APPENDIX B

License NWB1NAN0208

Jacques Whitford

LICENCE NWB1NAN0208

Pursuant to the *Nunavut Waters and Nunavut Surface Rights Tribunal Act* and the *Agreement Between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in right of Canada*, the Nunavut Water Board, hereinafter referred to as the Board, hereby grants to

CANZINCO LIMITED,
A WHOLLY-OWNED SUBSIDIARY OF BREAKWATER RESOURCES LIMITED
(Licensee)

of NANISIVIK, NUNAVUT, X0A 0X0
CORPORATE ADDRESS: CANZINCO LTD, PO BOX 56, BATHURST, NB, E2A 3Z1
(Mailing Address)

hereinafter called the Licensee, the right to alter, divert or otherwise use water or dispose of waste for a period subject to restrictions and conditions contained within this Licence:

Licence Number	NWB1NAN0208
Water Management Area	NUNAVUT 05
Location	NANISIVIK, NUNAVUT
Purpose	INDUSTRIAL WATER USE AND WASTE DISPOSAL
Description	CLOSURE AND RECLAMATION
Quantity of Water Not to be Exceeded	180,000 CUBIC METRES ANNUALLY
Date of Licence	OCTOBER 1, 2002
Expiry Date of Licence	MAY 1, 2008

Dated this 10 day of October 2002 at Baker Lake, NU.

ORIGINAL SIGNED BY
Thomas Kudloo
Chief Executive Officer

PART A: SCOPE, DEFINITIONS AND ENFORCEMENT

1. SCOPE

i. This Licence entitles the Licensee to use water and dispose of waste associated with the closure and reclamation of the Licensee's Nanisivik Mine, Nanisivik, Nunavut, (73°02' N, 84°32' W).

ii. This Licence is issued subject to the conditions contained herein with respect to the taking of water and the depositing of waste of any type in any waters or in any place under any conditions where such waste or any other waste that results from the deposits of such waste may enter any waters. Whenever new Regulations are made or existing Regulations are amended by the Governor in Council under the *Nunavut Waters and Nunavut Surface Rights Tribunal Act*, or other statutes imposing more stringent conditions relating to the quantity or type of waste that may be so deposited or under which any such waste may be so deposited, this licence shall be deemed to be subject to such requirements.

iii. Compliance with the terms and conditions of this licence does not absolve the Licensee from responsibility for compliance with all applicable legislation, guidelines and directives, including all relevant requirements of the *Metal Mining Effluent Regulations* SOR/2002-222 dated 6 June 2002;

iv. Mining and milling are not authorized under this licence. The Licensee shall apply for an amendment to the licence without delay should the Licensee decide to reopen the mine and return to Commercial Operation.

2. DEFINITIONS

In this Licence: **NWB1NAN0208**

"**Act**" means the *Nunavut Waters and Nunavut Surface Rights Tribunal Act*.

"**Acutely lethal effluent**" means effluent as defined in the *Metal Mining Effluent Regulations* SOR/2002-222 dated 6 June 2002;

"**Aliquot**" means the amount comprising a known fraction of a whole and constituting a sample used for analysis;

"**Amendment**" means a change to any terms and condition of this Licence requiring correction, addition or deletion of specific terms and conditions of the Licence;

"**Analyst**" means an Analyst designated by the Minister under Section 85 (1) of the *Act*;

"**Board**" means the Nunavut Water Board established under the Nunavut Land Claims Agreement;

"**Canadian Environmental Quality Guidelines**" means but is not limited to the following:

(a) CCME. 1999. Canadian Environmental Quality Guidelines. Canadian Council of Ministers of the Environment, Winnipeg;
(b) CCME. 1996. Guidance Manual for Developing Site-Specific Soil Quality Remediation Objectives for Contaminated sites in Canada. The National Contaminated Sites Remediation Program. En 108-4/9-1666e;
(c) CCME. 1007. A Framework for Ecological Risk Assessment: Technical Appendices.
(d) CCME. 1996. A Protocol for the Derivation of Environmental and Human Health Soil Quality Guidelines. The National Contaminated Sites Remediation Program. En 108-4/8-1996e.

