

PERMIT TO OPERATE

Pursuant to the *Water Resources Act*, SNL 2002 cW-4.01, specifically Section(s) 38

Date: **APRIL 27, 2017**

File No: **844.125.002**

Permit No: **OP-W-9133-2017**

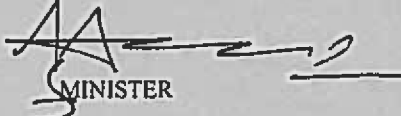
Permit Holder: **Town of Harbour Grace
PO Box 310
Harbour Grace NL A0A 2M0**

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

Re: **Harbour Grace - Permit to Operate - Drinking Water System**

For the operation of a: **Class I Water Treatment
Class II Water Distribution**

- This Permit is valid until there is a change in the classification of the water treatment or water distribution system as applicable, or as may be determined by this Department.
- This Permit does not release the Permit Holder from the obligation to obtain appropriate approvals from other concerned municipal, provincial and federal agencies.
- This Permit is subject to the terms and conditions indicated in Appendices A and B (attached).
- 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

DW- General

1. The Owner shall operate and maintain a drinking water system which shall include the following:
 - Bannerman Lake (Service Area-0332):
 - a. surface water supply from Bannerman Lake with two 500 mm cast iron intakes and screen house;
 - b. chlorine gas disinfection system;
 - c. booster pump stations located on Lady Lake Road, Alberta Drive and Mount Pleasant Road;
 - d. water distribution system including all appurtenances;
 - Riverhead (Service Area-0333):
 - a. groundwater source designated as Mercer's Road Well;
 - b. hypochlorination disinfection system;
 - c. a 7.5 m³ water storage tank located in the Mercer's Road well house;
 - d. water distribution system including all appurtenances;
 - Harbour Grace South (Service Area-0334):
 - a. groundwater source designated as Southside Wellfield;
 - b. hypochlorination disinfection system;
 - c. an arsenic removal system using ferric oxide media;
 - d. a 4.5 m³ and 8.3 m³ water storage tanks located at the Southside well house;
 - e. water distribution system including all appurtenances;
 - Thickett (Service Area-0335):
 - a. groundwater source designated as #1 Thickett Susie Galway Well;
 - b. hypochlorination disinfection system;
 - c. a 4.5 m³ water storage tank located in the #1 Thickett Susie Galway well house;
 - d. water distribution system including all appurtenances;
 - Thickett (Service Area-0336):
 - a. groundwater source designated as #2 Thickett New Well;
 - b. hypochlorination disinfection system;
 - c. an arsenic removal system using ferric oxide media;
 - d. a 4.5 m³ water storage tank located in the #2 Thickett New Well pumphouse;
 - e. water distribution system including all appurtenances.
2. The Owner shall operate the drinking water system in accordance with any applicable regulations, policy, guidelines, and this approval, or as may be directed by this Department. Water supplied to the consumer shall satisfy the requirements of the latest version of the *Guidelines for Drinking Water Quality in Newfoundland and Labrador*, and the *Standards for Bacteriological Quality of Drinking Water*.
3. The Owner shall ensure that all chemicals and materials used in the operation of the drinking water system that come into contact with water within the system shall meet all applicable standards set by both the American Water Works Association (AWWA) and the American National Standards Institute (ANSI) safety criteria standards NSF/60 or NSF/61.
4. The most current chemical and material product registration documentation from a testing institution accredited by either the Standards Council of Canada or by ANSI shall be available at all times for each chemical and material used in the operation of the drinking water system that comes into contact with water within the system.
5. The Owner shall practice a multi-barrier approach to protect the quality of drinking water from the source to the end of the water distribution system within the Owner's jurisdiction.
6. The Owner shall endeavour to take all necessary steps to ensure protection of the water supply sources from contamination. The operators must establish and maintain a regular inspection routine to monitor activities within the water supply areas.
7. The Owner shall ensure a copy of this Permit is kept in a conspicuous place so that it is available for reference by all persons responsible for all or part of the operation of the drinking water system.
8. The Owner shall maintain a sufficient inventory of spare parts for the most critical components of the drinking water system in order to keep downtime and disruptions to the system to a minimum. In particular, an adequate inventory of spare parts for the disinfection system must be maintained to ensure continuous disinfection.

