

**PERMIT TO ALTER A BODY OF WATER**

Pursuant to the *Water Resources Act*, SNL 2002 cW-4.01, specifically Section(s) 48

Date: **OCTOBER 27, 2016**

File No: **536-09**  
Permit No: **ALT8925-2016**

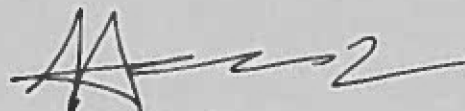
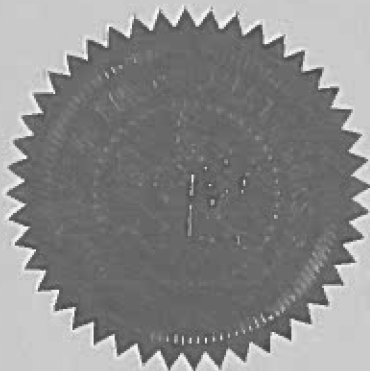
Permit Holder: **Newfoundland and Labrador Hydro**  
**500 Columbus Drive**  
**P.O. Box 12400**  
**St. John's, NL, A1B 4K7**

Attention: **Mr. Trevor Button**

Re: **Grand Falls Main Dam Rehabilitation**

Permission is hereby given for : **the rehabilitation of the Grand Falls Main Dam including removal of timber cribbing, partial demolition and recapping of the concrete spillway, installation of an new inflatable gate system on the spillway, and associated activities as detailed in the application received from NL Hydro on September 26, 2016 and additional information received on October 18, 2016.**

- This Permit does not release the Permit Holder from the obligation to obtain appropriate approvals from other concerned municipal, provincial and federal agencies.
- The Permit Holder must obtain the approval of the Crown Lands Administration Division if the project is being carried out on Crown Land.
- This Permit is subject to the terms and conditions indicated in Appendices A and B (attached).
- It should be noted that prior to any significant changes in the design or installation of the proposed works, or in event of changes in ownership or management of the project, an amendment to this Permit must be obtained from the Department of Environment and Climate Change under Section 49 of the *Water Resources Act*.
- Failure to comply with the terms and conditions will render this Permit null and void, place the Permit Holder and their agent (s) in violation of the *Water Resources Act* and make the Permit Holder responsible for taking any remedial measures as may be prescribed by this Department.



MINISTER

**APPENDIX A**  
**Terms and Conditions for Permit**

**Dam/Reservoir Design**

1. Reservoirs must be provided with a spillway of adequate capacity to safely discharge design flows at non-crosvive velocities without causing flooding of the reservoir or damage to the spillway or downstream channel.
2. Alteration of the natural minimum streamflow is not permitted in order to preserve aquatic life.
3. The dam and appurtenant structures shall be constructed at the following coordinates:

Name	Datum	Northing (m)	Easting (m)	Zone
Grand Falls Main Dam	NAD83	5420732.4	597318.5	21

4. The dam(s) must have the following dimensions:

Name	Height/Elev of Dam/Spillway (m)	Maximum Water Elevation (m)	Minimum Water Elevation (m)	Minimum Freeboard (m)
Grand Falls Main Dam	6/60.1 concrete crest, 61.6 with inflatable gate	63.1	87.0	0

5. To safely convey peak flows the dam(s) must be designed according to the following hydraulic criteria:

Name	Design Return Period (years)	Inflow Design Flood(m <sup>3</sup> /s)	Construction Design Flood (m <sup>3</sup> /s)
Grand Falls Main Dam	1000	2443	713

**General Alterations**

6. Any work that must be performed below the high water mark must be carried out during a period of low water levels.
7. Any flowing or standing water must be diverted around work sites so that work is carried out in the dry.
8. Water pumped from excavations or work areas, or any runoff or effluent directed out of work sites, must have silt and turbidity removed by settling ponds, filtration, or other suitable treatment before discharging to a body of water. Effluent discharged into receiving waters must comply with the *Environmental Control Water and Sewage Regulations, 2003*.
9. All operations must be carried out in a manner that prevents damage to land, vegetation, and watercourses, and which prevents pollution of bodies of water.
10. The use of heavy equipment in streams or bodies of water is not permitted. The operation of heavy equipment must be confined to dry stable areas.
11. All vehicles and equipment must be clean and in good repair, free of mud and oil, or other harmful substances that could

impair water quality.

