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## **Columbia River Project Water Use Plan**

### **Physical Works Terms of Reference**

- **CLBWORKS-50B Shelter Bay Boat Launch Maintenance**

**May 4, 2017**

## CLBWORKS-50B Shelter Bay Boat Launch Maintenance Physical Works Terms of Reference

### 1 Background

#### 1.1 Introduction

The Shelter Bay boat launch<sup>1</sup> is located approximately 50 km south of Revelstoke on the western shore of the Arrow Lakes Reservoir and adjacent to the Galena Bay-Shelter Bay ferry crossing. The boat launch itself is situated within the Shelter Bay portion of the Arrow Lakes Provincial Park.

Pursuant to Clause (m) of Conditional Water Licence 27066, and the Water Act Order dated January 23, 2006 (File number 0236915) with related Terms of Reference, BC Hydro is required to provide reservoir access at Shelter Bay Provincial Park.

A ramp at Shelter Bay had been built by BC Parks under the May 1, 1980 Parks Development Agreement with BC Hydro. Under the CLBWORKS-50A project, BC Hydro upgraded the boat launch facilities. In 2015 and 2016, BC Hydro replaced the gabion walkway with boarding floats and steel pilings. BC Hydro also installed breakwaters, a pit toilet, expanded the low water turn-around, resurfaced and expanded the parking lot and upgraded the concrete ramp surface.

The purpose of this Terms of Reference (TOR) is to outline BC Hydro's approach and scope of work for maintenance of the Shelter Bay boat launch.

**Figure 1: Shelter Bay boat launch. 50.637266°N -117.924272°W, 26 April, 2017. Reservoir elevation 429.83 m (1410.2 ft.)**

