

PERMIT TO CONSTRUCT

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

Date: MAY 31, 2018

File No: 844.097.246

Permit No: WS9575-2018

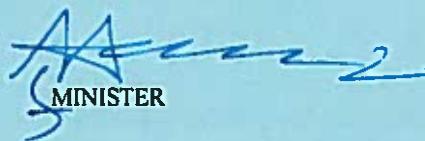
Permit Holder: H3 Development Ltd.
85 Kenmount Road
St. John's NL A1B 3N7

Attention: Mr. Bert Hickman

Re: St. John's - H3 Development West Site Services and Detention Pond Dam

Permission is hereby given for : the construction of a new earthfill dam for the creation of a stormwater detention pond, the installation of approximately 1210 m of 300 mm PVC watermain, 210 m of 300 mm PVC sanitary sewer, 960 m of 200 mm PVC sanitary sewer and related appurtenances and activities to develop 28 commercial lots as described in the drawings titled, "H3 Development West Drainage Area Site Services" as received from Progressive Engineering & Consulting Inc. on February 28, 2018 and May 16, 2018.

- 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

GOVERNMENT OF NEWFOUNDLAND AND LABRADOR
Department of Municipal Affairs and Environment

File No: 844.097.246
Permit No: WS9575-2018

APPENDIX A
Terms and Conditions for Permit

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 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 the Department of Municipal Affairs and Environment 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. 9575 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. The following terms are valid for the life cycle of the dam structure: 49, 52 and 65.
13. Management of stormwater is the responsibility of the city, 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 city, municipality or LSD if not managed properly.
14. The Permit holder 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

15. 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.

16. Under no circumstances shall sewage be permitted to enter the waterline trench during or after construction.
17. All new waterlines and appurtenances shall be hydrostatically tested in accordance with the *Municipal Water, Sewer and Roads Specifications*.
18. 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.
19. Backflow prevention devices should/must be installed on service connections where there is a high risk of contamination of the potable water supply.
20. 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.
21. 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.
22. 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.
23. Additional water services resulting from this project will not adversely affect the distribution system's ability to maintain a minimum pressure of 140 kPa (20 psi) at ground level at all points in the distribution system under maximum day demand plus fire flow conditions.

Sewer Systems

24. Storm water drainage, including roof drains, weeping tile drains, and street drainage, shall not be connected to the sanitary sewer system.
25. 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.
26. The flow channel through manholes should be made to conform in shape and slope to that of the sanitary sewer.
27. 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.
28. All sanitary sewers shall be laid or covered with sufficient depth of suitable material to prevent frost penetration and damage from traffic loading.
29. 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.

Miscellaneous

30. The Permit Holder must prevent erosion of drainage ditches, streams or other natural bodies of water by installing rip-rap and/or sodding.

Water & Sewer Installation

31. 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.

32. Watermain (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.

Dam/Reservoir Design

33. Reservoirs must be provided with an outlet control structure of adequate capacity to safely discharge design flows at non-erosive velocities without causing flooding of the reservoir or damage to the outlet control structure or downstream channel.
34. The dam and appurtenant structures shall be constructed at the following coordinates:

Name	Datum	Northing (m)	Easting (m)	Zone
H3 West Detention Pond Dam	NAD83	5266495.5	363235.59	22

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

Name	Height/Elev of Dam (m)	Elev of Spillway/Outlet (m)	Maximum Water Elevation (m)	Minimum Water Elevation (m)	Minimum Freeboard (m)
H3 West Detention Pond Dam	2.45/192.35-194.3	191.9	191.9	189.9	0.45

36. 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 (m³/s)
H3 West Detention Pond Dam	100	1.5

General Alterations

37. Any work that must be performed below the high water mark must be carried out during a period of low water levels.
38. Any flowing or standing water must be diverted around work sites so that work is carried out in the dry.
39. 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.
40. 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.
41. 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.
42. 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.
43. 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.

44. Care must be taken to prevent spillage of pollutants into the water.
45. The owners of structures are responsible for any environmental damage resulting from dislodgement caused by wind, wave, ice action, or structural failure.
46. 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.
47. 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.
48. The location of the work is highlighted on the Location Map for this Permit attached as Appendix D.

Dam Safety

49. The dam has been conditionally identified as a very small dam. However, the consequences of failure of the dam should be reviewed periodically, since they may change with downstream development. If the consequences of dam operation or failure are likely to be unacceptable to the public the dam may be classified based on the 2007 Canadian Dam Association (CDA) guidelines and have to meet CDA best practice for that class of dam.