"**Chief Administrative Officer**" means the Executive Director of the Nunavut Water Board;

"**Commercial Operation**" in respect of a mine, means an average rate of production equal to or greater than 25 % of the design rated capacity of the mine over a period of 90 consecutive days;

"**Composite Sample**" means

(a) a quantity of effluent consisting of not less than three equal volumes proportionate to flow that have been collected at approximately equal time intervals over a sampling period of not less than seven hours and not more than 24 hours; or
(b) a quantity of effluent collected continuously at a constant rate or at a rate proportionate to the rate of flow of the effluent over a sampling period of not less than seven hours and not more than 24 hours.

"**Deleterious Substance**" means a substance as defined in the *Metal Mining Effluent Regulations* SOR/2002-222 dated 6 June 2002;

"**Dump Pond**" means an engineered structure designed to temporarily contain tailings material from the tailings lines as detailed on drawing titled "Environmental Impact Nanisivik Area Drainage Basins," dated May 29, 1990;

"**East Adit Treatment Facility**" means the treatment and discharge facility used for the

treatment of contaminated runoff and minewater from the East Adit and ore stockpile area as described in: Figure 3.4 titled "Modified East Adit Water Treatment System" dated January 23, 1988; Drawing No. 50-102/17 titled "Typical x-section East Pit Retention System," dated August 16, 1986, Drawing No. 50-102/16 titled "East Pit Retention System", dated August 16, 1986; Drawing No. 30-15/02 titled "Waste Dump Environmental Control", dated August 20,1984; and Drawing No. 50-102/15 titled "East Pit Retention System", dated August 17, 1986;

"**Effluent**" means mine water effluent, milling facility effluent, tailings impoundment area effluent, treatment pond effluent, treatment facility effluent other than effluent from a sewage treatment facility, seepage and surface drainage that contains a deleterious substance;

"**Engineer**" means a professional engineer registered to practice in Nunavut in accordance with the *Engineering, Geological and Geophysical Act (Nunavut)* S.N.W.T. 1998, c.38, s.5;

"**Final Discharge Point**" in respect of an effluent, means an identifiable discharge point of a mine beyond which the operator of the mine no longer exercises control over the quality of the effluent;

"**Freeboard**" means the vertical distance between the water surface elevation and the lowest elevation of the effective water containment crest of the dam, dyke or other containment structure;

"**Geotechnical Engineer**" means an Engineer whose principal field of specialization is the design and construction of earthworks in a permafrost environment;

"**Grab Sample**" means a quantity of undiluted effluent collected at a time and place representative of the total discharge;

"**Inspector**" means an Inspector designated by the Minister under Section 85 (1) of the *Act*;

"**Landfill**" consists of the facilities described in S. 5.4 and as identified in the Nanisivik Mine Closure and Reclamation Plan (February 2002), Figure 1-2 titled "Mine General Arrangement";

"**Licence**" means Licence NWB1NAN0208;

"**Licensee**" means CanZinco Limited, a wholly-owned subsidiary of Breakwater Resources Limited to whom Licence NWB1NAN0208 is issued to or assigned;

"**Modification**" means an alteration to a physical work that introduces a new structure or eliminates an existing structure and does not alter the purpose or function of the work, but does not include an expansion;

"**Minister**" means the Minister of Indian and Northern Affairs Canada;

"**Minewater**" means water that is pumped from or flows out of any underground works, adits, solution chambers or open pits;

"**Monthly Mean Concentration**" means the average value of the concentrations measures in all composite or grab samples collected from each final discharge point during each month when a deleterious substance is deposited;

"**Nunavut Land Claims Agreement**" (NLCA) means the "*Agreement Between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in Right of Canada*," including its preamble and schedules, and any amendments to that agreement made pursuant to it;

"**Operations Area**" means all the land and works that are used or have been used in conjunction with exploration, mining or milling activity, including;

(a) open pits, underground mines, heap leaching areas, solution mines, buildings, ore storage areas and waste rock dumps;
(b) tailings impoundment areas, lagoons and treatment ponds; and
(c) cleared or disturbed areas that are adjacent to the land and works;

"**Operator**" means the person who operates, has control or custody of, or is in charge of a mine or recognized closed mine;

"**Pingo**" means a perennial frost mound consisting of a core of massive ice, produced primarily by injection of water and covered with soil;

