



Transport
Canada

Transports
Canada

Navigation Protection Program
Suite 610, 800 Burrard Street
Vancouver, B.C. V6Z 2J8

Your file

Our file
2008-500822-001 (T4230)

February 27, 2019

REGISTERED MAIL

BC Hydro
Suite 600 - Four Bentall Ctr, 1055 Dunsmuir St. PO Box 49260
Vancouver, BC V7X 1V5

Attention: Karen von Muehldorfer

RE: Notice to the Minister under the *Navigation Protection Act* for Approval of the Dam, Spillway, Cofferdams, Diversion Tunnels, Generating Station and Reserve Surplus Excavated Materials (RSEM) R5b located on Peace River, 56° 11' 51.62" N x 120° 54' 56.31" W, Site C Dam, located on unsurveyed foreshore or land covered by water being part of the bed of Peace River, Site C, fronting Sec. 15, 16, Twp 83, Rge 19, West of the 6th Meridian Peace River District, City of Fort St. John, in the Province of British Columbia

The Minister of Transport has determined under section 5 of the *Navigation Protection Act* (NPA) that your work is likely to substantially interfere with navigation.

Enclosed please find the Approval for the above-noted work issued by the Minister of Transport in accordance with subsection s.6(1) Alteration of the NPA.

Pursuant to Sec. 5 of the Navigable Waters Works Regulations, no person shall permit any tools, equipment, vehicles, temporary structures or parts thereof used or maintained for the purpose of building or placing a work in a navigable water to remain in such water after the completion of the project.

Pursuant to Sec. 6 of the Navigable Waters Works Regulations, where a work or a portion of a work that is being constructed or maintained in a navigable water causes debris or other material to accumulate on the bed or the surface of such water, the owner of that work or portion of that work shall cause the debris or other material to be removed to the satisfaction of the minister.

Pursuant to Sec. 7(4) of the Navigable Waters Works Regulations, the owner of the work shall maintain limits of flow and elevation of water for navigation purposes as required by the Minister.

For the purposes of this Approval Transport Canada considers regional newspapers and local media to be ones that cover Fort St John, Taylor, Chetwynd and Hudson Hope.

Should the dam owner wish to make changes to the portage system, usage data may be presented to Transport Canada for review. This may be done every 5 years from the start of operations.

This Approval supersedes the portage conditions outlined in the Navigation Protection Act (NPA) Approvals for the Upstream and downstream Safety boom, NPA Files 2014-500331 & 2014-500332.

Misuse of the portage system for purposes other than portaging vessels can be reported to Transport Canada, who will make a usage determination at that time.

This permission relates only to the effect of your work on navigation under the NPA and does not grant any rights related to the ownership of the bed of the waterway.

Please note that the NPA, amongst other obligations, requires the owner to immediately notify the Minister if your work causes or is likely to cause serious or imminent danger to navigation and take reasonable measures to remediate the danger to navigation (section 12 of the NPA).

Should you have any questions, please do not hesitate to contact our office in Vancouver by phone at (604) 775-8867 or by e-mail at NPPAC-PPNPAC@tc.gc.ca.

Respectfully,



Colin Parkinson
Navigation Protection Program Officer
Programs Group
Transport Canada
Pacific Region

CP/sp

Attachment(s) – Approval Document, Reviewed Drawings (12), Appendix A

CC: James.Chircoski@dfo-mpo.gc.ca
Compliance.Conformite@ceaa-acee.gc.ca
Gypsy.Fisher@gov.bc.ca



NAVIGATION PROTECTION ACT

Subsection 6(1)
001 (T4230)

2008-500822-

Approval

OWNER:

BC Hydro
Suite 600 - Four Bentall Ctr, 1055 Dunsmuir St. PO Box 49260
Vancouver, BC V7X 1V5

WORK:

**Dam, Spillway, Cofferdams, Diversion Tunnels, Generating Station
and Reserve Surplus Excavated Materials (RSEM) R5b**

SITE LOCATION:

