

## PERMIT TO CONSTRUCT

Pursuant to the *Water Resources Act*, SNL 2002 cW-4.01, specifically Section(s) 36, 37, 48

Date: **AUGUST 17, 2021**

File No: **844.097.016.8**  
Permit No: **WS11948-2021**

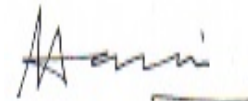
Permit Holder: **City of St. John's  
P.O. Box 908  
10 New Gower St.  
St. John's NL A1C 5M2  
jhunt@stjohns.ca**

Attention: **Jamie Hunt**

Re: **St. John's - Goulds Servicing Phase 2 Sanitary Sewer Trunk Extension**

Permission is hereby given for : **the installation of approximately 2300 m of 600 mm PVC sanitary sewer, 72 m of 750 mm PVC sanitary sewer, 70 m of 250 mm PVC sanitary sewer, 695 m of 300 mm PVC watermain and related appurtenances, replacement and relocation of 1-1800mm culvert, and diversion of an approximately 65 metre channel in the designated floodplain as described in the drawings titled, "St. John's Goulds Servicing (Phase 2) Sanitary Trunk Sewer Extension" as received from Pinnacle Engineering Limited on May 27, 2021.**

- 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*.




(for) MINISTER

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

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**Water & Sewer General**

1. 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*.
2. 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.
3. 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.
4. All waste materials resulting from this project must be disposed of at a site approved by the Department of Digital Government and Service NL.
5. The works proposed must satisfy the requirements of the latest applicable codes and standards, and be consistent with or otherwise address the design criteria set out in this Department's publication *Guidelines for the Design, Construction, and Operation of Water and Sewerage Systems, 2005*, and as amended from time to time.
6. The work must be undertaken in strict compliance with the submitted documents and the latest version of the *Municipal Water, Sewer and Roads Master Construction Specifications*. A copy of all documents, including the *Municipal Water, Sewer and Roads Master Construction Specifications* must be available for viewing at the construction site office at all times.
7. Liaison is to be maintained with the Environmental Scientist representing the Drinking Water and Wastewater Section of this Department, during the construction and operation of the project. They shall be notified of the pre-construction and post-construction meetings so that they may attend, if deemed necessary. They can be reached at telephone (709)729-2558 .
8. Officials of this Department may visit the project from time to time to ensure that work is carried out within the provisions of this Permit, and is not creating any environmental hazard.
9. Any changes in the approved works, or works other than those specified in the application, must be submitted, in writing, to this Department, and approved, in the form of an Amendment to this Permit, prior to any work.
10. Copies of this Permit, as well as any subsequent Amendments, must be provided to the contractor(s) who will be carrying out these works, and to the engineer's site representative.
11. The attached Completion Report (Appendix C) for Permit No. 11948 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.
12. 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.

13. The drinking water and wastewater system shall be operated and maintained in accordance with the Permit to Operate issued by this Department.
14. Management of stormwater is the responsibility of the municipality or LSD. Stormwater management should focus on ensuring that the post-development stormwater runoff rate will be equal to or less than the pre-development runoff rate. Any stormwater runoff has the potential to contribute to flooding downstream which may have liability issues for the municipality or LSD if not managed properly.
15. The Owner must update any drawings maintained of the drinking water or wastewater system to reflect the modification or replacement of the works, where applicable.

