

PERMIT TO ALTER A BODY OF WATER

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

Date: **MARCH 29, 2018**

File No: **534-10**
Permit No: **ALT9534-2018**

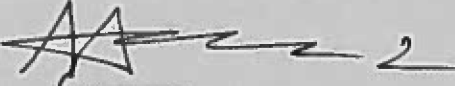
Permit Holder: **Tata Steel Minerals Canada Ltd.**
1000 Sherbrooke Street West
Suite 1120
Montreal, Quebec H3A 3G4

Attention: **Loic Didillon**

Re: **Tata Steel- Howse Settling Pond Dams**

Permission is hereby given for : **the construction of two new earthfill dams and spillways for the creation of sedimentation ponds, and associated appurtenances and activities as detailed in the application received from Tata Steel Minerals Canada on September 11, 2017 and additional documentation received on November 13, 2017.**

- 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

APPENDIX A
Terms and Conditions for Permit

Dam/Reservoir Design

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

Name	Datum	Northing (m)	Easting (m)	Zone
Howse Sedimentation Pond Dams	NAD83	6087643.534	619558.376	19

- The dam(s) must have the following dimensions:

Name	Height/Elev of Dam (m)	Elev of Spillway (m)	Maximum Water Elevation (m)	Minimum Water Elevation (m)	Minimum Freeboard (m)
Sedimentation Pond 1 Dam	3.5/617.5	616.5	617	615.5	0.5
Sedimentation Pond 2 Dam	2.5/617.5	616.5	617	615.5	0.5

- 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 (m ³ /s)
Howse Sedimentation Pond Dams	100	10.1

General Alterations

- Any work that must be performed below the high water mark must be carried out during a period of low water levels.
- Any flowing or standing water must be diverted around work sites so that work is carried out in the dry.
- 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*.
- 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.
- 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.
- 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. 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.
12. 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.
13. 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.
14. 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.
15. All waste materials resulting from this project must be disposed of at a site approved by the Department of Service NL.
16. Care must be taken to prevent spillage of pollutants into the water.
17. The owners of structures are responsible for any environmental damage resulting from dislodgement caused by wind, wave, ice action, or structural failure.
18. 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.
19. 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.
20. The attached Completion Report (Appendix C) for Permit No. 9534 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.
21. 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: 24, 28, and 29.
22. The location of the work is highlighted on the Location Map for this Permit attached as Appendix D.
23. All work must be carried out within the Permit Holder's legal property boundaries.

Dam Safety

24. The dams have been conditionally classified in the LOW Consequence category based on the 2007 Canadian Dam Association (CDA) guidelines. The dam consequence classification should be reviewed periodically, since there may be changes to downstream development over time. If the classification increases, a Dam Safety Review is required at that time. The dam owner must carry out an annual Dam Safety Inspection and provide the results to this Department.

Special Conditions

25. The dam must meet the requirements of the Environmental Protection Plan (latest version) and mine Rehabilitation and Closure Plan for the project.
26. The dam and associated works shall be designed according to the Canadian Dam Association Dam Safety Guidelines and associated Bulletins (most recent edition).
27. 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.
28. The Permit Holder is required to adhere to the Memorandum of Agreement as set forth by this Department. This agreement relates to the operation of real time water monitoring stations. The following monitoring station must remain active for the life cycle of the mining development through the renewal of the Memorandum of Agreement with the Department: Goodream Creek above Triangle Lake (03OB010), Joan Brook below Outlet of Joan Lake (03OB009), and Elross Creek below Pinette Lake Inflow (03OA015). The Department may require the setup of additional monitoring stations in the Memorandum of

Agreement as per provisions of Section 31 of the Water Resources Act, SNL2002 Chapter W-4.01.

29. 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.
30. Geotextile shall be placed directly on the prepared subgrade in accordance with manufacturers recommendations.

Dam Construction

31. Embankment dam and emergency spillway 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.
32. 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.
33. 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.
34. The reservoir side of the dam structure must be constructed with a 0.3 m layer of riprap with a D50 of 250 mm to provide adequate protection from wave or ice induced erosion.
35. The finished downstream and upstream sides of the embankment dam shall have a slope of 3 horizontal to 1 vertical. The emergency spillway inlet and channel shall have side slopes of 5-10 horizontal to 1 vertical.
36. The upstream slope of the embankment dam shall be constructed using a geomembrane and geotextile. The geotextile shall be placed over the geomembrane and a 0.3 m layer of bedding material. The geotextile/geomembrane shall extend from the dam crest to an elevation of 614.5 m and shall be anchored or keyed into the dam layers at both the top and bottom to form a hydraulic barrier.
37. 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.
38. 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.
39. The area to be flooded by the reservoir must be prepared by removing timber, brush, and slash up to the maximum water elevation.
40. The transportation of labour and materials to the site must be along existing access roads.
41. The spillway shall be constructed using a concrete carpet treatment over a geomembrane overlaying a 0.3 m thick layer of bedding material.
42. Sedimentation pond 2 will be constructed with a floating baffle system comprised of 4 reinforced concrete anchors, and 2 dividing curtains with ballast chains.

Sedimentation Ponds

43. The sedimentation pond(s) must have the following minimum dimensions:

Name	Length (m)	Width (m)	Depth (m)	Width of Overflow (m)
Sedimentation Pond 2	196	81.5	5	30
Sedimentation Pond 1	93-109	25-60	5	20

44. The sedimentation pond(s) must be designed according to the following criteria:
-

Name	Flow Capacity (m ³ /s)	Contributing Watershed (ha)	Return Period (years)
Sedimentation Pond 1&2	27	118	100

- 45. The sedimentation pond(s) design criteria should consider soil type and the required time it will take for particle settlement.
- 46. The sedimentation pond(s) must be designed in that the sediment-laden runoff is captured and detained allowing the suspended sediment to settle from the water.
- 47. The sedimentation pond(s) must provide enough storage for the captured sediment.

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: Amir Ali Khan, Ph.D., P.Eng.
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Water Resources Management Division
Department of Municipal Affairs and Environment
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- cc: Mr. Dexter Pittman, P. Eng.
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Pollution Prevention Division
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Senior Analyst
Executive Council - Labrador and Aboriginal Affairs
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Appendix C - Completion Report

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

Date: **MARCH 29, 2018**

File No: **534-10**
Permit No: **ALT9534-2018**

Permit Holder: **Tata Steel Minerals Canada Ltd.
1000 Sherbrooke Street West
Suite 1120
Montreal, Quebec H3A 3G4**

Attention: **Loic Didillon**

Re: **Tata Steel- Howse Settling Pond Dams**

Permission was given for : the construction of two new earthfill dams and spillways for the creation of sedimentation ponds, and associated appurtenances and activities as detailed in the application received from Tata Steel Minerals Canada on September 11, 2017 and additional documentation received on November 13, 2017.

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