Located at Approximately 56° 11' 51.62" N x 120° 54' 56.31" W,
Peace River, Site C Dam, located on unsurveyed foreshore or land
covered by water being part of the bed of Peace River, Site C, fronting
Sec. 15, 16, Twp 83, Rge 19, West of the 6th Meridian Peace River
District, City of Fort St. John, in the Province of British Columbia

Regarding the notice and application to the Minister of Transport, submitted pursuant to the *Navigation Protection Act*, for an approval of a work, the Minister hereby approves the alteration (of the above-described work and the attached plans pursuant to subsection 6(1) in accordance with the following terms and conditions:

General

1. The works are to be constructed or installed in accordance with the attached approved plans.
2. Once the construction of the works are completed, the owner shall provide a Statutory Declaration to Transport Canada that the works are built and placed in conformity with the approved plans and site pursuant to the *Navigation Protection Act*, its regulations and the terms and conditions of approval.
3. As built plans of the works are to be forwarded to Transport Canada within 6 months upon completion of the project and commencing operation. (Construction related terms and conditions are attached in appendix A)

LIDAR Survey

4. The owner shall conduct an Airborne LIDAR survey of the downstream area to site of the Water Survey Station 07FA004 (Peace River above Pine River) (56° 11' 57" N 120° 48' 52" W). The survey shall take place post construction, but prior to the operations. (This survey can be conducted at the same time as the LIDAR survey in Condition 39)

Dam Operations

5. The NPA Approval including the cover letter and its Terms and Conditions shall be posted at the dam site office during operations. (See appendix A for construction related posting)
6. As soon as the dam is in operation, the owner shall maintain a minimum water flow release of 390 cubic metres per second from the Site C dam as measured from the dam or a site no more than 6.5km downstream of the dam (consistent with condition 4.1 in the Decision Statement issued under section 54 of the *Canadian Environmental Assessment Act, 2012*).
7. The owner shall maintain the limits of flow and elevation of water as required by Transport Canada. The Minister may also limit changes to ramp rates as required for navigation safety.
8. The owner shall provide records and data related to water flow as outlined in condition 7, records on all dam safety and surveillance and dam operations including the Operation, Maintenance and Surveillance Manual to Transport Canada as requested.

Signage upstream and downstream

9. The owner shall install and maintain warning signs on both banks of the waterway at locations approximately 800-1,000m upstream of the dam site. Each Sign shall state;



**WARNING DAM DOWNSTREAM
WATER LEVELS AND FLOWS
MAY CHANGE WITHOUT NOTICE**

and be in accordance with the Canadian Dam Association Technical Bulletin on Public Safety around Dams 2011, or as updated. See Appendix B for Examples taken from the Bulletin.

10. Install and maintain warning signs on both banks of the river at locations approximately 900m, approximately 6 kms downstream of the dam site, and at Old Fort. The Signs shall state:

At approximately 900m

**WARNING DAM AHEAD
STAY CLEAR
WATER LEVELS AND FLOWS
MAY CHANGE WITHOUT NOTICE**

At approximately 6 km

**WARNING DAM AHEAD
WATER LEVELS AND FLOWS
MAY CHANGE WITHOUT NOTICE**

At Old Fort

**WARNING
WATER LEVELS AND FLOWS
MAY CHANGE WITHOUT NOTICE**

and be in accordance with the Canadian Dam Association Technical Bulletin on Public Safety around Dams, 2011 or as updated. See Appendix B for Examples taken from the Bulletin.