### **Water Systems**

16. Wherever possible, water distribution system layouts should be designed to eliminate dead-end sections. Where dead-end mains cannot be avoided, they should be provided with a fire hydrant, blow off, or other acceptable measures taken to prevent problems associated with stagnation.
17. Under no circumstances shall sewage be permitted to enter the waterline trench during or after construction.
18. All new waterlines and appurtenances shall be hydrostatically tested in accordance with the *Municipal Water, Sewer and Roads Specifications*.
19. All components, lubricants and chemicals provided shall be compatible for use with drinking water and shall meet the requirements of ANSI/NSF 60 Drinking Water Treatment Chemical Standard and ANSI/NSF 61 Drinking Water and System Component Standard and any other standard applicable to potable water.
20. Backflow prevention devices should/must be installed on service connections where there is a high risk of contamination of the potable water supply.
21. Buildings or homes to be connected to this system must have their private supplies permanently disconnected so as not to create a cross-connection with the town's water distribution system.
22. All new lines and appurtenances must be disinfected by an approved method described in the latest edition of the AWWA C651 Standard for Disinfecting Watermains and using only chlorine products that meet the NSF 60 standard.
23. After final flushing and before the new water main is commissioned into service, bacteriological sampling must be conducted as per the latest edition of the AWWA C651 Standard for Disinfecting Watermains. Two acceptable options are available: (1) two consecutive sets of bacteriological samples, taken at least 16 hours apart, must be collected and tested for bacteriological quality, or (2) following a 16 hour rest period two consecutive sets of samples, taken 15 minutes apart, must be collected and tested for bacteriological quality. Sets of samples shall be collected for every 366 m of new water main including the end of the main line and the end of each branch line. These sampling locations shall be determined by the engineer. **A copy of test results must be submitted to this Department (Water Resources Management Division) before the new watermain is placed into service.** In the event of any bacteria detected in the sample results, flushing and re-sampling may be attempted or the disinfection process will need to be repeated until results for two consecutive sets of samples are bacteria free. Where necessary, this Department should be contacted to determine provisions for the disposal of heavily chlorinated water.
24. For the purpose of disinfecting new or upgraded watermains, connection may only be made to the existing watermain provided a valve is installed that maintains a water tight seal. This valve may be operated to flush the new water extension before disinfection and post disinfection provided adequate measures and procedures are followed to avoid a backflow and contamination of the existing system.

25. The existing watermain that is being taken out of service must be permanently disconnected so as not to create a cross-connection with the town's water distribution system.

### **Sewer Systems**

26. Safety landings to be installed in all manholes over 5m in depth and in accordance with the Municipal Master Specification.
27. Storm water drainage, including roof drains, weeping tile drains, and street drainage, shall not be connected to the sanitary sewer system.
28. In the event that private or existing sewer lines are disturbed during construction, the lines are to be restored to their original *working* condition. Care shall be taken to ensure that soil or other material does not enter the lines to cause blockage.
29. The flow channel through manholes should be made to conform in shape and slope to that of the sanitary sewer.
30. The direct connection of sanitary sewer service lines to manholes is prohibited unless the service enters at the flow line of the manhole. In this instance, filleting must be provided to prevent solids deposition.
31. All sanitary sewers shall be laid or covered with sufficient depth of suitable material to prevent frost penetration and damage from traffic loading.
32. Where storm sewer and sanitary sewer service laterals are extended to property boundaries for future connections, the stub ends must be clearly marked to identify storm and sanitary lines to prevent possible cross-connections.

### **Water & Sewer Installation**

33. Where the horizontal separation between watermains (including hydrant leads and drains) and gravity sanitary sewers is less than 3.0 metres, the watermain shall be laid in a separate trench, or on an undisturbed earth shelf located on one side of the sanitary sewer and at such an elevation that the invert of the watermain shall be a minimum of 450 mm above the crown of the sanitary sewer and 300 mm horizontally from the sanitary sewer measured edge to edge.
34. Watermains (including hydrant leads) crossing gravity sanitary sewers should be laid to provide a minimum vertical distance of 450 mm between the outside of the watermain and the outside of the sanitary sewer. This should be the case where the watermain is either above or below the sanitary sewer with preference to the watermain located above the sanitary sewer. At crossings, above or below, one full length of water pipe shall be located so both joints will be as far from the sanitary sewer as possible. Special structural support for the water and/or sewer pipes may be required.

### **Culvert Design**

35. A 12.7 metres long - 1800mm diameter concrete culvert may be installed across the Killbride Brook in the City of St. John's.
36. The crossing structure must provide adequate capacity to safely discharge flood flows without causing backwater effects upstream or increased flow velocity downstream.