Special Conditions

50. The dam and associated works shall be designed according to best practice.
51. 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.
52. The dam shall be inspected after construction and one year after construction for any indications of foundation or embankment settlement. The inspections shall be completed by a qualified geotechnical engineer. Placement of additional fill material may be required if settlement occurs to ensure design freeboard is maintained.
53. The detention pond must be designed such that detained water has sufficient retention time to mimic natural flow conditions if the catchment area had remained undeveloped.
54. The storage volume of the detention pond shall not be greater than 16,800 cubic meters at the maximum design water level. The detention pond shall consist of three cells of varying capacity.
55. The stormwater detention pond shall have a design return period of 100 years.
56. The stormwater detention pond must provide enough storage for any captured sediment.

Dam Construction

57. A 1.0 m wide 0.6 m deep impervious cutoff trench must be constructed beneath the earthfill dam from the original ground level into undisturbed native material. The cutoff trench will be part of the glacial till dam core running through the center of the dam. The till core height will be approximately 2 m.
58. 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.
59. 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. The upstream and downstream slopes of the embankment dam shall be covered with 100 mm of topsoil and hydroseeded. The bottom of the reservoir shall be lined with armour stone with a D50 of 100-150 mm.
60. The finished upstream sides of the earthen dam structures shall have a minimum slope of 2 horizontal to 1 vertical. The finished downstream sides of the earthen dam structures shall have a minimum slope of 2 horizontal to 1 vertical.
61. The dam shall be constructed with an outlet control structure consisting of a 300 mm diameter pipe with an invert elevation of 189.9 m, a 520 mm diameter pipe with an invert elevation of 190.9 m, and an emergency overflow with an invert of 191.9 m.
62. Embankment dam and outlet control structure foundations shall be prepared to ensure a clean, stable, competent foundation.

Exposed foundations will be inspected and approved by a qualified geotechnical engineer prior to fill placement.

63. The area to be flooded by the reservoir must be prepared by removing timber, brush, and slash up to the maximum water elevation.
64. The transportation of labour and materials to the site must be along existing access roads.
65. The dam and outlet control structures 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.

GOVERNMENT OF NEWFOUNDLAND AND LABRADOR
Department of Municipal Affairs and Environment

File No: **844.097.246**
Permit No: **WS9575-2018**

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.
Environmental Engineer, Drinking Water and Wastewater Section
Water Resources Management Division
Department of Municipal Affairs and Environment
P.O. Box 8700
4th Floor, West Block, Confederation Building
St. John's, NL A1B 4J6
dspracklin@gov.nl.ca
- cc: Ms. Paula Dawe, P.Eng.
Manager, Drinking Water and Wastewater Section
Water Resources Management Division
Department of Municipal Affairs and Environment
P.O. Box 8700
4th Floor, West Block, Confederation Building
St. John's, NL A1L 4J6
pauladawe@gov.nl.ca
- cc: Ms. Sharon Williams, Regional Manager
Environmental Health, GSC - Mount Pearl, Service NL
P.O. Box 8700
St. John's, NL A1B 4J6
williams@gov.nl.ca
- cc: City of St. John's
Jason Sinyard, P.Eng.
Director of Planning & Development
P.O. Box 908
St. John's, NL A1C 5M2
planning@stjohns.ca
- cc: File Copy for Binder
- cc: Mr. Jon Pawson, P.Tech.
Progressive Engineering & Consulting Inc.
Suite 203, Center Unit, Rear Entrance
1243 Kenmount Road
Paradise, NL A1L 0V8
jon@pec-eng.ca

Appendix C - Completion Report

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

Date: **MAY 31, 2018**

File No: **844.097.246**
Permit No: **WS9575-2018**

Permit Holder: **H3 Development Ltd.
85 Kenmount Road
St. John's NL A1B 3N7**

Attention: **Mr. Bert Hickman**

Re: **St. John's - H3 Development West Site Services and Detention Pond Dam**

Permission was given for : the construction of a new earthfill dam for the creation of a stormwater detention pond, the installation of approximately 1210 m of 300 mm PVC watermain, 210 m of 300 mm PVC sanitary sewer, 960 m of 200 mm PVC sanitary sewer and related appurtenances and activities to develop 28 commercial lots as described in the drawings titled, "H3 Development West Drainage Area Site Services" as received from Progressive Engineering & Consulting Inc. on February 28, 2018 and May 16, 2018.

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

APPENDIX D
Location Map for Permit