Portage System

11. A portage system includes appropriate boat launches and the transportation of vessels and allowable passengers for each such vessel. The owner is only required to portage vessels that are already waterborne, that have arrived by water to the boat launch from another location and have met the notification requirements. The owner is required to portage up to the allowable number of passengers based on the certified capacity of the portaged vessel. The owner can request this information as part of its notification requirements.
12. The owner shall comply with any direction from Transport Canada modifying the requirements in this section in regards to the Portage System.
13. The owner shall:
- Unless the upstream or downstream boat launches are blocked by ice, provide a portage system operating in both directions from downstream of the dam to upstream of the dam to transiting vessels during daylight hours. The portage system shall be able to transport the watercraft typically transiting the river including canoes and large jetboats.
 - If the portage system is not operating because boat launches are blocked by ice, post notices of this suspension of service on the BC Hydro project website or the point of reservation and at the portage locations.
 - Operate the portage system if provided notification 24 hours in advance, unless multiple vessels are transiting together (a public or groups event) in which case a minimum of 2 weeks notice is required.
 - Provide adequate information about the portage system and notification requirements using the Boater Communications Protocol, and:
 - For the initial start of portage operation and opening of the reservoir boat launches, publicize in regional newspapers bi-weekly for the first month, weekly for the next 2 months
 - For subsequent 5 years of operation, publicize weekly for 2 months after both portage points are free of ice
 - Permanently post notice at the Peace Island Park boat launch
 - Permanently post notice at the Halfway River replacement boat launch
 - Permanently post notice at the Lynx Creek, boat launch
 - Post portage information on the owner website, on a page related to the project



Discharge in excess of maximum diversion rate

14. The owner shall provide notification for discharges in excess of 2700 m³/s (discharge greater than maximum generation capacity) to Transport Canada and the public using the Boater Communications Protocol as soon as the date and extent of the discharge is known.

Audible warnings for flow release changes

15. The owner shall:
 - (a) Install and maintain audible warning devices that meet the current Canadian Dam Association Guidelines to cover the downstream tailrace and spillway discharge area. The audio devices shall emit a signal that is clearly distinguishable throughout the downstream tailrace and spillway discharge danger area and downriver for 1.5km or a distance specified by Transport Canada.
 - (b) Operate the warning signals upon a discharge from the spillway, except to maintain the minimum flow requirement of 390 cm/s or during spillway gates and sluice gate tests
 - (c) Operate the warning signals upon an increase of flows from the tailrace as specified by Transport Canada.
 - (d) The owner shall provide flow data and video recordings of flows and waterlevels downstream of the tailrace as required by Transport Canada.
 - (e) Audible warning signals are only required to operate during daylight hours.
 - (f) Conduct ongoing maintenance and inspection of audio warning devices.
 - (g) Conduct tests of the audio warning devices at least 2 times a year.
 - (h) Maintain records of maintenance tests, inspections and repairs of all audible warning devices for a period of 5 years.

Monitoring of flows downstream

16. The owner shall collect, store and report on hydrometric data from all of the existing hydrometric stations on the Peace River and provide the information to Transport Canada as outlined below and as otherwise requested. Upon direction by Transport Canada, the owner shall reinstate any discontinued hydrometric survey stations or install and maintain new hydrometric survey stations on the Peace River and ensure that water level and flow data is collected, stored and made available for the purpose of navigation.
17. The owner shall provide records of discharges from the dam or data collected from relevant hydrometric stations on a given date or time to assist in determining the causes of any reported impacts on navigation upon request by Transport Canada.
18. In addition to the data required to be collected by the owner pursuant to section 6 of the CEEA 2012 Decision Statement, the owner shall prepare and submit to Transport Canada a report of the data collected from the following sites showing actual measurements of water flow and levels compared to the predicted water flows and levels done through modeling presented by BC Hydro in its Environmental Impact Statement for the Project. This review shall be done at 5, 10 and 15 years after start of operational flows, and the results for each review period shall be submitted to Transport Canada within 6 months of the end of each review period. The report shall cover the period of operations preceding the report include a summary of findings, supporting tables or graphs and data sets for the Water Survey of Canada stations:
 - (a) Near Taylor 07FD002
 - (b) Near Dunvegan bridge 07FD003
 - (c) Near Peace Point 07KC001
19. The owner shall conduct a review of any navigational impacts on operations of the 3 existing ferries (La Crete, Shaftsbury and Little Red River Cree Nation/Fox Lake) on the Peace River. A report of this review must be submitted to Transport Canada after the first year of operation and thereafter every 5 years for the next 20 years after the start of dam operations. On the 20th year Transport Canada will determine if continued review is warranted. As part of the review process the owner shall:
 - (a) Prior to the start of dam operations,
 - i. Contact the ferry operators and establish a reporting protocol that the ferry operators can use to report any groundings, strandings or inability to operate a ferry due to water levels.
 - ii. Provide a copy of this reporting protocol to Transport Canada.