37. To safely convey peak flows the culvert installations must be designed according to the following hydraulic criteria:

| <b>Crossing Name / No.</b>                      | <b>Design Return Period (years)</b> | <b>Design Flow (m<sup>3</sup>/s)</b> | <b>Minimum Size (mm)</b> | <b>Number of Pipes</b> | <b>Length (m)</b> |
|---|-------------------------------------|--------------------------------------|--------------------------|------------------------|-------------------|
| <b>381 Bay Bulls Road Culvert in St. John's</b> | <b>100</b>                          | <b>3.20</b>                          | <b>1800</b>              | <b>1</b>               | <b>12.7</b>       |

### **Culvert Installation**

38. Drainage ditches must collect and transport surface runoff in a manner that does not cause flooding, erosion or sedimentation of adjacent land or receiving waters.
39. Inlet and outlet areas of culvert installations must be adequately protected from erosion by placing rip-rap, fitted stone, or concrete headwalls.
40. Culvert installations must follow the stream channel gradient to the maximum extent possible and placed in line with the direction of the main flow to minimize disturbance to the channel. Culverts must not disrupt the flow of water or cause ponding at the upstream side of the installation.
41. In multiple culvert installations, one culvert must be set a minimum of 150 mm lower than the others to provide adequate water depth and velocity for fish passage during low flow conditions. In addition, multiple culverts must be installed within 0.6 to 0.9 metres apart for maximum stability.
42. 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.
43. All work involving minor alteration to the stream channel to permit culvert placement must be carried out at a time of low flow, and in a manner that prevents downstream siltation and unnecessary alteration of the channel.
44. Grading and finishing of roadways or road embankments must not cause damage to culverts or allow road material to enter the watercourse.
45. Roadside embankments near the watercourse must be adequately protected from erosion by sodding, seeding or placing of rip-rap.
46. Culverts must be inspected regularly so that immediate action can be taken to clear blockages caused by ice or debris or to undertake repairs as required.
47. The inlet and outlet of culverts must be clearly marked so that operators of road grading and snow clearing equipment can avoid blocking culverts.
48. Any damage to culverts during installation or due to inadequate capacity and/or improper construction must be reported to this Department. Damaged culverts must be replaced immediately to prevent overtopping, erosion, or flooding.
49. If a culvert is installed in natural fish habitat it must be embedded a minimum of 150 mm below the natural streambed (up to a maximum of 1/3 of the culvert diameter).

### Stream Diversion Design

50. An approximately 65 metres long permanent diversion channel may be excavated to carry the waters of Killbride Brook within the proponent's legal property boundaries.
51. The new channel must provide adequate capacity to safely discharge flood flows at a velocity no greater than that which would occur in the natural channel.
52. A minimum freeboard of 0.5 metres must be provided between the design high water level and the top of the channel bank to prevent overtopping.
53. The stream diversion must have the following dimensions:

| <b>Bottom Width (m)</b> | <b>Depth of Channel (m)</b> | <b>Bank Slope (H:V)</b> | <b>Flow Area (m<sup>2</sup>)</b> | <b>Bed Slope (%)</b> |
|-------------------------|-----------------------------|-------------------------|----------------------------------|----------------------|
| <b>1.0</b>              | <b>0.8</b>                  | <b>2:1</b>              | <b>2.08</b>                      | <b>0.74-1.50</b>     |

54. To safely convey peak flows, the stream diversion must be designed according to the following hydraulic criteria:

| <b>Design Return Period (years)</b> | <b>Maximum Flow Capacity (m<sup>3</sup>/s)</b> | <b>Maximum Flow Velocity (m/s)</b> |
|-------------------------------------|--|------------------------------------|
| <b>100</b>                          | <b>3.20</b>                                    | <b>1.73</b>                        |

### Stream Diversion Construction

55. Alteration of the natural minimum streamflow is not permitted in order to preserve aquatic life.
56. The old channel must be closed to all flow of water. The fill or structure diverting flows into the new channel must be adequately protected from erosion.
57. The toe of the stream bank must be stabilized with fitted rock. The bank must be covered with an adequate layer of topsoil and seeded or sodded. The channel bed must be stabilized with a layer of clean gravel to resemble natural stream conditions.
58. 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.
59. The new channel must be excavated in the dry beginning from the downstream end.
60. Flow must not be diverted into the new channel until all excavation, lining and bank stabilization work has been completed. Water from the old channel must be diverted into the new channel gradually. The channel must be monitored visually for any indications of excessive erosion or other problems.
61. The channel, including any areas up to the high water mark, must be kept free of all excavated or unused construction materials at all times.
62. The channel must be inspected regularly and maintained to ensure that there is no erosion of the channel. Any debris causing a blockage must be removed when necessary.

