

PERMIT TO ALTER A BODY OF WATER

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

Date: **NOVEMBER 03, 2015**

File No: **534-01**
Permit No: **ALT8359-2015**

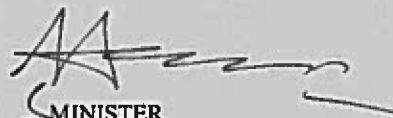
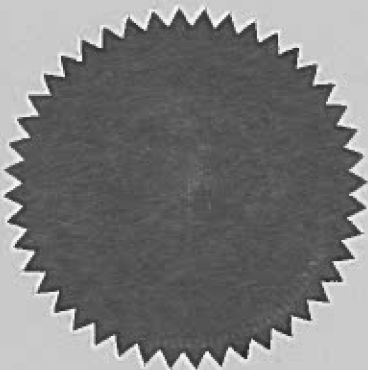
Permit Holder: **Department of Natural Resources
50 Elizabeth Avenue
P.O. Box 8700
St. John's NL A1B 4J6**

Attention: **Ms. Abigail Steel**

Re: **Buchans Mine Tailings Dam 1 Rehabilitation**

Permission is hereby given for : **the rehabilitation of a section of the former Buchans Mine tailings Dam 1 from 0+375 to 0+650 shared with the Atlantic Barite Ltd. tailings pond and associated activities, as detailed in the application received from SNC-Lavalin Inc. on October 30, 2015.**

- 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

Dam/Reservoir Design

1. Reservoirs must be provided with a spillway of adequate capacity to safely discharge design flows at non-erosive velocities without causing flooding of the reservoir or damage to the spillway or section downstream channel.
2. The dam and appurtenant structures shall be constructed at the following coordinates:

Name	Datum	Northing (m)	Easting (m)	Zone
Buchans Mine Dam 1	NAD83	5407178.807	509847.865	21

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

Name	Height of Dam/ Elevation of Dam (m)	Elevation of Spillway (m)	Maximum Water Elevation (m)	Minimum Water Elevation (m)	Minimum Freeboard (m)
Buchans Mine Dam 1	1.8/289.8	289.2	289.5	289.2	0.3

4. To safely convey peak flows the dam(s) must be designed according to the following hydraulic criteria:

Name	Design Return Period (years)	Minimum Flow Capacity (m ³ /s)
Buchans Mine Dam 1	1/3 between 1/1000 and PMF	~98

General Alterations

5. Any work that must be performed below the high water mark must be carried out during a period of low water levels.
6. Any flowing or standing water must be diverted around work sites so that work is carried out in the dry.
7. 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*.
8. 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.
9. 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.
10. 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.
11. 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.

12. 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.
13. All waste materials resulting from this project must be disposed of at a site approved by the Department of Service NL.
14. The owners of structures are responsible for any environmental damage resulting from dislodgement caused by wind, wave, ice action, or structural failure.
15. 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.
16. 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.
17. The attached Completion Report (Appendix C) for Permit No. 8359 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.
18. This Permit is valid for two years from the date of issue for all construction related work. Construction work must be completed by that date or the application and approval procedure must be repeated. The following term(s) are valid for the life cycle of the structure: 20, 23.
19. The location of the work is highlighted on the Location Map for this Permit attached as Appendix D.

Dam Safety

20. The dam has been conditionally classified in the HIGH Consequence category based on the 2007 Canadian Dam Association (CDA) guidelines. To meet the CDA's Dam Safety guidelines (Current Edition) for dams of this classification, the owner must:
 - Carry out an annual Dam Safety Inspection and provide the results to this Department,
 - Carry out a Dam Safety Review and submit a Dam Safety Report to this Department a maximum of every seven years from the date of the last report,
 - Update, in consultation with this Department, the Operation, Maintenance and Surveillance (OMS) Manual within 1 year of the date of issue of this permit,
 - Update the Emergency Preparedness and Response Plan (EPRP) within 1 year of the date of issue of this permit.

Special Conditions

21. The dam and associated works shall be designed according to the Canadian Dam Association Dam Safety Guidelines and associated Bulletins (most recent edition).
22. 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.
23. The Department of Natural Resources shall submit to this Department an implementation plan and schedule for the undertaking of recommendations made in the most recent Dam Safety Review for all of the former Buchans Mine tailings dams.

Dam Construction

24. A geotextile liner shall be installed overlaying a 3 mm layer of structural fill along the upstream crest and embankment of the tailings dam. The geotextile liner will be anchored in a trench at the new dam crest and anchored with riprap at the downstream embankment to form a hydraulic barrier.
25. 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.
26. 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.
27. The reservoir side of the dam structure must be constructed with a 0.45 metre facing of rip-rap with a D50= 0.30 m to provide

adequate protection from wave or ice induced erosion.

28. The finished downstream side of tailings Dam 1 shall have a slope of 2.5 horizontal to 1 vertical. The finished upstream side of the dam shall have a minimum slope of 2.5 horizontal to 1 vertical.
29. The downstream side of tailings Dam 1 must be constructed with a 0.45 metre facing of rip-rap with a D50= 0.30 m to prevent erosion of the structure.
30. The area to be flooded by the reservoir must be prepared by removing timber, brush, and slash up to the maximum water elevation.
31. The transportation of labour and materials to the site must be along existing access roads.
32. The dam and spillway 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.

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.

File No: 534-01
Permit No: ALT8359-2015

cc: Ms. Paula Dawe, P.Eng.
Environmental Engineer, Drinking Water and Wastewater Section
Water Resources Management Division
Dept. of Environment and Conservation
PO Box 8700
St. John's, NL
A1B 4J6

cc: File Copy for Binder

Appendix C - Completion Report

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

Date: **NOVEMBER 03, 2015**

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Permit No: **ALT8359-2015**

Permit Holder: **Department of Natural Resources
50 Elizabeth Avenue
P.O. Box 8700
St. John's NL A1B 4J6**

Attention: **Ms. Abigail Steel**

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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 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

APPENDIX D
Location Map for Permit