- (b) Submit to Transport Canada a report of all navigational impacts reported to BCH within 1 month. BCH shall provide the following in the report;
- i. Water levels recorded from the nearest hydrometric station and,
 - ii. Information about flow releases from the dam at or around the times of the reported navigational impact and an analysis of the findings.
20. If another water control or large withdrawal structure is built on the Peace River downstream of Site C, Transport Canada will determine which of the downstream monitoring requirements will remain in effect.

Reservoir Filling

21. The owner shall submit a draft operational debris management plan to Transport Canada for review and approval no later than 2 years prior to reservoir filling.
22. Prior to reservoir filling, the owner shall also:
- i. Complete the clearing plan in the reservoir area in accordance with the Environmental Assessment and Water License Conditions, as outlined in the Joint Review Panel and the Vegetation Clearing and Debris Management Plan as per the British Columbia Environmental Assessment Office Certificate Conditions,
 - ii. Submit documentation to Transport Canada that these conditions have been fulfilled and accepted by the agencies responsible, and
 - iii. Provide Transport Canada with the same information, at the same time it is being provided to Canadian Environmental Assessment Agency to meet condition 4.2 of the CEAA 2012 Decision Statement:

The Owner shall, 90 days prior to initiating reservoir filling, provide the Agency with estimates of downstream water flows and water levels to Peace Point, Alberta for scenarios at minimum, average and maximum rates of reservoir filling and a description of how these estimates have been used to undertake reservoir filling in a manner that would minimize impacts on downstream water flows and water level conditions.

23. 90 days prior to the start of the filling of the reservoir, the owner shall provide the public with information about the reservoir filling using the Boater Communications Protocol and the following:
- (a) Publication in regional newspapers bi-weekly for the first month, weekly for the next 2 months.
 - (b) Posted notice at the Peace Island Park, boat launch
 - (c) Posted notice at the Halfway River replacement boat launch
 - (d) Posted notice at the Lynx Creek, boat launch
 - (e) Posted notice at the Hudson Hope, boat launch
 - (f) Post information on the owner website, on a page related to the project

Reservoir Operation Operating regime

24. Except for emergency or planned drawdowns the owner shall operate the reservoir between the elevations of 460.0 metres ASL, the minimum operating level, and 461.8 metres ASL, the full supply level, measured at the dam using Geodetic Survey of Canada datum.
25. The owner shall install and maintain water level gauges, at the dam and at each of the 3 boat launches. The owner shall at a minimum of once a week post, on a webpage related to the project, the current level of the reservoir.

Drawdowns for planned maintenance, upgrades and unplanned repairs

26. The owner shall provide adequate information about planned drawdowns below the reservoir level of 460 metres ASL, 20 days prior to the start of the drawdown of the reservoir, using the Boater Communications Protocol and:
- (a) Publicize in regional newspapers weekly for the first month, bi-monthly for the 2nd month and once per month for the remaining length of the drawdown or by other public media or publication methods upon agreement with Transport Canada
 - (b) Posted notice at the Halfway River replacement boat launch
 - (c) Posted notice at the Lynx Creek, boat launch
 - (d) Posted notice at the Hudson Hope, boat launch
 - (e) Post information on the owner website, on a page related to the project
 - (f) Notice to Transport Canada

Emergency drawdowns

27. The owner shall provide information about an emergency drawdown below the 460.0 metres ASL to Transport Canada and the public as soon as the date and extent of the drawdown is known using the Boater Communications Protocol, and:



- (a) Initial and ongoing notifications to the regional media outlets, throughout the period of the drawdown
- (b) Posted notice at the Halfway River replacement boat launch
- (c) Posted notice at the Lynx Creek, boat launch
- (d) Posted notice at the Hudson Hope, boat launch
- (e) Post information on the owners website, on a page related to the project
- (f) Notice to Transport Canada

Drawdowns ordered by the Comptroller

28. For drawdowns below the 460.0metres ASL operating regime as ordered by the Comptroller of Water Rights in accordance with the Province of BC, *Water Act or Water Sustainability Act.*, the owner shall provide information about a drawdown ordered by the Comptroller to Transport Canada and the public as soon as the date and extent of the drawdown is known using the Boater Communications Protocol, and:

- (a) Posted notice at the Halfway River replacement boat launch
- (b) Posted notice at the Lynx Creek, boat launch
- (c) Posted notice at the Hudson Hope, boat launch
- (d) Post information on the owners website, on a page related to the project
- (e) Notice to Transport Canada

Emergency surcharges

29. In the event of an emergency surcharge greater than elevation 462.10m that will extend beyond 24 hours the owner shall provide information to Transport Canada and the public as soon as the date and extent of the surcharge is known using the Boater Communications Protocol, and:

- (a) Posted notice at the Halfway River replacement boat launch
- (b) Posted notice at the Lynx Creek, boat launch
- (c) Posted notice at the Hudson Hope, boat launch
- (d) Post information on the owners website, on a page related to the project
- (e) Notice to Transport Canada

Debris Management on the Reservoir

- 30. The owner shall maintain an active debris management system to remove debris from the reservoir for the first 5 years from the start of reservoir filling. This system will consist of equipment to marshal debris, move it a collection site and remove it from the waterway.
- 31. Long term debris management shall be dependent on the actual accumulation of debris. The owner shall submit to Transport Canada for review and approval it's draft long term debris management plan 1 year prior to the end of the first, 5 year period.
- 32. The owner shall continually monitor the reservoir, advise the public of areas of potentially floating debris and remove the debris in an expedient manner.
- 33. Debris storage at the dam site shall not block navigation access to the Moberly River.
- 34. The owner shall cut or remove submerged or partial submerged timbers that are potential hazards to navigation. Timbers not removed shall be cut to Elevation 455m ESL or as directed by Transport Canada.
- 35. The owner shall conduct further debris management activities that Transport Canada may require.

Post filling reservoir survey and long term safety and shoreline monitoring

- 36. The owner shall;
 - (a) Submit a boating safety and shoreline monitoring plan 2 years prior to the filling of the reservoir for Transport Canada review and approval.
 - (b) Conduct a safety survey of the reservoir post filling and prior to May 30th of the first year after reservoir filling and report the findings to Transport Canada. This information will be used to determine when the full access for the public to the reservoir is granted.
 - (c) Conduct an annual safety survey of the reservoir prior to the boating season and report any potential navigation safety concerns to Transport Canada.-
 - (d) Conduct a safety inspection at any time for all or a portion of the reservoir and report the findings to Transport Canada upon request.



Sediment survey

37. The owner shall:

- (a) Conduct a bottom survey of the Halfway River embayment to determine sediment deposition rates. The area to be surveyed is bank to bank, 1.5km upstream from the new Halfway River Bridge to the site of the confluence of the Halfway River embayment at approximately 56°13'9.80"N 121°26'50.87"W at 10 year and 15 year intervals from start of operation. Survey results are to be provided to Transport Canada within 6 months of each survey period.
- (b) Conduct sediment or hydrographic surveys for portions of the reservoir and report as required to Transport Canada.