12. During the construction of concrete components, formwork must be properly constructed to prevent any fresh concrete from entering a body of water. Dumping of concrete or washing of tools and equipment in any body of water is prohibited.
13. Wood preservatives such as penta, CCA or other such chemicals must not be applied to timber near a body of water. All treated wood or timber must be thoroughly dry before being brought to any work site and installed.
14. Any areas adversely affected by this project must be restored to a state that resembles local natural conditions. Further remedial measures to mitigate environmental impacts on water resources can and will be specified, if considered necessary in the opinion of this Department.
15. The bed, banks and floodplains of watercourses, or other vulnerable areas affected by this project, must be adequately protected from erosion by seeding, sodding or placing of rip-rap.
16. All waste materials resulting from this project must be disposed of at a site approved by the Department of Service NL.
17. Care must be taken to prevent spillage of pollutants into the water.
18. The owners of structures are responsible for any environmental damage resulting from dislodgement caused by wind, wave, ice action, or structural failure.
19. Sediment and erosion control measures must be installed before starting work. All control measures must be inspected regularly and any necessary repairs made if damage is discovered.
20. Fill material must be of good quality, free of fines or other substances including metals, organics, or chemicals that may be harmful to the receiving waters.
21. The attached Completion Report (Appendix C) for Permit No. 8925 must be completed and returned to this Department upon completion of the approved works. Pictures must be submitted along with the completion report, showing the project site prior to and after development.
22. This Permit is valid for three years from the date of issue. Construction work must be completed by that date or the application and approval procedure must be repeated. The following terms are valid for the life cycle of the structure: 25, 28, 29 and 40.
23. The location of the work is highlighted on the Location Map for this Permit attached as Appendix D.
24. All work must be carried out within the Permit Holder's legal property boundaries.

#### **Dam Safety**

25. The dam has been conditionally classified in the SIGNIFICANT Consequence category based on the 2007 Canadian Dam Association (CDA) guidelines. To meet the CDA's Dam Safety guidelines (Current Edition) for dams of this classification, the owner must:
  - Carry out a Dam Safety Review and submit a Dam Safety Report to this Department a maximum of every ten years,
  - Develop within one year of the issuance of this permit, and in consultation with this Department, an Operation, Maintenance and Surveillance (OMS) Manual for the operation of the dam.
  - Develop within two years of the issuance of this permit, and in consultation with this Department, an Emergency Preparedness and Response Plan, and
  - Carry out an annual Dam Safety Inspection and provide the results to this Department.

#### **Special Conditions**

26. The dam and associated works shall be designed according to the Canadian Dam Association Dam Safety Guidelines and associated Bulletins (most recent edition).
27. The dam and associated works must be designed and constructed under the direct supervision of an engineer eligible for membership with the Professional Engineers and Geoscientists of Newfoundland and Labrador who is able to demonstrate competence in the design, construction, and surveillance of dams.

28. The Permit Holder is required to adhere to the Memorandum of Agreement as set forth by the Department of Environment and Conservation. This agreement relates to the operation of hydrometric and climate stations for the Exploits River. The following monitoring stations must remain active for the life of the dam through the renewal of the Memorandum of Agreement with the Department of Environment and Conservation: Exploits River at Charlie Edwards Point (02YO018), Exploits River at Badger (02YO013), Exploits River Below Noel Pauls Brook (02YO011), Red Indian Lake at Indian Point (02YO017), Exploits River Near Millertown (02YO016), Lloyds River Below King George IV Lake (02YN002), and Exploits River at Badger East of Stadium - Weather Station (NLENCL0002). The Great Rattling Brook Above Tote River Confluence (02YO008) station, listed in the Memorandum of Agreement, is downstream of this dam and applies to monitoring requirements for the Bishop's Falls Dam also operated by the Permit Holder. The Department may require the setup of additional monitoring stations in the Memorandum of Agreement as per provisions of Section 31 of the Water Resources Act, SNL2002 Chapter W-4.01.
29. The following documents will be provided to this Department at this time or upon completion:
- Flood Risk and Vulnerability Analysis Report, 2012
  - Exploits River Flood Study (in progress)
  - Revised dam break flood inundation mapping (in progress)

#### **Dam Construction**

30. Laydown areas to be used for construction materials must be prepared by removing timber, brush, and slash. A minimum 30 meter buffer shall be maintained between any body of water and any laydown area for material used in construction.
31. Fill material must be obtained from an approved quarry site. It must not be taken from beaches or streams, and must not be dredged from a body of water.
32. Reservoir shorelines with moderately steep slopes or vulnerability to wave induced erosion, must be adequately protected with armour stone, rip-rap, or by other suitable measures.
33. The concrete spillway crest is to be demolished to an elevation of 58.9 m (phase 1) and 59.5 (phase 2 and 3). The existing concrete on the downstream slope of the spillway is to be removed until sound concrete is reached and aggregate is exposed to a minimum depth of 75 mm. The concrete spillway is to be resurfaced with a new 1.11 m (phase 1) and 0.6 m (phase 2 and 3) concrete overlay on the crest and following the shape of the existing downstream spillway profile. The exposed concrete spillway surface shall be cleaned using a combination of pressurized air and water prior to the concrete overlay. A cement slurry or bonding agent shall be applied prior to the concrete overlay.
34. The top 1.9 m section of the upstream timber crib portion of the dam shall be removed.
35. Rehabilitation work will be carried out in 3 phases to allow for the passage of water from the Exploits River. Concrete spillway demolition and rehabilitation will only occur in the identified phase area during that phase: phase 1- 0-9.5 m from the south bank fish ladder, phase 2- 9.5-132.46 m from the south bank fish ladder, phase 3- 132.46-254.96 m from the south bank fish ladder.
36. Where pumping is used to bypass flow, cofferdams must be installed both above and below areas of construction. The Permit Holder must provide pumps with sufficient capacity to prevent washout of cofferdams.
37. Cofferdams must be properly designed and constructed of suitable materials to prevent leakage and to resist loss of any material as a result of erosion. Cofferdams must be removed upon completion of their intended function. All material must be removed carefully to prevent disturbance of the water body and to prevent water quality degradation.
38. An inflatable gate system shall be installed on the new dam crest during each phase. Concrete piers 1 and 2 shall be constructed during phase 1. Pier 1 shall have a top elevation of 64.25 m and pier 2 shall have a top elevation of 63.3 m.
39. The transportation of labour and materials to the site must be along existing access roads.
40. The dam and spillway must be inspected regularly to identify any indications of structural failure, leaking, erosion or other problem so that immediate action can be taken to rectify the problem.
41. The work must meet the requirements of the Environmental Protection Plan (latest approved version) for the project.