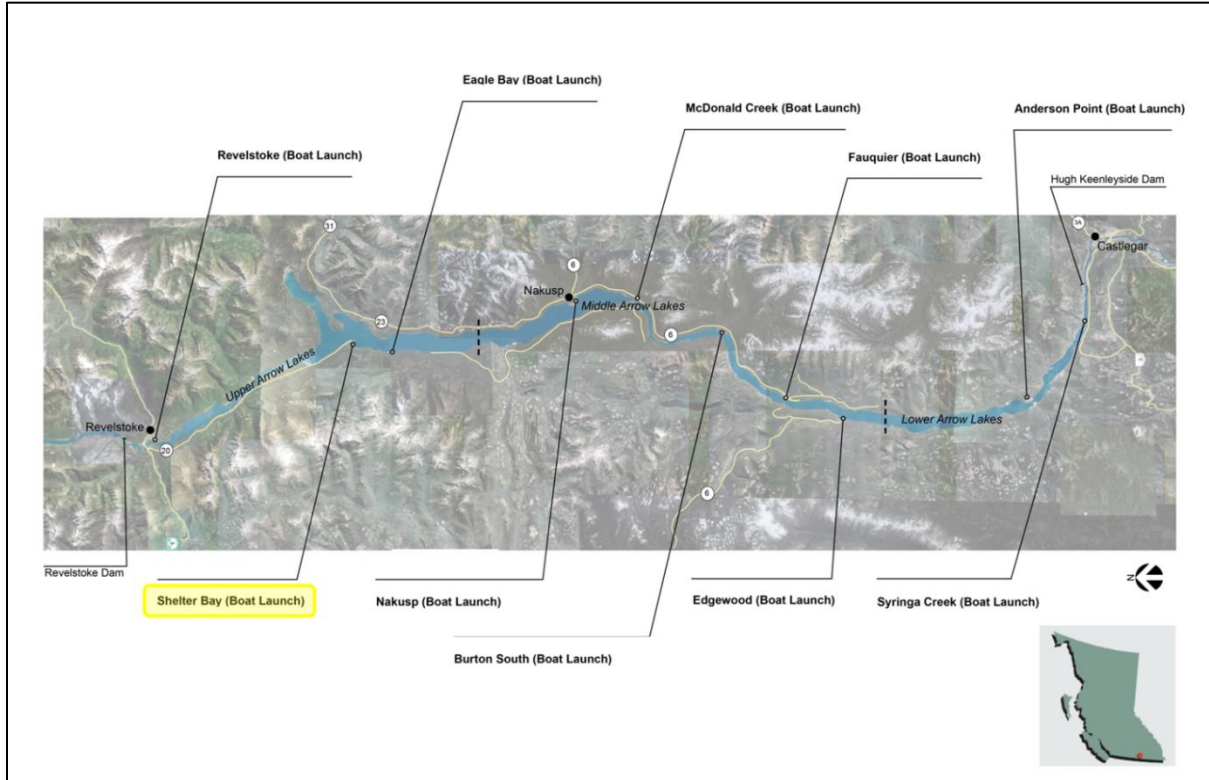


<sup>1</sup> Boat ramp refers to the concrete or gravel ramp used to access the reservoir. Boat launch is used more broadly to refer to all related facilities, including the ramp, walkways, breakwaters, etc. and may include other non-access related facilities such as a parking lots, etc.

## 1.2 Location

The location of the Shelter Bay boat launch is shown in relation to the other Arrow reservoir boat launches in Figure 2 below.

Figure 2: Boat Launches on the Arrow Lakes Reservoir



## 1.3 BC Hydro's approach to boat launch maintenance

BC Hydro filed its maintenance plan approach with the Comptroller of Water Rights (CWR) on January 30, 2017. As described in that letter, BC Hydro will undertake structural and routine maintenance of access-related facilities at boat launches where BC Hydro has licence or Water Use Plan responsibilities.

In some locations, additional non-access facilities may have been constructed or upgraded as part of the boat launch projects. Typically, the Park Operator or land owner will hold the responsibility for maintenance of these non-access facilities as part of their Crown License of Occupation or tenure and would be specified in their Crown Management Plan responsibilities. However, in a few instances where there is no other operator and BC Hydro holds the right and responsibilities by tenure or by the License of Occupation (i.e. Burton South, Anderson), then BC Hydro will additionally take on the maintenance (structural and routine) of these non-access facilities.

These terms are defined below:

- **Access-related facilities** are defined as those structures and facilities that provide safe access to the reservoir (i.e., ramps, low-water turnarounds, breakwaters, and boarding floats).
- **Non-access related facilities** are defined as those structures that provide related infrastructure adjacent to the boat launch but are not directly related to access (e.g., access roads, day use areas, parking lots, toilets.)

- **Structural maintenance** refers to work that occurs at infrequent intervals to ensure the physical facilities are structurally sound and are functioning as intended (i.e., to ensure safe access to the reservoir). Examples would include, repair of a major crack that has formed in a ramp, replacing breakwaters when they can no longer be effectively repaired, etc.
- **Routine maintenance** refers to the work that must occur on a routine and regular basis such as annual activities in preparation for the recreation season, or throughout the recreation season, as required. For access-related facilities for example, this includes debris, or sediment removal, replacing safety signs, any pre-season repairs to walkways or breakwater bumpers.

## 2 Shelter Bay boat launch maintenance

### 2.1 Maintenance period

BC Hydro will undertake routine and structural maintenance of the access-related facilities at Shelter Bay to ensure that the general public have safe access to the reservoir for the peak recreation season, and during the spring and fall shoulder recreation seasons when the ramp is available for launching. For the Arrow reservoir, the seasons are defined as follows:

- Peak season: June 15 to September 15;
- Spring shoulder season: May 15 to June 14;and
- Fall shoulder season: September 16 to September 30.