"**Recognized Closed Mine**" means a recognized closed mine as defined by section (1) of the *Metal Mining Effluent Regulations* SOR/2002-222 dated 6 June 2002;

"**Regulations**" means the *Northwest Territories Water Regulations SOR/93-303 8 June, 1993.*

"**Surface Drainage**" means all surface water run-off contaminated by a deleterious substance as a result of flowing over, through or out of an operations area;

"**Tailings**" means material in solid and liquid form rejected from the process plant after the recoverable minerals have been extracted;

"**Talik**" means a layer or body of *unfrozen* ground occurring in a permafrost area due to a local anomaly in thermal, hydrological, hydrogeological or hydrochemical condition;

"**Use**" means use as defined in section 4 of the *Act*.

"**Waste**" means waste as defined in section 4 of the *Act*;

"**Waste Rock**" means all unprocessed rock materials that are or were produced as a result of mining operations and having no economical value;

"**Water**" means water as defined in section 4 of the *Act*;

"**Water Supply Facilities** " comprises the area and associated intake infrastructure at East Twin Lake; and

"**West Twin Disposal Area**" consists of the tailings impoundment area known as the Surface Cell, the structures designed to contain tailings, and West Twin Reservoir and Test Cell Area as identified in the Nanisivik Mine Closure and Reclamation Plan (February 2002), Figure 6-1 titled "West Twin Disposal Area Reclamation Plan".

3. ENFORCEMENT

i. Failure to comply with this Licence will be a violation of the *Act*, exposing the Licensee to the enforcement measures and the penalties provided for in the *Act*;

ii. All inspection and enforcement services regarding this Licence will be provided by Inspectors appointed under the *Act*; and

iii. Inspectors appointed under the *Act* enjoy with respect to this Licence, and for the purpose of enforcing this Licence, and with respect to the use of water and deposit or discharge of waste by the licensee-all powers, privileges and protections that are conferred upon them by the *Act* or by other applicable law.

PART B: GENERAL CONDITIONS

1. The Water Use fee shall be paid annually in advance as set in accordance with the Regulations.

2. The Licensee shall within thirty (30) days of issuance of the Licence, furnish and

maintain a security in the amount of $17.6 million dollars in the form and nature in accordance with the Regulation or that is satisfactory to the Minister.

3. Notwithstanding Part B, Item 2, the Licensee shall provide such further or other amounts as may be required by the Board based on annual assessment of current mine restoration liability in accordance with Part G, Item 21.

4. The security required pursuant to the Licence shall be guaranteed by Breakwater Resources Limited.

5. The Licensee may apply to the Board for a reduction in the amount of security required pursuant to the Licence by providing the Board with evidence to support such reduction.

6. The Licensee shall file an **Annual Report** with the Board no later than March 31 of the year following the calendar year reported, which shall include, but not be limited to the following information:

   i. A summary of any construction work, modification and major maintenance work and/or demolition work carried out on the Water Supply Facilities, West Twin Disposal Area, East Adit Treatment Facility, and associated structures;

   ii. A list of unauthorized discharges and summary of follow-up actions taken;

   iii. A progress report and/or revision of any studies or plans requested by the Board under this licence;

   iv. An executive summary in terms understandable to the general public, translated into Inuktitut, of all plans, reports, or studies conducted under this Licence.

   v. A summary of any closure and reclamation work undertaken during the year and an outline of any work anticipated for the next year, including any changes to implementation and scheduling;

   vi. A summary of the estimate of the total current mine closure cost based upon mine reclamation and monitoring activities carried out during the past year in accordance with Part B, Item 3 or Part G, Item 21;

   vii. A public consultation/participation report describing consultation with local organizations and the residents of the nearby communities;

   viii. A brief summary of work done to address concerns or deficiencies listed in the inspection reports and/or compliance reports;

ix. A report on the Effluent and Water quality monitoring studies conducted during a calendar year, including but not limited to:

a. The monthly and annual quantities (in cubic metres) of Water pumped from East Twin Lake for all purposes;

b. A report summarizing the Effluent monitoring results as required in Part H in the form set out in Schedule 6 of the *Metal Mining Effluent Regulations*.