Navigation aids

38. The owner shall:

- (a) Place, operate, inspect and maintain a flashing white light (.5 sec. flash, 3.5 sec. Eclipse) on the North Bank at the mouth of the Halfway River.
 - I. Sited to maximize the sightlines both upstream and down along the Peace River reservoir.
 - II. This light shall have a nominal range of 12km.
- (b) Place, operate, inspect and maintain a flashing white light (.5 sec. flash, 3.5 sec. Eclipse) on the dam at a location to maximize the sightline, facing upstream on the Peace River reservoir.
 - i. This light shall have a nominal range of 5km.
- (c) Install and maintain other navigation aids as required by the Transport Canada.

LIDAR Survey

39. The owner shall conduct an Airborne LIDAR survey of the reservoir area post construction and clearing, but prior to the filling of the reservoir. This survey shall be the basis for mapping of the reservoir for boating. (This survey can be conducted at the same time as the LIDAR survey in Condition 4)

Mapping

40. Prior to starting operation of the boat launches, the owner shall produce and make publicly available a map or maps of the reservoir at a scale that is usable to vessel operators. The map(s) must be available on the internet and the owner must provide paper copies for purchase by the public at a nominal fee equivalent to the cost of marine charts. Drafts of these map(s) must be submitted to Transport Canada for review 120 days prior to full access to the reservoir being granted. The map or maps must be reviewed and updated every 10 years or when required by Transport Canada due to a significant change in the reservoir. The map must show at the minimum, the following information:

A. Map information

- I. Date of Issue
- II. Scale bar
- III. Scale
- IV. True North to be indicated
- V. Depth datum
- VI. Emergency contact information

B. Amenities

- I. Boat launches
- II. Navigation aids
- III. In-water works

C. Depths

Bathymetry contours shall be delineated in meters as follows; 0-1, 1-2, 2-5, 5-10, 20, 30, 40, 50
The shoreline will be 461.8m ASL, the datum for depth shall be the 460.0 ASL

D. Marking of navigation hazards

- I. Small or individual hazards shall be marked as point features with unique symbology.
- II. Areas with multiple hazards may be outlined with a polygon using appropriate symbology.
- III. Fish habitat compensation areas to be marked and outlined with a polygon using appropriate symbology.

Signage and notifications

41. The owner shall provide boater information about the reservoir using the Boater Communications Protocol and signage at the following locations:



- (a) Halfway River replacement boat launch
 - (b) Lynx Creek boat launch
 - (c) Hudson Hope boat launch
 - (d) On the owner website, on a page related to the project
42. In the year that the public boat launches are opened, the owner shall establish and chair a reservoir marine user group, available all interested users of the reservoir, to discuss issues or concerns on the reservoir.
43. The owner shall arrange and hold a minimum of one meeting per calendar year for the reservoir marine user group and maintain the minutes and contact lists. The meetings are to be held at Fort St John or a location agreed upon by members of the group.
44. The owner shall install navigation aids as required by Transport Canada.

Emergency dock at dam site

45. The owner shall ensure that the public and emergency services can access a docking or landing facility at the dam site for emergency use. Signage at this facility shall have emergency contact information.

Boat launches

46. The owner shall construct the three replacement boat launches prior to filling of the reservoir.
- I. Near Halfway River
 - II. At Lynx Creek
 - III. At Hudson Hope

Decommissioning

47. Unless otherwise specified in the Act, the owner shall submit notice and detailed plans to the Minister responsible one year prior to the planned decommissioning date.

Aboriginal

48. In regards to Aboriginal groups affected by the proposed project, the Proponent, in consultation with the Department of Transport, shall:
- (a) Collaborate with Aboriginal groups to:
 - Develop, implement and manage a plan to monitor the terms and conditions in this approval;
 - In the event of unforeseen circumstances related to navigation, identify and develop additional mitigation measures to address impacts to current use of lands and resources for traditional purposes; and
 - Share information about the project.
 - (b) Establish committees and/or mechanisms for dialogue among the Proponent, Aboriginal groups, and the governments of Canada and British Columbia on ways to mitigate the impacts of the project as it relates to navigation;
 - (c) Inform Aboriginal groups about project activities that may affect access to land and waters for the purpose of those uses;
 - (d) Notify without delay Aboriginal groups of an occurrence that results in a significant interference to navigation which poses a serious and imminent danger of such an occurrence, and which occurrence is not captured by this authorization; and
 - (e) Provide funds to Aboriginal groups to support their capacity to carry out these activities.

