

## PERMIT TO ALTER A BODY OF WATER

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

Date: **FEBRUARY 15, 2016**

File No: 527  
Permit No: ALT8445-2016

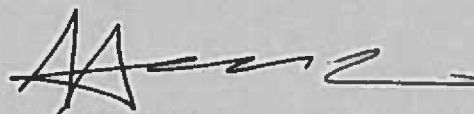
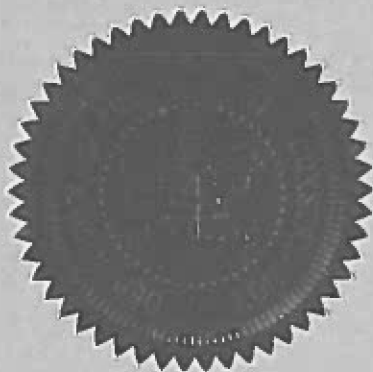
Permit Holder: **Vale Newfoundland and Labrador Limited**  
10 Fort William Place  
Suite 700, Baine Johnston Centre  
St. John's, NL, A1C 1K4

Attention: **Mr. Steve Ball**

Re: **Voisey's Bay Mine Site (Unnamed Body of Water) - Stream Diversion and Culvert Installation**

Permission is hereby given for : the diversion of an unnamed body of water (locally known as Discovery Hill Stream) and the installation of a new 1600mm diameter HDPE culvert across a local road at Voisey's Bay Mine Site, as indicated in Appendices A and D of this Permit (attached), in reference to the application dated December 4, 2015 and further information provided on or before February 3, 2016.

- This Permit does not release the Permit Holder from the obligation to obtain appropriate approvals from other concerned municipal, provincial and federal agencies.
- The Permit Holder must obtain the approval of the Crown Lands Administration Division if the project is being carried out on Crown Land.
- This Permit is subject to the terms and conditions indicated in Appendices A and B (attached).
- It should be noted that prior to any significant changes in the design or installation of the proposed works, or in event of changes in ownership or management of the project, an amendment to this Permit must be obtained from the Department of Environment and Conservation 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**

**Culvert Design**

1. The crossing structure must provide adequate capacity to safely discharge flood flows without causing backwater effects upstream or increased flow velocity downstream.
2. To safely convey peak flows the culvert installation must be designed according to the following hydraulic criteria:

| <b>Crossing Name / No.</b>                | <b>Minimum Size (mm)</b> | <b>Number of Pipes</b> | <b>Length (m)</b> |
|---|--------------------------|------------------------|-------------------|
| Locally known as<br>Discovery Hill Stream | 1600                     | 1                      | 35                |

**Culvert Installation**

3. 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.
4. Inlet and outlet areas of culvert installations must be adequately protected from erosion by placing rip-rap, fitted stone, or concrete headwalls.
5. 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.
6. 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.
7. 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.
8. 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.
9. Grading and finishing of roadways or road embankments must not cause damage to culverts or allow road material to enter the watercourse.
10. Roadside embankments near the watercourse must be adequately protected from erosion by sodding, seeding or placing of rip-rap.
11. 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.
12. The inlet and outlet of culverts must be clearly marked so that operators of road grading and snow clearing equipment can avoid blocking culverts.
13. 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.
14. 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

15. An approximately 250 metre long permanent diversion channel may be excavated to carry the waters of an unnamed body of water (locally known as Discovery Hill Stream) within the proponent's legal property boundaries.
16. 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.
17. 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.
18. The stream diversion must have the following dimensions:

| Bottom Width (m) | Depth of Channel (m) | Bank Slope (H:V) | Flow Area (m <sup>2</sup> ) | Bed Slope (%) |
|------------------|----------------------|------------------|-----------------------------|---------------|
| 1.0              | 1.5                  | Minimum 3H:1V    | 8.25                        | 1.5           |

### Stream Diversion Construction

19. Alteration of the natural minimum streamflow is not permitted in order to preserve aquatic life.
20. 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.
21. 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.
22. The Permit Holder must prevent erosion of drainage ditches, streams or other natural bodies of water by installing rip-rap and/or sodding.
23. 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.
24. 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.
25. The new channel must be excavated in the dry beginning from the downstream end.
26. 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.
27. 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.
28. 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.
29. 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 C.A.E.A.L. accredited laboratory.
30. 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.

### General Alterations

31. Any work that must be performed below the high water mark must be carried out during a period of low water levels.
32. Any flowing or standing water must be diverted around work sites so that work is carried out in the dry.

33. 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*.
34. 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.
35. 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.
36. 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.
37. 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.
38. 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 the Department.
39. 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.
40. All waste materials resulting from this project must be disposed of at a site approved by the Department of Service NL.
41. 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.
42. The owners of structures are responsible for any environmental damage resulting from dislodgement caused by wind, wave, ice action, or structural failure.
43. 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.
44. 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.
45. The attached Completion Report (Appendix C) for Permit No. 8445 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.
46. 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.
47. The location of the work is highlighted on the Location Map for this Permit attached as Appendix D.
48. All work must be carried out within the proponent's legal property boundaries.

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

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



Government of Newfoundland and Labrador  
Department of Environment and Conservation  
Water Resources Management Division

## Appendix C - Completion Report

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

Date: **FEBRUARY 15, 2016**

File No: **527**  
Permit No: **ALT8445-2016**

Permit Holder: **Vale Newfoundland and Labrador Limited  
Suite W200, Bally Rou Place  
280 Torbay Road  
St. John's NL A1A 3W8**

Attention: **Mr. Steve Ball**

Re: **Voisey's Bay Mine Site (Unnamed Body of Water) - Stream Diversion and Culvert Installation**

Permission was given for : the diversion of an unnamed body of water (locally known as Discovery Hill Stream) and the installation of a new 1600mm diameter HDPE culvert across a local road at Voisey's Bay Mine Site, as indicated in Appendices A and D of this Permit (attached), in reference to the application dated December 4, 2015 and further information provided on or before February 3, 2016.

*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 Conservation 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 Conservation  
Water Resources Management Division  
PO Box 8700  
St. John's NL A1B 4J6

cc: Dr. Abdel-Zaher Kamal Abdel-Razek, Ph. D., P.Eng.  
Manager, Water Rights and Investigations Section  
Water Resources Management Division  
Department of Environment and Conservation  
P.O. Box 8700  
St. John's NL A1B 4J6

cc: Mr. Ken Russell (Labrador)  
Manager of Operations  
Department of Service NL  
PO Box 3014, Stn. B  
Happy Valley-Goose Bay NL A0P 1E0

cc: Fisheries Protection Division  
Ecosystem Management Branch  
Fisheries and Oceans Canada  
P.O. Box 5667  
St. John's NL A1C 5X1

cc: Larry Innes and Paula Reid  
Innu Nation  
P.O. Box 119  
Sheshatshiu, NL A0P 1M0

cc: Mr. Tom Sheldon  
Director  
Environment Division  
Nunatsiavut Government  
P.O. Box 70  
Nain NL A0P 1L0

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