1. The monthly and annual quantities of Effluent discharged from the West Twin Disposal Area at the Final Discharge Point;

2. The daily, monthly and annual quantities of Effluent discharged from the East Adit Treatment Facility at the Final Discharge Point;

3. Results of Acute Lethality Tests and Daphnia Magna Monitoring Tests;

4. Summary cause and remedial measures planned or implemented for non-compliant Effluent discharges and Acute Lethality Test failures.

c. A report summarizing the results of Effluent characterization, sublethal toxicity testing and Water quality monitoring generated under the Part H, (using tabular summaries where applicable) including but not limited to the following:

1. The dates on which each sample was collected for Effluent characterization, sublethal toxicity testing and Water quality monitoring;

2. The locations of the Final Discharge Points from which samples were collected for Effluent characterization;

3. The location of the Final Discharge Point from which samples were collected for sublethal toxicity testing and the data on which the selection of the final discharge point was made in compliance with Part H, Item 38;

4. The geographical coordinates of sampling areas for Water quality monitoring, in degrees, minutes and seconds, and a description that is sufficient to identify the location of the sampling areas;

5. The methodologies used to conduct Effluent characterization and Water quality monitoring, and the related method detection limits; and

6. A description of quality assurance and quality control measures that were implemented and the data related to the implementation of those measures.

x. Any other details on water use or waste disposal requested by the Board by November 1st of the year being reported.

7. The Licensee shall maintain a copy of this Licence, all records, books of account or other documents as required as part of this or previous licenses at the Nanisivik Mine until such time as it is no longer practicable.

8. If no longer practicable, the Licensee shall notify the Board of changes of location and maintain documents at said location for a period not less than 5 years.

9. Any communication with respect to this Licence shall be made in writing to the attention of:

Chief Administrative Officer
Nunavut Water Board
P. O. Box 119
Gjoa Haven, NU X0B 1J0
Telephone: (867) 360-6338
Fax: (867) 360-6369
Email: nwblic@polarnet.ca

10. Any notice made to an Inspector shall be made in writing to the attention of:

Water Resources Officer
Nunavut District, Nunavut Region
P.O. Box 100
Iqaluit, NU X0A 0H0
Telephone: (867) 975-4298
Fax: (867) 979-6445

11. The Licensee shall submit two paper copies and one electronic copy of all reports, studies, and plans to the Board unless otherwise requested by the Board. Reports or studies submitted to the Board by the Licensee shall include a detailed executive summary in Inuktitut.

12. This Licence is not assignable except as provided in section 44 of the *Act*.

PART C: CONDITIONS APPLYING TO WATER USE

1. The Licensee shall obtain all fresh Water from East Twin Lake using the Water Supply Facilities or as otherwise approved by the Board.

2. The annual quantity of Water withdrawn from East Twin Lake shall not exceed 180,000 cubic metres annually or as otherwise approved by the Board.

3. The Licensee shall, within thirty (30) days of issuance of the Licence, submit to the Board for approval a revised Water quantity estimate which represents the required volume in cubic metres based on the scope of this Licence.

4. The Licensee shall not lower the level of East Twin Lake such that the level of East Twin Lake is below the level of the West Twin Reservoir.

5. The Licensee shall install, operate and maintain measuring equipment to provide a continuous record of Water levels at East Twin Lake and the West Twin Reservoir.

PART D: CONDITIONS APPLYING TO WASTE MANAGEMENT

1. The Licensee shall deposit and contain all Tailings in the West Twin Disposal Area.

2. The Licensee shall deposit all Minewater to the West Twin Disposal Area or the East Adit Treatment Facility except as referred to in Part D, Item 3.

3. Notwithstanding Part D, Item 2, all Minewater which is not deposited in the West Twin Disposal Area or the East Adit Treatment Facility shall meet the Effluent quality limits specified in Part D, Item 6.

4. The Licensee shall provide at least ten (10) days written notice to an Inspector prior to any planned discharges of Effluent from the West Twin Disposal Area and the East Adit Treatment Facility during each calendar year.

