposed works or activities are compliant with local government zoning and bylaws as well as other agencies that may have jurisdiction (i.e. Ministry of Forests, Lands and Natural Resource Operations, Transport Canada) before submitting project information to DFO. Proceed to Front Counter BC and apply for necessary approvals.
² Aquatic Habitat Index rankings are illustrated in the attached Figure Binder (Attachment 1) and on the Community Mapping Network (see <http://www.cmnbc.ca>).

³ The designated jurisdictional boundary for Slocan Lake is the geodetic lake level of 537.5 m asl.

Figure 2 Design and Assessment Flowchart for Lakeshore Erosion Control on the Slocan Lake System



¹ Indicators of lakeshore erosion include large areas of bare soil and steep, high banks at natural boundary, noticeable recession of the natural boundary over a period of time, leaning or downed trees with exposed roots at the natural boundary, large patches of muddy water at the lake margin during high water and large deposits of eroded soil on the lakeshore following high water.

² Erosion-related risks include loss of property and damage or loss of nearshore structures.

³ Many lakeshore erosion protection options are available, including planting of native trees and shrubs, planting of native trees and shrubs through a biodegradable erosion control blanket, planting of native trees and shrubs within the joints of a rock matrix and hard armoring techniques. Additional information is provided in the BC Ministry of Environment document *Best Management Practices for Lakeshore Stabilization* (see http://www.env.gov.bc.ca/wld/documents/bmp/BMLakeshoreStabilization_WorkingDraft.pdf)

⁴ Applicable Operational Best Practices are detailed in the BC Ministry of Environment document *Best Management Practices for Lakeshore Stabilization* (see http://www.env.gov.bc.ca/wld/documents/bmp/BMPLakeshoreStabilization_WorkingDraft.pdf)

⁵ Aquatic Habitat Index Ratings are illustrated in Attachment I and on the Community Mapping Network (<http://www.cmnb.ca>)

⁶ Minimum information standards for DFO review include a completed Request for Review application form and Aquatic Effects Assessment. These are described on the DFO Projects Near Water website at <http://www.dfo-mpo.gc.ca/pnw-ppe/index-eng.html>. Please ensure proposed works or activities are compliant with local government zoning and bylaws as well as other agencies that may have jurisdiction (i.e. Ministry of Forests, Lands and Natural Resource Operations, etc.) before submitting project information to DFO. Proceed to Front Counter BC and apply for necessary approvals

Figure 3 Design and Assessment Flowchart for Private Moorage on the Slocan Lake System