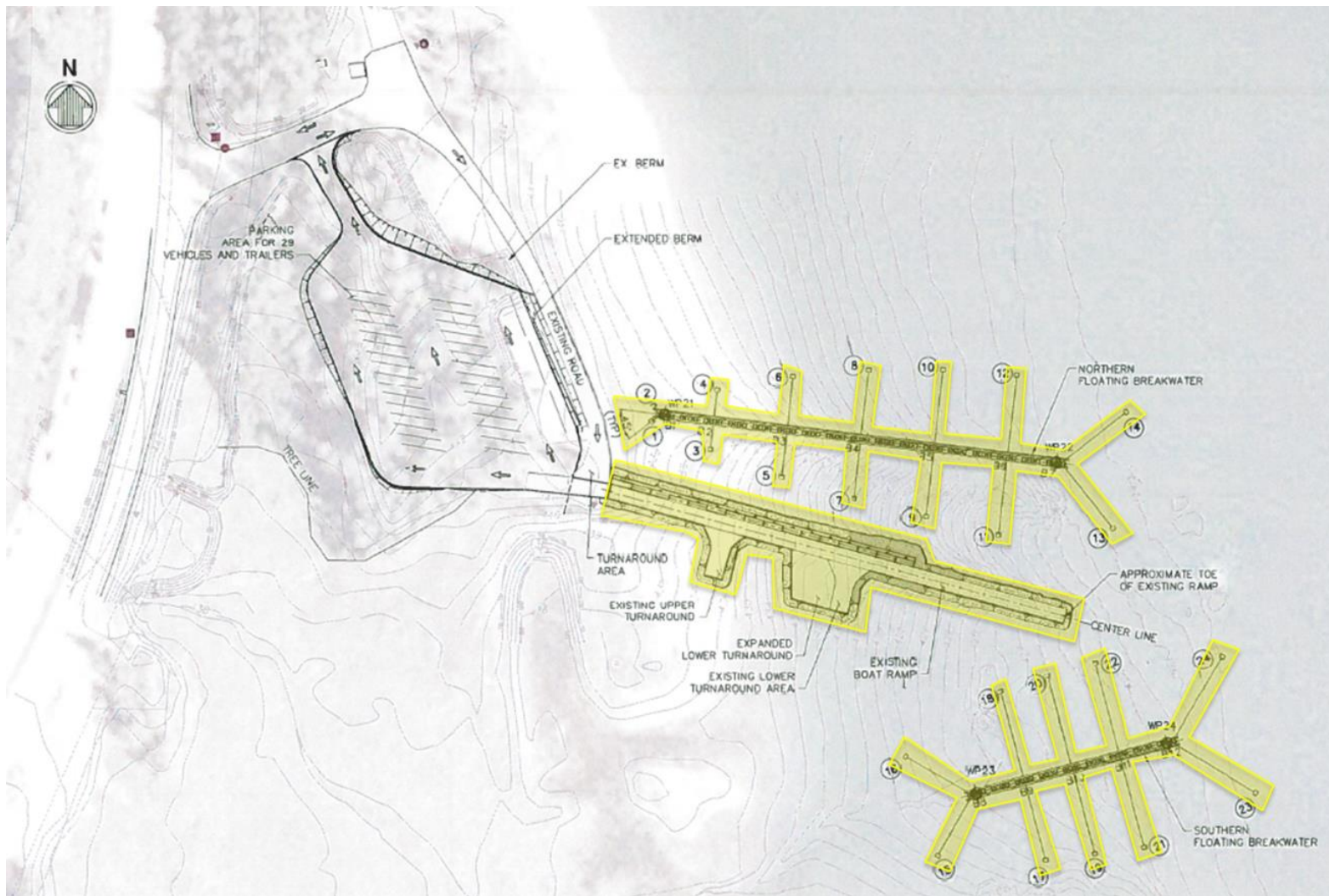
In the event that a significant safety issue arises at the boat launch outside of the maintenance period, then BC Hydro will use reasonable efforts to ensure the site is secured until the hazard can be removed.

### 2.2 Area of responsibility

The Shelter Bay boat launch sits within a Provincial Park. The BC Parks Facility Operator maintains the non-access related facilities (e.g., toilet, parking lots, etc.). BC Hydro, via a Parks Use Permit (PUP#103216), is responsible for the structural and routine maintenance of the access-related facilities only.

The yellow highlighted area shown in Figure 3 represents BC Hydro's area of responsibility for the Shelter Bay boat launch. This polygon is provided to give greater clarity and certainty on which parts of the launch need to be maintained as part of BC Hydro's ongoing obligations under of Clause (m) of CWL 27066.

