

PERMIT TO ALTER A BODY OF WATER

Pursuant to the *Water Resources Act*, SNL 2002 cW-4.01, specifically Section(s) 39, 48

Date: **JULY 19, 2017**

File No: **524**
Permit No: **ALT9253-2017**

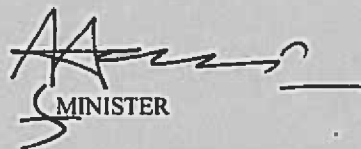
Permit Holder: **Town of Harbour Grace
PO Box 310
Harbour Grace NL A0A 2M0**

Attention: **Mr. Michael Saccary, Town Clerk**

Re: **Harbour Grace-Bannerman Lake Dam Upgrade**

Permission is hereby given for : the upgrading of the Town of Harbour Grace water supply dam at Bannerman Lake including reconstruction of the spillway, shoreline protection and associated appurtenances and activities as detailed in the application received from Harris & Associates on July 7, 2017.

- 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 Municipal Affairs and Environment 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-erosive velocities without causing flooding of the reservoir or damage to the spillway or section 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
Bannerman Lake Dam	NAD83	5283102.25	328908.13	22

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

Name	Height/Elev of Dam (m)	Elev of Spillway (m)	Maximum Water Elevation (m)	Minimum Water Elevation (m)	Minimum Freeboard (m)
Bannerman Lake Dam	3.55/67.9	66.6	67.8	66.6	0.1

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 ³ /s)
Bannerman Lake Dam	100	56.2

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. 9253 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 two years from the date of issue. 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 dam structure: 34, 37, 38.
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.

Water Supply Area

25. No fuels, chemicals, or other deleterious material shall be stored at the site.
26. The Permit Holder must take necessary measures to control dust that may impair the quality of any adjacent waterbody.
27. Equipment must not be serviced within the boundaries of protected watersheds.
28. The Permit Holder is hereby informed that if there is any change in water quality in a protected watershed resulting directly from the project which causes sufficient changes in physical, chemical or bacteriological composition to render the water within the protected watershed unsuitable as a public water supply, then the Permit Holder must ensure that an alternate source of potable water is provided to the citizens until water quality returns to an acceptable level.
29. All persons working on this project must be informed that they are within a Protected Public Water Supply Area, and must be made aware of all conditions of this Permit. A copy of this Permit must be on site during operations.
30. Liaison is to be maintained with the Regional Watershed Management Specialist for all activities within the PPWSA. If there are any problems, she may be reached at (709) 729-2603.
31. Fording is only permitted within the boundaries of Protected Water Supply Areas where conditions are conducive to fording (stable non-erodible stream channels, low approach grades etc.) and where fording sites are not in close proximity to water

supply intakes.

32. All vegetation removal within 100 metres of a body of water or within the Protected Water Supply Area for the Town of Harbour Grace must be carried out by hand operated equipment only.
33. A complete oil spill clean-up kit must be on site at all times when gasoline or fuel powered equipment is being used or refuelled. The kit must contain the following:
 - One hand operated fuel pump
 - One recovery container such an empty 205 litre drum
 - One shovel
 - One pick ax
 - Five metres of containment boom
 - Five absorbent pads
 - Twenty-five litres of loose absorbent material

Dam Safety

34. 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 within two years of the date of issue of this permit and every ten years after that,
 - Carry out an annual Dam Safety Inspection and provide the results to this Department,
 - Carry out dam operation, maintenance and surveillance operations in accordance with the OMS Manual and any recommendations of the most recent Dam Safety Review so that an acceptable level of the dam safety is ensured.