9. The Owner shall develop and promote a water conservation program to reduce water demand on the drinking water system.
10. The Owner shall take preventative or corrective action as directed by this Department to address any identified deficiencies that may pose a risk to public health or the environment.

DW-Water Distribution

11. The Owner shall initiate a regular program for the inspection and cleaning of the source reservoir and intake screens as applicable.
 12. The Owner shall initiate a regular flushing program for the distribution systems. The systems should be flushed on an annual basis, at minimum, and more frequently as conditions warrant.
 13. The Owner shall initiate corrosion control measures if corrosion has been identified as an issue in the drinking water system.
 14. The Owner shall put in place a cross connection control program with ongoing testing and maintenance of cross connection control equipment. Special attention should be paid to existing and potential cross connections in the water distribution systems such as bleed lines into manholes, unprotected watering stations, commercial and industrial establishments, and private water supplies.
 15. The Owner shall ensure that repaired watermains are disinfected by an approved method such as described in the latest *Water Mains Standard for Disinfecting, C651* prepared by the American Water Works Association. The solution used for disinfecting water lines may not be discharged to a water course.
 16. Portable equipment must be provided for measuring chlorine residuals. The equipment shall have digital display readout, enable measurement of chlorine residuals to the nearest 0.02 mg/L, and shall be of a type approved by this Department.
 17. A minimum of two sites on each of the distribution systems must be checked for residual disinfectant (free chlorine, total chlorine) on a daily basis. The sites must be situated at or near the first consumer on the system, and near the end(s) of the system for each independent system operated by the Owner within the Owner's jurisdiction. Residual disinfectant level must be recorded for each site along with date, time, location, and the record signed off by the operator. Measurement of water temperature, pH, turbidity, flow and pressure would also be desirable as part of this monitoring.
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18. The Owner should establish an annual leak detection and repair program as a means to reduce unaccounted for water from the distribution systems.
 19. The Owner should establish a regular program for the inspection, exercising and maintenance of valves, hydrants and mechanical equipment according to manufacturer's recommendations.
 20. The Owner, in consultation with the Medical Officer of Health, should issue a Boil Water Advisory (BWA) if conditions with the drinking water system meet any of the standard reasons for issuing a BWA as established by the province.

DW-Disinfection

21. A summary of emergency procedures shall be posted outside the chlorine room(s).
22. The Owner shall monitor and document chlorine consumption on a daily basis at each chlorination facility.
23. Disinfection facilities should be kept at an adequate temperature to ensure the integrity of disinfection chemicals is not compromised.

DW-Water Treatment

24. The Owner shall only use the following chemicals in the treatment process, unless otherwise approved by this Department:
 - a. chlorine gas
 - b. sodium hypochlorite
25. The Owner shall ensure that access to the treatment facilities is maintained year-round.
26. The Owner shall ensure that the treatment facilities are reasonably secure from all unauthorized intrusions and shall maintain adequate security defences such as surveillance, adequate fencing and gates, and other measures as may be deemed necessary to prevent vandalism and unauthorized entry.
27. The Owner shall ensure the use of proper housekeeping techniques to keep the water treatment facilities clean. All functioning components and housing structures shall be kept in good repair and well maintained.
28. The Owner shall ensure that all backflow prevention devices that are in use in the water treatment facilities to prevent the backflow of

contaminants into the potable water system are installed, maintained and tested on a regular basis by a certified installer and tester.