Figure 3: Shelter Bay boat launch. Yellow highlights represent BC Hydro's area of responsibility for facility maintenance.



### 2.3 Facilities to be maintained

Table 1 below provides a list of the facilities for which BC Hydro will undertake maintenance at the Shelter Bay boat launch and the typical type of work required. The work listed in the 'Details' section of the table below is not exhaustive but is provided for illustration purposes. All items below are to be inspected at least once annually with repairs to be done as needed. Any public safety hazards will require immediate action.

A list of suppliers, model number and other technical information for these facilities can be found in the Operations and Maintenance Manual for Shelter Bay Boat Launch (Moffatt & Nichol, 2016).

**Table 1: Facility details at Shelter Bay boat launch with a description of maintenance activities**

Facilities	Details
<b>Access Related Facilities</b>	
Concrete boat ramp	<ul style="list-style-type: none"> <li>Concrete panels.</li> <li>Structural maintenance: inspect for cracks, depressions and any other significant abnormalities that will impede safe access to the reservoir.</li> <li>Routine maintenance: remove sediment and/or debris where it obstructs access and/or could harm the facilities. Smaller pieces of debris and sediment that can be moved by hand will be performed by the BC Parks Facility Operator).</li> </ul>
Scour protection (toe and sides of ramp)	<ul style="list-style-type: none"> <li>Riprap.</li> <li>Structural maintenance: inspect for slumps and depressions.</li> <li>Routine maintenance: removal of debris and/or vegetation that could displace the riprap. Smaller pieces of debris and sediment that can be moved by hand will be performed by the BC Parks Facility Operator).</li> </ul>
Breakwaters	<ul style="list-style-type: none"> <li>Two floating timber breakwaters with lock-block anchors, chains and navigational lights.</li> <li>Structural maintenance: inspect equipment (e.g., connecting chains, shackles, navigational lights, etc.) for wear and tear and proper function.</li> <li>Routine maintenance: removal of debris, replacement of end caps, etc.</li> </ul>
Boarding Floats	<ul style="list-style-type: none"> <li>A line of floating wharves with each wharf attached to a steel piling.</li> <li>Structural maintenance: inspect for any reduction in freeboard, missing hardware, etc.</li> <li>Routine maintenance: removal of any unauthorized equipment.</li> </ul>
Pilings	<ul style="list-style-type: none"> <li>Steel pipe supports.</li> <li>Structural maintenance: inspection for pitting, corrosion or other abnormalities in the supports.</li> <li>Routine maintenance: removal of any unauthorized signs, structures, boats, etc. to the pilings.</li> </ul>
Shoreline between ramp and breakwaters.	<ul style="list-style-type: none"> <li>BC Hydro's role is limited to removing significant safety hazards or removing debris and/or other items that pose a danger to the public/facilities or impede access to the reservoir. BC Hydro will remove significant safety hazards that may exist on the beach area between the ramp and breakwaters or restrict access to the boat launch or reservoir.</li> </ul>

### 2.4 Permit Information

As the site is located within a Provincial park BC Hydro has been granted access via a Parks Use Permit (PUP#103216; expiry 14 January, 2040).

In addition, annual notification is provided to the Ministry of Forests, Lands and Natural Resources Operations for maintenance works within an existing footprint according to *The Approved Work Practices for Boat Launch Construction and Maintenance in BC Hydro Managed Freshwater Systems* (AWP).

## **2.5 Safety**

All work must be in compliance with all WorkSafeBC health and safety regulations and must be undertaken following BC Hydro's current processes for ensuring worker and contractor safety.

## **3 Budget**

Total Program Cost \$212,514.

## **4 References and related documents**

BC Hydro (May 13, 2014). Approved Work Practices for Boat Launch Construction and Maintenance in BC Hydro Managed Freshwater Systems. 21pp.

Moffatt & Nichol (April 15, 2016). Shelter Bay Boat Launch Ramp Completion Report and Operation & Maintenance Manual. Prepared for BC Hydro. 96pp.