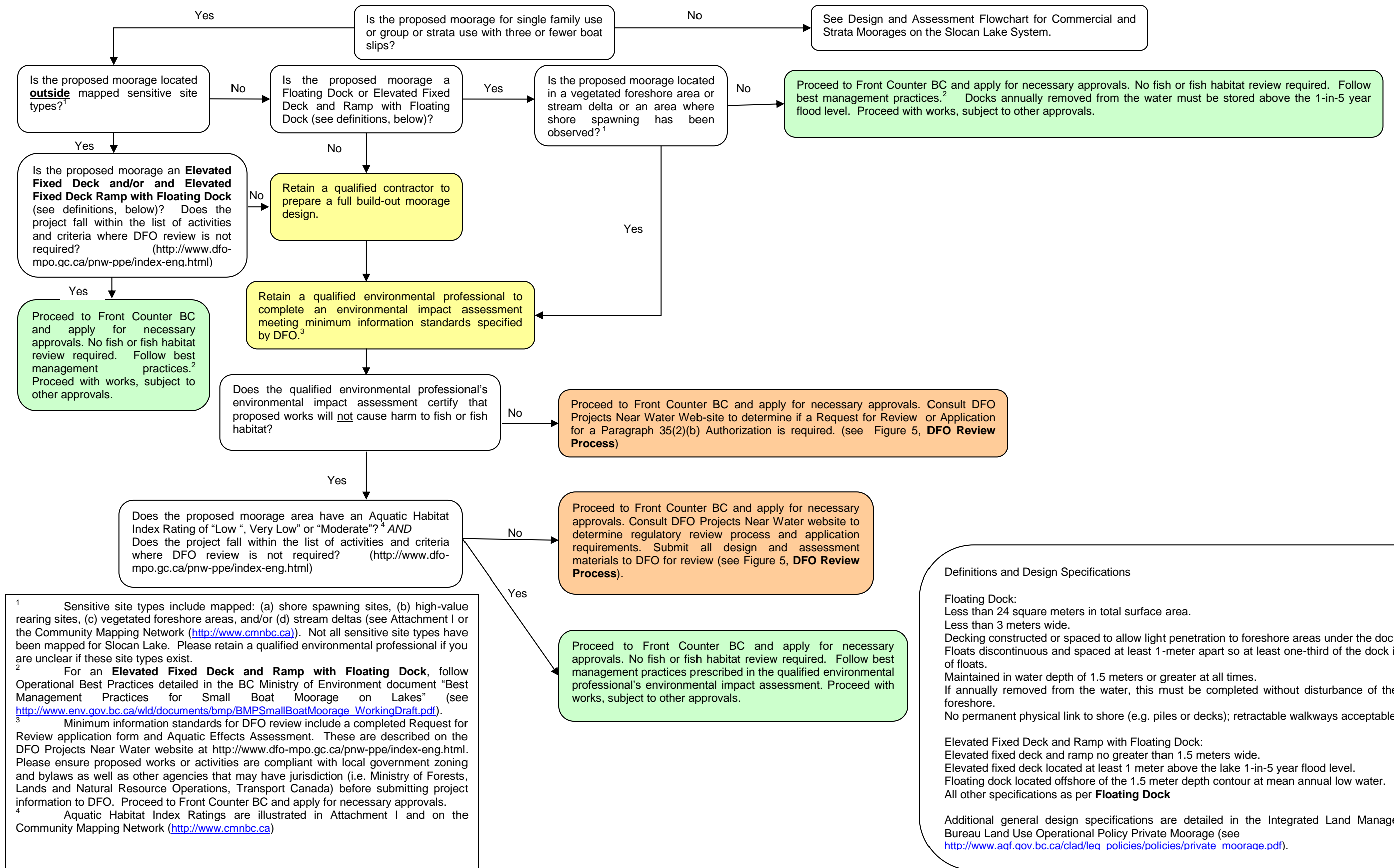
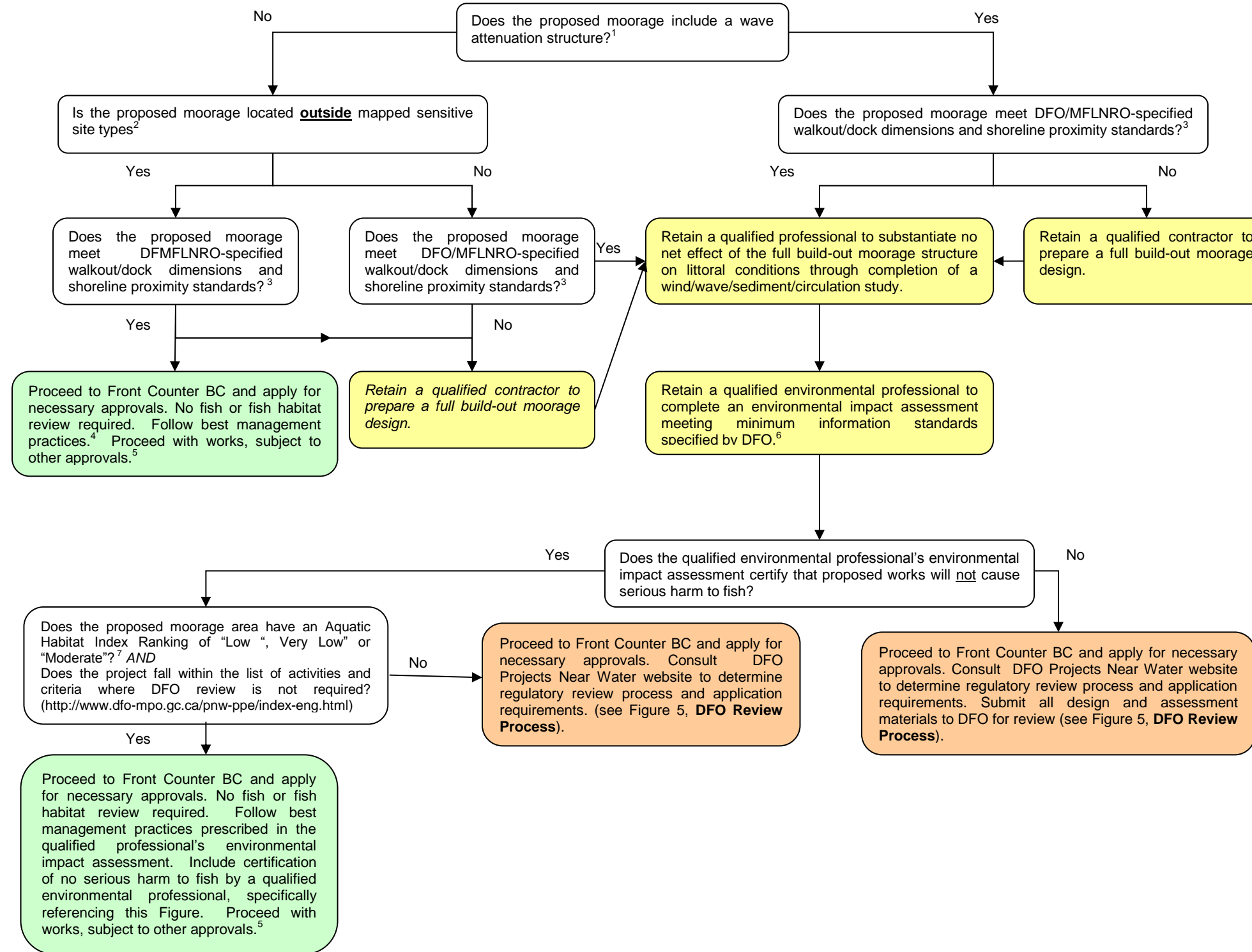