DW-Tanks

29. The Owner shall ensure that water storage tanks put back into service after cleaning or repairs shall be disinfected by an approved method such as described in the standard *Disinfection of Water Storage Facilities C652* prepared by the American Water Works Association. The solution used for disinfecting may not be discharged to a water course.
30. The Owner shall monitor and record the operational conditions of the water storage tanks including the water level, time to fill/empty the tank, occurrence of overflows, occurrence of alarms, ice formation, and water quality in the tank as applicable. If necessary the Owner shall modify tank operating conditions in order to address any issues or optimize performance.
31. The Owner shall establish a preventative maintenance program for all water storage tanks outlining the frequency, procedures and maintenance of records for tank inspections. Routine tank inspections shall occur weekly, periodic inspections annually, and comprehensive inspections including tank cleaning at least every 5 years. Inspections shall assess tank sanitary, structural, safety, coatings and security conditions.

DW-Operators

32. There shall be a person or persons designated by the Owner with the overall authority for the operation and maintenance of the water treatment facility(ies) and water distribution system, respectively, the Operator in Direct Responsible Charge.
33. Sufficient staffing of Operators must be provided to carry out daily operation and maintenance activities on the drinking water system to ensure reliable operation of the system.
34. The Operator(s) in Direct Responsible Charge of the water distribution system is required to Class II Water Distribution Operator Certification status. Other subordinate Operators are required to have Class II Water Distribution Operator Certification status. These required levels of certification must be achieved at the earliest possible opportunity, if not already achieved, not to exceed 4 years from the date of issue of this Permit. Certification must be achieved in accordance with the Operator education and experience requirements of the *Policy for Newfoundland and Labrador Water and Wastewater Operator Certification Program*. All Operators shall be permitted to certify to one level above that of the water distribution system they operate.
35. All Operator(s) of the water treatment facilities (arsenic removal systems) are eligible to have Class I Water Treatment Operator Certification status. Certification must be achieved in accordance with the Operator education and experience requirements of the *Policy for Newfoundland and Labrador Water and Wastewater Operator Certification Program*.
36. Operators must receive a minimum of 24 hours of related training per year. The Owner shall ensure that Operators participate in training opportunities as they arise in order to meet this requirement.
37. Contractors who do work on the drinking water system on behalf of the Owner shall do so under the supervision of the Operator in Direct Responsible Charge and be trained in the particular aspect of the operation and maintenance that they have been contracted to do.

DW-Monitoring/Records/Reports

38. The Owner shall notify this Department prior to implementing significant changes to any process that may adversely affect the quality and/or quantity of the finished water.
39. The Owner shall establish a maintenance and operation program that includes the following:
 - The Owner shall develop a Maintenance Assurance Manual (MAM) for their drinking water system as required by this Department.
 - The Owner shall compile and maintain an up to date operations manual that is made available for reference by all persons responsible for all or part of the operation of the drinking water system. The manual must include manufacturer's information on all components of the system including supplier, contact information, specification information, shop drawings, model and serial numbers, date installed or date put into service, length of service, and parts inventory.
 - A maintenance schedule must be maintained for task specific items to be completed on a daily, weekly, monthly, and annual basis as may be applicable for the drinking water system.
 - An operator's daily log must be kept of items pertaining to the operation and maintenance of the drinking water system. All manual records should include date and time of record and the operator's signature.
40. The Owner shall ensure the continuous measurement and recording of:
 - a. Flow rates of water conveyed into individual treatment systems and trains, and the daily volumes of water conveyed into the individual treatment systems.
 - b. Flow rates and daily volumes of water conveyed to the distribution systems from each treatment system that has a separate line feeding the distribution system.
 - c. Pressure at critical points in the distribution system, as applicable.
41. The Owner shall ensure that monitoring of raw and finished water quality (turbidity, pH, temperature, conductivity, aluminium

residual, UVA/UVT, TOC, chlorine residual, etc.) is undertaken to ensure efficient operation of the water treatment plant.