63. A water quality monitoring program is not required at this time. However, the Department reserves the right to require that the Permit Holder sample, analyse, and submit results of water quality tests, for the purpose of ensuring that the water quality is maintained within acceptable guidelines. All analyses must be undertaken by a CALA accredited laboratory.
64. All work must be carried out within the Permit Holder's legal property boundaries.

### **Flood Zone Development**

65. The proposed culvert relocation/replacement and channel diversion works are within the designated floodplain of Killbride Brook for the City of St. John's. This development, and future development at the site, must comply with this Department's policy directive for *Flood Plain Management W.R. 96-1*.
66. Fill may be placed on the lot only to the extent required for flood protection.
67. Any further development in the flood zone area not specifically covered by this permit will require a separate permit from this Division under Section 48 of the *Water Resources Act*.
68. The proposed use of the facility and site will not involve any storage of pollutants such as fuels, chemicals, pesticides, etc.
69. The structure will not interfere with the flow of water or displace water such that it creates a worse flooding situation for other properties.

### **General Alterations**

70. Any work that must be performed below the high water mark must be carried out during a period of low water levels.
71. Any flowing or standing water must be diverted around work sites so that work is carried out in the dry.
72. 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.
73. 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.
74. 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.
75. 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.
76. 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.
77. Periodic maintenance such as painting, resurfacing, clearing of debris, or minor repairs, must be carried out without causing any physical disruption of any watercourse. Care must be taken to prevent spillage of pollutants into the water.
78. The owners of structures are responsible for any environmental damage resulting from dislodgement caused by wind, wave, ice action, or structural failure.

79. 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.
80. 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.
81. The location of the work is highlighted on the Location Map for this Permit attached as Appendix D.



**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, as determined by this Department, the Minister may, without notice, 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: Trevor Moore, P.Eng  
Pinnacle Engineering Limited  
40 Aberdeen Avenue, Suite 202,  
St. John's, NL  
A1A 5T3  
trevor.moore@pinnacleengineering.ca
- cc: Amir Ali Khan, Ph.D., P.Eng.  
Manager, Water Rights, Investigations and Modelling 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 A1B 4J6  
akhan@gov.nl.ca
- cc: Ms. Deneen Spracklin, P.Eng.  
Environmental Engineer, Drinking Water and Wastewater Section  
Water Resources Management Division  
Department of Environment, Climate Change and Municipalities  
P.O. Box 8700  
4th Floor, West Block, Confederation Building  
St. John's, NL A1B 4J6  
dspracklin@gov.nl.ca
- cc: Eastern Lands Office  
Fisheries & Land Resources  
P.O. Box 8700  
Howley Building, Higgins Line  
St. John's NL A1B 4J6  
easternlandsoffice@gov.nl.ca
- cc: Ms. Sharon Metcalfe (Avalon - Eastern)  
Manager of Operations  
Digital Government and Service NL  
PO Box 8700  
St. John's NL A1B 4J6  
smetcalfe@gov.nl.ca
- 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

### Appendix C - Completion Report

Pursuant to the *Water Resources Act*, SNL 2002 cW-4.01, specifically Section(s) 36, 37, 48

Date: **AUGUST 17, 2021**

File No: **844.097.016.8**  
Permit No: **WS11948-2021**

Permit Holder: **City of St. John's  
P.O. Box 908  
10 New Gower St.  
St. John's NL A1C 5M2  
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Attention: **Jamie Hunt**

Re: **St. John's - Goulds Servicing Phase 2 Sanitary Sewer Trunk Extension**

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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**

Killbride Brook Floodplain, a tributary to Waterford River  
Culvert relocation and stream diversion for Goulds Servicing Phase 2 Project