Figure 4 Design and Assessment Flowchart for Commercial and Strata Moorage on the Slocan Lake System



¹ Wave attenuation structures include standalone breakwaters as well as over-wide outer docks and other structures intended to modify wave conditions in the moorage area and/or near-shore environment.

² Sensitive site types include mapped: (a) shore spawning sites, (b) high-value rearing sites, (c) vegetated foreshore areas, and/or (d) stream deltas; see Attachment I or the Community Mapping Network (<http://www.cmNBC.ca>).

³ Draft Integrated Land Management Bureau Thompson Okanagan Strata - Commercial Moorage Guidelines (these guidelines are recommended for use in the absence of a similar guidance document for the Kootenay Region) include the following walkout/dock dimensions and shoreline proximity standards: Floating portions of the dock must be located offshore of the 6 meter depth contour at mean annual low water. Access to floating portions of the dock must be achieved by a single elevated fixed deck and ramp that must not exceed 1.5 meters in width. At a minimum, the base of the elevated fixed deck must be located at least 1 meter above the lake 1-in 5 year flood level. The remainder of the dock surface must not exceed 3 meters in width for any other portion of the dock. Supported dock structures must use widely spaced wooden or steel piles that are made of non-toxic materials (solid core docks will not be allowed). Do not use pressure treated wood. Dock structures including any attached or detached boatlift mechanism must be greater than 5 meters from property lines. (Generally, property lines are projected perpendicular to shoreline.) If property is adjacent to a dedicated public beach access or park - a 6 meter offset is required. Greater setbacks should be considered for longer docks or where adjoining single family residential property. The placement of the dock shall be undertaken in a manner that: is consistent with the orientation of neighbouring docks is sensitive to views and other impacts on neighbours is sensitive to increased boat traffic on neighbours avoids impacts on access to existing docks and adjacent properties No roof or covered structures are to be placed on the dock or the boat lift. Boat Lifts: No overhead boat lift mechanisms - utilize post style or facsimile that is supported from the bottom of the lake or to dock. No overhead structures. No roof or covered structures. Must be located at least 5 meters from property line as lifts are considered as part of moorage structure.