Special Conditions

35. The dam and associated works shall be designed according to the Canadian Dam Association Dam Safety Guidelines and associated Bulletins (most recent edition).
36. 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 (or equivalent Canadian organization) who is able to demonstrate competence in the design, construction, and surveillance of dams.
37. The Department of Environment and Conservation may require the set-up of water resources monitoring stations through a Memorandum of Agreement as per provisions of Section 31 of the Water Resources Act, SNL2002 Chapter W-4.01.
38. The Town of Harbour Grace must submit to this Department a dam safety review report of the drinking water supply dam within 2 years of the date of issue of this permit. Dam breach analysis and flood inundation mapping must be undertaken as part of this review to confirm the dam classification. Hydrotechnical analysis must be undertaken as part of this review to determine the adequacy of the dam design including assessment of the inflow design flood, spillway capacity, freeboard capacity and other relevant design factors.

Dam Construction

39. The top 300 mm of the existing concrete spillway shall be removed and resurfaced with a new 300 mm concrete overlay that will form the new spillway surface. The area between the new spillway and existing dam is to be filled with mass concrete. The new spillway shall be 300 mm thick concrete over select bedding material.
40. 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.
41. 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.
42. The area for the new concrete spillway will be excavated to the bottom of the footing. Any rock will be removed by hydraulic busting. Depressions or cracks will be leveled with mass concrete or filled with non-shrink grout.
43. The new spillway will be comprised of 5 evenly spaced buttresses with footings anchored into the solid bearing bedrock foundation.
44. The face of the existing dam and bedrock shall be thoroughly cleaned prior to the pouring of any new concrete. A bonding

agent shall be applied to the concrete overlay.

45. 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.
46. 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.
47. The area to be flooded by the reservoir must be prepared by removing timber, brush, and slash up to the maximum water elevation.
48. The transportation of labour and materials to the site must be along existing access roads.
49. Damage to the existing earthen embankment dam and rock retaining wall shall be minimized. Where required, the existing rock retaining wall and earthen embankment shall be reinstated. The earthen embankment shall be reinstated with 100 mm of topsoil and hydroseeded.
50. Existing river rocks D50=300 mm shall be reinstated at the toe of the spillway. The spillway side embankment shall be lined with a layer of D50= 500 mm rip rap for approximately 13 m downstream from the crest of the spillway.

GOVERNMENT OF NEWFOUNDLAND AND LABRADOR
Department of Municipal Affairs and Environment

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APPENDIX B
Special Terms and Conditions for Permit

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.

- cc: File Copy for Binder
- cc: Ms. Christa Ramsay (E)
Environmental Scientist, Drinking Water and Wastewater Section
Water Resources Management Division
Department of Municipal Affairs and Environment
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4th Floor, West Block, Confederation
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- cc: Ms. Paula Dawe, P.Eng.
Manager, Drinking Water and Wastewater Section
Water Resources Management Division
Department of Municipal Affairs and Environment
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- cc: Mr. Inayat Rehman, P.Eng.
District Engineer
Department of Municipal Affairs and Environment
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-
- cc: Mr. Robert Locke
Manager of Operations and Environmental Protection, GSC - Mount Pearl, Service NL
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- cc: Ms. Sharon Williams, Regional Manager
Environmental Health, GSC - Mount Pearl, Service NL
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- cc: Fisheries Protection Division
Ecosystem Management Branch
Fisheries and Oceans Canada
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Government of Newfoundland and Labrador
Department of Municipal Affairs and Environment
Water Resources Management Division

Appendix C - Completion Report

Pursuant to the *Water Resources Act*, SNL 2002 cW-4.01, specifically Section(s) 39, 48

Date: **JULY 19, 2017**

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Permit Holder: **Town of Harbour Grace
PO Box 310
Harbour Grace NL A0A 2M0**

Attention: **Mr. Michael Saccary, Town Clerk**

Re: **Harbour Grace-Bannerman Lake Dam Upgrade**

Permission was given for : **the upgrading of the Town of Harbour Grace water supply dam at Bannerman Lake including reconstruction of the spillway, shoreline protection and associated appurtenances and activities as detailed in the application received from Harris & Associates on July 7, 2017.**

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 Municipal Affairs and Environment 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 Municipal Affairs and Environment
Water Resources Management Division
PO Box 8700
St. John's NL A1B 4J6