

**PERMIT TO ALTER A BODY OF WATER**

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

Date: MAY 24, 2019

File No: 534-11  
Permit No: ALT10322-2019

Permit Holder: Canada Fluorspar (NL) Inc.  
P.O. Box 337  
1 Clarke's Pond Road  
St. Lawrence, NL, A0E 2V0

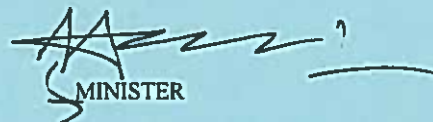
Attention: Shelly Adams

Re: St. Lawrence Fluorspar Mine - Tailings Management Facility Raise

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Permission is hereby given for : the raise of AGS East Tailings Impoundment Dam to 120 meters as part of the St. Lawrence Fluorspar Tailings Management Facility as per the "AGS East Tailings Management Facility Design Summary" prepared by Knight Piesold Consulting, as detailed in the application received from Canada Fluorspar (NL) Inc. on March 23, 2019 and supporting documentation received on May 9, 2019.

- 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*.



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
Tailings Dam	NAD83	5196250	618000	21

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

Name	Elevation/Height of Dam (m)	Elevation of Spillway (m)	Maximum Water Elevation (m)	Minimum Water Elevation (m)	Minimum Freeboard (m)
Tailings Dam	120/26	118	118.36	varies	1.6

4. 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 <sup>3</sup> /s)
Tailings Dam	2/3 between 1:1000 and PMF	20

**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 this 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. 10322 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 terms are valid for the life cycle of the mine dam structure: 21, 35, 38, 39.
19. The location of the work is highlighted on the Location Map for this Permit attached as Appendix D.
20. All work must be carried out within the Permit Holder's legal property boundaries.

#### **Dam Safety**

21. The dam has been conditionally classified in the VERY 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 five years after from the date of commissioning of the original dam structure,
  - Carry out dam operation, maintenance and surveillance operations in accordance with the OMS Manual and any recommendations of the most recent Dam Safety Review so that an acceptable level of dam safety is ensured,
  - Prepare an Emergency Preparedness Plan (EPP) and ensure information in the plan is up to date on an annual basis.

#### **Dam Construction**

22. Foundation preparation will be carried out to ensure a stable and competent foundation is present under each new or raised embankment. Prepared foundations will be inspected by a qualified geotechnical engineer prior to fill placement to verify conditions are acceptable. Exposed foundation soils will be compacted using a large vibratory roller compactor. Prepared foundations should be covered with fill as soon as possible to protect foundations once verified acceptable.
23. The areas of abutment between the existing embankments and the new embankments will be inspected by a qualified geotechnical engineer to verify conditions are acceptable.
24. 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.
25. 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.
26. A HDPE geomembrane liner shall be installed overlaying a non-woven geotextile layer that is placed on a 0.5 m bedding layer along the upstream face of the tailings dam embankment. For the existing embankments, the geomembrane will be anchored in a trench at the dam crest and tied into the pre-existing crest to form a hydraulic barrier. For the new embankment construction, the geomembrane will be anchored in a trench at the dam crest and tied into the foundation under 1.5 m of screened till at the toe to form a hydraulic barrier.
27. The finished downstream side of the Tailings Dam shall have a slope of 2 horizontal to 1 vertical. The finished upstream side of the dam shall have a slope of 2 horizontal to 1 vertical.
28. The spillways shall be constructed with a geomembrane over geotextile lined inlet and a protective rip-rap barrier lining the outlet channel to prevent erosion of the structure when overtopping occurs. The Tailings Dam spillway outlet channel shall be lined with rip-rap of D50 = 300 mm to a depth of 600 mm.

29. The liner on the upstream side of the dam shall be separated from the rockfill used for core dam construction by a 1 m transition zone of intermediate filter graded material.
30. The area to be flooded by the reservoir must be prepared by removing timber, brush and slash up to the maximum water elevation. Organics and unsuitable soils will be removed from the embankment footprint as part of the foundation preparation.
31. The extension of the toe drain shall be installed behind the liner tie-in of the Tailings Dam. The extension of foundation drains will be connected to the toe drains and constructed transecting the dam embankment to discharge at the original ground surface at the downstream toe to ensure that any seepage is collected and directed away from the structure. Toe and foundation drains shall be constructed in 1 m x 1 m trenches into the foundation soils, filled with gravel and lined with non-woven geotextile. Toe and foundation drains will consist of corrugated polyethylene tube surrounded by drain gravel.

#### **Special Conditions**

32. The dam and associated works shall be designed according to the Canadian Dam Association Dam Safety Guidelines and associated Bulletins (most recent edition).
33. Armour stone 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.
34. 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 who is able to demonstrate competence in the design, construction, and surveillance of dams.
35. 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.
36. The tailings dam and management area (TMA) must meet the requirements of the Environmental Protection Plan (latest version) and mine Rehabilitation and Closure Plan for the project.
37. The transportation of labour and materials to the site must be along existing access roads.
38. The Permit Holder is required to adhere to the Memorandum of Agreement as set forth by the Department of Municipal Affairs and Environment. This agreement related to the operation of hydrometric and water quality stations in the vicinity of the mine site. The following monitoring stations must remain active for the life of the project through the renewal of the Memorandum of Agreement with the Department of Municipal Affairs and Environment: Outflow Grebes Nest Pond (02ZG006) and Outflow of Unnamed Pond south of Long Pond (02ZG007). 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.
39. The following instrumentation shall be included for long term monitoring of the Tailings Dam: 10 piezometers installed along the toe drain and 3 survey monuments.
40. An experienced geosynthetics installer will install the geomembrance liner and non-woven geotextile associated with this project. Installation will be carried out in accordance with the International Association of Geosynthetics Installers and Geosynthetics Research Institute industry standards.

**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: Ms. Annette Tobin, 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  
annettetobin@gov.nl.ca

cc: Mr. Alex Smith, P. Eng.  
Director, Mineral Development Division  
Department of Natural Resources  
50 Elizabeth Avenue, P.O. Box 8700  
St. John's, NL A1B 4J6  
asmith@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  
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4th Floor, West Block, Confederation Building  
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pauladawe@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

cc: Mr. Alex McIntyre, P.Eng.  
Knight PiÅ©sold Ltd.  
1650 Main Street West  
North Bay, Ontario P1B 8G5  
northbay@knightpicsold.com

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: **MAY 24, 2019**

Permit Holder: **Canada Fluorspar (NL) Inc.  
P.O. Box 337  
1 Clarke's Pond Road  
St. Lawrence, NL, A0E 2V0**

File No: **534-11**  
Permit No: **ALT10322-2019**

Attention: **Shelly Adams**

Re: **St. Lawrence Fluorspar Mine - Tailings Management Facility Raise**

Permission was given for : the raise of AGS East Tailings Impoundment Dam to 120 meters as part of the St. Lawrence Fluorspar Tailings Management Facility as per the "AGS East Tailings Management Facility Design Summary" prepared by Knight Piesold Consulting, as detailed in the application received from Canada Fluorspar (NL) Inc. on March 23, 2019 and supporting documentation received on May 9, 2019.

*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**

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