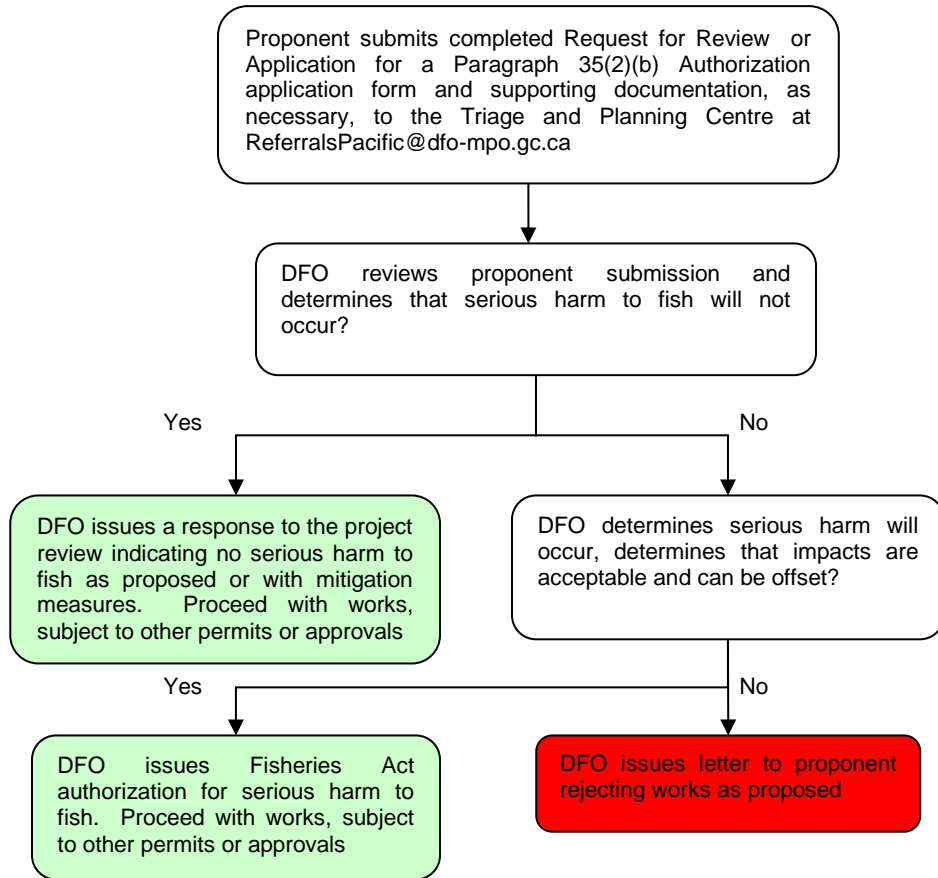
⁴ Follow Operational Best Practices detailed in the BC Ministry of Environment document "Best Management Practices for Small Boat Moorage on Lakes" (see http://www.env.gov.bc.ca/wld/documents/bmp/BMPSmallBoatMoorage_WorkingDraft.pdf)

⁵ To ensure protection of fish habitat and meet present-day best practice standards, all new, renewal and replacement tenures for commercial and strata moorages will be subject to this flowchart process.