42. The Owner shall maintain complete up to date digital and/or paper as-built drawings of the drinking water system including all major infrastructure components, process flow diagrams (PFDs), and process and instrumentation diagrams (P&IDs).
 43. The Owner shall ensure that all process control monitoring instruments (including flow measuring devices, pressure sensors, level indicators, and water quality sensors) are maintained, calibrated and replaced in accordance with manufacturer's recommendations.
 44. The Owner shall immediately report any major problems or malfunctions to the Environmental Scientist by telephone at (709) 729-2558 or by email at: waterandsewer@gov.nl.ca. A written report shall be submitted within seven days to this Department.
 45. The Owner shall notify consumers at the earliest possible time of malfunctions in the system. The Owner shall also provide advance notice of any planned disruptions for maintenance and repair, upgrading, and flushing, including anticipated duration and any other relevant information. The nature of the circumstance that will result in water quality deterioration must also be communicated to other concerned Departments, as applicable, including the Department of Health and Community Services, and Service NL.
 46. The Owner shall establish procedures for receiving and responding to complaints including a reporting system which records what steps were taken to determine the cause of complaint and the corrective measures taken to alleviate the cause and prevent its reoccurrence.
 47. The Owner shall produce an annual summary report documenting the operation and maintenance of the drinking water system, including as a minimum: daily water production, daily disinfectant residuals, amount of chemicals used, and any issues experienced with the distribution system (heavy rainfall, major leaks, water shortages, algae blooms, beavers in the water source, shutdown of water treatment equipment, etc.).
 48. Any information requested by officials from this Department concerning the drinking water system and its operation under this Permit, including but not limited to any records required to be kept by this permit, shall be provided upon request.
 49. The Owner shall retain all records required by or created in accordance with this approval for a minimum of 5 years from the date of their creation.
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50. The Owner shall establish long and short term plans for the sustainable operation of the drinking water system. Planning shall incorporate sound fiscal planning for all operational aspects of the system including general maintenance and operation, emergencies, operator training and continuing education, and capital fiscal planning for upgrading, expansion, and replacement.

DW-Safety & Emergencies

51. The Owner shall ensure that all self-contained breathing apparatuses (SCBAs) are maintained as per the latest version of the CSA Standard for the *Selection, Use and Care of Respirators*. Air cylinders which have not been used in any 3-6 month period should be slowly depressurized and recharged with clean, dry, respirable air. The designated system operators must be trained in the use of the breathing apparatus.
52. The Owner shall ensure that all eye wash stations and emergency showers adhere to the latest edition of the ANSI Z358.1 standard and to the requirements of the applicable Materials Safety Data Sheet(s) (MSDS). Portable stations shall be checked regularly and the solutions replaced as required. Permanent stations should be flushed regularly to ensure an adequate and clean supply of potable water.
53. Operation of the drinking water system shall be conducted in accordance with the requirements of the *Occupational Health and Safety Act* and its regulations for the safety of operators and the general public. All safety requirements (handrails, guards, walkways, gas detectors, alarms, first aid equipment, emergency lighting, etc.) with respect to operation and maintenance of the drinking water system must be met.
54. The Owner shall ensure that operators are provided with all the safety clothing, equipment and training required to carry out hazardous activities. Hazards may include contact with sewage, dangerous chemicals and physical hazards such as confined space entry, climbing water storage tanks, buried power hazards, traffic, trenches, heights, etc. Servicing of all safety equipment must be undertaken according to the manufacturer's recommendations.
55. The Owner shall provide operators with access to suitable facilities for hand washing and cleaning, and shall provide disinfecting soap and cleaning products and services as may be necessary.
56. The Owner shall ensure that all used oil products and other related hazardous wastes generated by the machinery used in the operation of the drinking water system are collected and disposed of in an approved manner. The regional office of Service NL shall be contacted in this regard.
57. Emergency warning devices must be checked and exercised on a regular basis to ensure that all systems are operating and functioning

properly. In particular, chlorine gas detectors should be tested on a monthly basis and calibrated every 6 months. A log shall be maintained to record the details of emergency warning device maintenance activity.

58. Contingency and emergency response plans must be established for all foreseeable what if scenarios such as extensive fire demand, main line breaks, contamination problems, or the SCADA system is hacked. Plans must include notification of all water system users. The Owner shall ensure that adequate equipment and material are available for dealing with emergencies, upset conditions and equipment breakdowns.
59. WHMIS and MSDS information will be kept on site where any chemicals are used in the operation of the drinking water system.

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: Ms. Deneen Spracklin, P.Eng.
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