SIGNED in two copies on FEB 27th 2019 in Vancouver, B.C.

Colin Parkinson
Navigation Protection Program Officer
Programs Group
Transport Canada
Pacific Region

Appendix A - CONSTRUCTION RELATED TERMS AND CONDITIONS

1. During the construction period, the owner shall:
 - (a) Provide real time flow and level data from a location no more than 7 km below the proposed dam on a public webpage related to the project, if data is not available from the existing Water Survey of Canada hydrometric station identified as *Peace River above Pine River #7FA004*,
2. In the event that construction of the works are terminated prior to their completion, it will be the owner's responsibility to remove the works and associated equipment in their entirety from the waterway including any anchors and pilings. The banks and bed of the waterway disturbed by the works shall be contoured to match the local conditions as required.
3. Post the NPA Approval and its Terms and Conditions at following locations and times;
 - i. During construction at the BC Hydro office onsite and the site offices of all contractors conducting work on, in, through, over or under the waterway.
 - ii. The construction related terms and conditions in appendix A shall also be posted at site of the boat operations during construction.
4. The owner shall immediately remove construction debris from the waterway.
5. While public vessel traffic on the Peace River is capable of transiting through or accessing portions of the construction site the owner shall:
 - (a) Install and maintain warning signs at locations approximately 100m upstream and downstream of the dam site advising of the work in progress prior to, and for the duration of, construction until the closure of the river. Signs shall state

WARNING CONSTRUCTION AHEAD PROCEED WITH CAUTION

and be in accordance with the Canadian Dam Association Technical Bulletin on Public Safety around Dams, 2011 or as updated. See Appendix B for Examples taken from the Bulletin;

- (b) Mark the outermost extremity of the works extending from either bank above the surface with orange high visibility markers on the upstream and downstream corners and every 75m,
 - (c) Install and maintain a flashing yellow light on the outermost extremity of the works above the surface on the upstream and downstream corners and every 150m. The lights shall be in operation in periods of darkness or limited visibility,
 - (d) Install and maintain a yellow flashing light on the outermost extremity of any equipment, construction machinery or barges anchored or left in or on the waterway overnight. The lights shall be visible upstream and downstream, and
 - (e) Inspect and maintain weekly all lights and markings to ensure function and correct positioning.
6. Upon closure of the river by the completion of the cofferdam(s), the owner shall:
 - (a) Install and maintain warning signs on the upstream and downstream wetted sides of the cofferdam(s) advising that the river is closed. The signs shall state

WARNING RIVER CLOSED

and be in accordance with the Canadian Dam Association Technical Bulletin on Public Safety around Dams, 2011 or as updated. See Appendix B for Examples taken from the Bulletin.

- (b) Mark all cofferdams with flashing yellow lights and orange high visibility markers on the upstream and downstream wetted sides with lights spaced at intervals of 75m. The lights shall be in operation during periods of darkness or limited visibility.
- (c) Inspect and maintain weekly all lights and markings to ensure function and correct positioning.

Diversion Tunnel

7. The owner shall:

- (a) Install and maintain warning signs at the entrances of both the upstream and downstream diversion tunnel channel on both banks during construction until the diversion tunnels are closed. The signs shall state:

**DANGER
EXTREME HAZARD
DO NOT ENTER**

and be in accordance with the Canadian Dam Association Technical Bulletin on Public Safety around Dams, 2011 or as updated. See Appendix B for Examples taken from the Bulletin.

- (b) Install and maintain flashing yellow warning lights on both banks, at the entrance of the upstream and downstream diversion tunnel channels. The lights shall be in operation in periods of darkness or limited visibility, and
- (c) Inspect and maintain weekly all lights and markings to ensure function and correct positioning.