⁶ Minimum information standards for DFO review include a completed Request for Review application form and Aquatic Effects Assessment. These are described on the DFO Projects Near Water website at <http://www.dfo-mpo.gc.ca/pnw-ppe/index-eng.html>. Please ensure proposed works or activities are compliant with local government zoning and bylaws as well as other agencies that may have jurisdiction (i.e. Ministry of Forests, Lands and Natural Resource Operations, Transport Canada) before submitting project information to DFO. Proceed to Front Counter BC and apply for necessary approvals.

⁷ Aquatic Habitat Index Ratings are illustrated in Attachment I and on the Community Mapping Network (<http://www.cmNBC.ca>).

Figure 5 DFO Project Review Process



Attachment 1
FORESHORE INVENTORY AND MAPPING
FIGURE BINDER

Project mapping is also available on the Community Mapping Network
(<http://www.cmnbc.ca>)

Appendix A

LEGAL REQUIREMENTS

This Appendix was adapted from the Windermere Lake Shoreline Management Guidelines entirely. Selected text has been changed to update changes to current legislation. All credit should be given to the original authors of that document.

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 and Provincial. For both 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), and in particular local government legislation, may apply to their development, and they are encouraged to consult with the appropriate agency prior to proceeding with any proposed works.

1.0 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 DFO and is one of the most important pieces of legislation for managing aquatic resources in Canada. The *Fisheries Act* enables prohibits “Serious harm to fish” that are part of a commercial, recreational or Aboriginal fishery, or to fish that support such a fishery. It also protects marine and freshwater habitats supporting those species that sustain fisheries, namely fish, shellfish, crustaceans and marine mammals.

Navigable Waters Protection Act

From Transport Canada’s website:

The Transport Canada Navigable Waters Protection Program supports the regulation of works constructed or placed in, on, over, under, through, or across, navigable waters in Canada. Program staff across the country work to ensure that applications for approval of proposed works are reviewed and administered in accordance with the Navigable Waters Protection Act (NWPA) . In daily operations, the NWPP:

- Approves works that interfere with navigation built in, on, over, under, through or across navigable waters in Canada prior to their construction;
- Ensures the appropriate safety and warning lights, markers, etc. are used and maintained during construction and operation of various works;
- Oversees the removal of obstructions to navigation including unauthorized works;
- Applies the Canada Shipping Act 2001, Part 7 as the Receiver of Wreck.

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.

Canadian Environmental Assessment Act (CEAA)**From the Canadian Environmental Assessment Agency's website:**

The *Canadian Environmental Assessment Act, 2012* (CEAA 2012) offers an updated, modern approach that responds to Canada's current economic and environmental context. It implements central elements of the Government's plan for Responsible Resource Development to modernize the regulatory system and allow for natural resources to be developed in a responsible and timely way for the benefit of all Canadians. This overview provides details of CEAA 2012 as it applies to the Canadian Environmental Assessment Agency (the Agency).

Under CEAA 2012, an environmental assessment focuses on potential adverse environmental effects that are within federal jurisdiction, including:

- fish and fish habitat;
- other aquatic species;
- migratory birds;
- federal lands;
- effects that cross provincial or international boundaries;
- effects that impact on Aboriginal peoples, such as their use of lands and resources for traditional purposes;
- changes to the environment that are directly linked to or necessarily incidental to any federal decisions about a project.

An environmental assessment will consider a comprehensive set of factors that include cumulative effects, mitigation measures and comments received from the public.

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.

2.0 Provincial Legislation

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

Fish Protection Act and Riparian Areas Regulation

Designates a 30 m strip from the top of fish bearing waterbodies or waterbodies connected to fish bearing waters as an assessment area subject to this regulation. The regulation facilitates the determination of riparian setback requirements prior to development. Only adopted in some jurisdictions in BC.

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 Forests, Lands and Natural Resource Management and the Land Tenures Branch.

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.