**APPENDIX B**  
**Special Terms and Conditions for Permit**

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1. The Permit Holder and its agent(s), subcontractor(s), and consultant(s) shall keep all systems and works in good condition and repair and in accordance with all laws, by-laws, directions, rules and regulations of any governmental authority. The Permit Holder or its agent(s), subcontractor(s), or consultant(s) shall immediately notify the Minister if any problem arises which may threaten the structural stability of the systems and works, endanger public safety and/or the environment or adversely affect others and/or any body of water either in or outside the said Project areas. The Permit Holder and its agent(s), subcontractor(s), and consultant(s) shall be responsible for all damages suffered by the Minister and Government resulting from any defect in the systems and works, operational deficiencies/inadequacies, or structural failure.
2. The Permit Holder and its agent(s), subcontractor(s), and consultant(s) shall operate the said Project and its systems and works in a manner which does not cause any water related and/or environmental problems, including but not limited to problems of erosion, deposition, flooding, and deterioration of water quality and groundwater depletion, in or outside the said Project areas. The Permit Holder and its agent(s), subcontractor(s), and consultant(s) shall be responsible for any and all damages associated with these problems caused as a result of changes, deficiencies, and inadequacies in the operational procedures by the Permit Holder or its agent(s), subcontractor(s), or consultant(s).
3. If the Permit Holder or its agent(s), subcontractor(s), or consultant(s) fails to perform, fulfil, or observe any of the terms and conditions, or provisions of this Permit and/or Ministerial orders and guidelines, as determined by this Department, the Minister may, after providing ten (10) day notice to the Permit Holder, amend, modify, suspend or cancel this Permit in accordance with the *Water Resources Act*.
4. The Permit Holder and its agent(s), subcontractor(s), and consultant(s) indemnify and hold the Minister and Government harmless against any and all liabilities, losses, claims, demands, damages or expenses including legal expenses of any nature whatsoever whether arising in tort, contract, statute, trust or otherwise resulting directly or indirectly from granting this Permit, systems and works in or outside the said Project areas, or any act or omission of the Permit Holder or its agent(s), subcontractor(s), or consultant(s) in or outside the said Project areas, or arising out of a breach or non-performance of any of the terms and conditions, or provisions of this Permit by the Permit Holder or its agent(s), subcontractor(s), or consultant(s).
5. This Permit is subject to all provisions of the *Water Resources Act* and any regulations in effect either at the date of this Permit or hereafter made pursuant thereto or any other relevant legislation enacted by the Province of Newfoundland and Labrador in the future.
6. This Permit shall be construed and interpreted in accordance with the laws of the Province of Newfoundland and Labrador.

File No: 536-09  
Permit No: ALT8925-2016

- cc: Fisheries Protection Division  
Ecosystem Management Branch  
Fisheries and Oceans Canada  
P.O. Box 5667  
St. John's, NL A1C 5X1  
FPP-NL@dfo-mpo.gc.ca
- cc: File Copy for Binder
- cc: Ms. Paula Dawe, P.Eng.  
Manager, Drinking Water and Wastewater Section  
Water Resources Management Division  
Department of Environment and Climate Change  
P.O. Box 8700  
4th Floor, West Block, Confederation Building  
St. John's, NL A1L 4J6  
pauladawe@gov.nl.ca



**Appendix C - Completion Report**

Pursuant to the *Water Resources Act*, SNL 2002 cW-4.01, specifically Section(s) 48

Date: **OCTOBER 27, 2016**

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Permit No: ALT8925-2016

Permit Holder: **Newfoundland and Labrador Hydro  
500 Columbus Drive  
P.O. Box 12400  
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Attention: **Mr. Trevor Button**

Re: **Grand Falls Main Dam Rehabilitation**

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*I (the Permit Holder named above or agent authorized to represent the Permit Holder) do hereby certify that the project described above was completed in accordance with the plans and specifications submitted to the Department of Environment and Climate Change and that the work was carried out in strict compliance with the terms and conditions of the Permit issued for this project.*

Date: \_\_\_\_\_ Signature: \_\_\_\_\_

This completion report must be completed and forwarded to the following address upon completion of the approved work.

Department of Environment and Climate Change  
Water Resources Management Division  
PO Box 8700  
St. John's NL A1B 4J6

**APPENDIX D**  
**Location Map for Permit**