Headpond

- 8. Upstream of the cofferdam(s), riverbank warning signage is required if booms, buoys are not installed and maintained or if a patrol boat is not monitoring the area. If this is the case, the owner shall:
 - a) Install and maintain warning signs facing traffic moving downstream at locations on both banks of the river at approximately the maximum upstream extent of the Headpond prior to and for the duration of construction. The signs shall state

**WARNING
SUBMERGED HAZARDS AHEAD
PROCEED WITH CAUTION
STAY CLEAR OF BANKS**

and be in accordance with the Canadian Dam Association Technical Bulletin on Public Safety around Dams, 2011 or as updated. See Appendix B for Examples taken from the Bulletin,

Closure Notification

- 9. The owner shall, 30 days prior to the physical closure of the river to vessel traffic by the cofferdams, provide information to boaters that the river will be closed using the BC Hydro's Public Safety Management Plan - Boater Communications Protocol, and:
 - Publication in regional newspapers bi-weekly.
 - Posted notice at the Peace Island Park, boat launch

- Posted notice at the Halfway river, boat launch
- Posted notice at the Lynx Creek, boat launch
- Notification to Transport Canada
- On the owner's website, on a page related to the project

Portage System during construction

9. A portage system includes appropriate boat launches and the transportation of vessels and allowable passengers for each such vessel. The owner is only required to portage vessels that are already waterborne, that have arrived by water to the boat launch from another location and have met the notification requirements.
10. The owner is required to portage up to the allowable number of passengers based on the certified capacity of the portaged vessel. The owner can request this information as part of its notification requirements.
11. There is no requirement for a portage system while the reservoir is being filled.
12. The owner shall:
 - (a) Upon the closure of the river, unless the upstream or downstream boat launches are blocked by ice, provide a portage system operating in both directions from downstream of the construction zone to upstream of the construction zone to transiting vessels during daylight hours. The portage system shall be able to transport the watercraft typically transiting the river including canoes and large jetboats.
 - (b) If the portage system is not operating, because boat launches are blocked by ice or the reservoir is being filled, post notices of this suspension of service on the BC Hydro project website or the point of reservation and at the portage locations.
 - (c) Operate the portage system if provided notification 24 hours in advance, unless multiple vessels are transiting together (a public or groups event) in which case a minimum of 2 weeks notice is required.
 - (d) Provide adequate information about the portage system and notification requirements using the Boater Communications Protocol, and:
 - For the initial start of the portage system, publicize in regional newspapers bi-weekly for the first month, weekly for the next 2 months. (can be combined with river closure information)
 - For subsequent years of construction, publicize weekly for the months of April, May and June
 - Permanent posted notice at the Peace Island Park boat launch
 - Permanent posted notice at the Halfway river boat launch
 - Permanent posted notice at the Lynx Creek boat launch
 - Post portage information on the owner website, on a page related to the project

Existing Boat launches

13. During construction, the owner shall maintain access at all times to at least one boat launch at either Lynx Creek or Halfway River during the Highway 29 re-alignment construction until the flooding of the reservoir.

Risk Treatment – Control Measures

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Signage Technical Bulletin

Examples of signs



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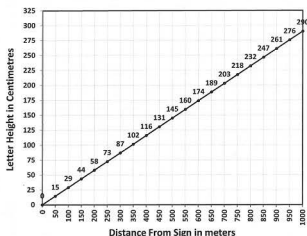
Risk Treatment – Control Measures

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Signage Technical Bulletin

Sizing of signs (pg. 4):

The size of the sign is determined by the letter size of the message text, which should be such that persons even with less than perfect eyesight can read it. Most provinces use 20/40 as the minimum vision standard for motor vehicle licensing. Given this standard in Canada for visual acuity, it is recommended that the height of a capital letter of message text be 0.29 centimetres for every meter of viewing distance:



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