5. The Licensee shall not dilute Effluent with Water or any other Effluent prior to its deposit in Water.

6. All Effluent discharged by the Licensee shall not exceed the following Effluent quality limits at all Final Discharge Points:

Substance	Maximum Authorized Monthly Mean Concentration	Maximum Authorized Concentration in a Composite Sample	Maximum Authorized Concentration in a Grab Sample
Arsenic (As)*	0.25 mg/L	0. 375mg/L	0.50 mg/L
Copper (Cu)*	0.10 mg/L	0.15 mg/L	0.20 mg/L
Lead (Pb)*	0.10 mg/L	0.15 mg/L	0.20 mg/L
Nickel (Ni)*	0.50 mg/L	0.75 mg/L	1.00 mg/L
Zinc (Zn)*	0.25 mg/L	0.375 mg/L	0.50 mg/L
Total Suspended Solids (TSS)	15.00 mg/L	22.50 mg/L	30 mg/L
Radium 226 (^{226}Ra)*	0.37 Bq/L	0.74 Bq/L	1.11 Bq/L
Cadmium (Cd)	0.005 mg/L	0.008 mg/L	0.01 mg/L

Note: All concentrations represent total values and * indicates a Deleterious Substance.

7. The Licencee shall ensure that any Effluent discharged at all Final Discharge Points:

   i. Has a pH between 6.0 and 9.5;

   ii. Is not an Acutely Lethal Effluent; and

   iii. Has no visible sheen of Oil and Grease.

8. If a visible sheen of Oil and Grease is present in any Effluent, the Licensee shall ensure that the Maximum Authorized Concentration in a Grab Sample is equal to or less than 30 mg/L. The results shall be submitted to the Board in accordance with Part H, Item 30.

9. The Licensee shall submit to the Board for review by February 4, 2003 a report identifying each Final Discharge Point. The report shall at least include:

   i. Plans, specifications and a general description of each Final Discharge Point together with its specific geo-referenced location;

   ii. A description of how each Final Discharge Point is designed and maintained in respect of the deposit of Deleterious Substances.

10. If, during the term of this Licence, additional Final Discharge Points are identified, the Licensee shall submit the information as required by Part D, Item 9 for each new Final Discharge Point within 30 days after the discharge point is identified and at least 60 days prior to depositing Effluent from the new Final Discharge Point and/or proposed changes

are made to a Final Discharge Point.

11. The Licensee shall operate and maintain the East Adit Treatment Facility such that:

    i. The inspections of the retention pond and structures are carried out weekly during periods of open water and records are kept of these inspections for review upon request of an Inspector; and

    ii. At least one (1) metre of Freeboard is maintained at the retention berm at all times.

12. The Licensee shall operate and maintain the West Twin Disposal Area such that:

    i. At least one (1) metre of Freeboard is maintained at all times;

    ii. Surface Water or ground Water does not enter East Twin Lake from the West Twin Disposal Area;

    iii. Surface water or ground Water does not enter the West Twin Disposal Area from either East Twin Lake, its diversion channel or Twin Lakes Creek;

    iv. The diversion dam and diversion channel for East Twin Lake are maintained to prevent any erosion;

    v. Signs in English and Inuktitut are posted around the West Twin Disposal Area identifying the Lake as a Waste disposal area and are maintained to the satisfaction of an Inspector;

    vi. Inspections of the West Twin Disposal Area and tailings lines are carried out weekly and records kept of these inspections for review upon the request of an Inspector; and

13. The Licensee shall perform more frequent inspection of the area specified in Part D, Item 11(i) and Part D, Item 12 (vi) at the request of an Inspector.

PART E: CONDITIONS APPLYING TO EMERGENCY RESPONSE

1. The Licensee shall submit to the Board for approval within thirty (30) days of issuance of this Licence, a revised **Emergency Response Plan**. This plan shall be prepared in accordance with the Nunavut Water Board's, "Guidelines for Contingency Planning" (1987) and shall also include the standard operating procedures for the decontamination

and disposal of fuel containment infrastructure and equipment.

2. A back-up pump system (stand-by power) and/or other contingency measures shall be maintained at the East Adit Treatment Facility to prevent the release of untreated Effluent to the environment.

3. The Emergency Response Plan referred to in Part E, Item 1 shall be reviewed annually by the Licensee and revised as necessary to reflect changes in operation and technology. The revised Plan shall include but not be limited to:

   i. A revised site risk analysis;

   ii. Changes to the organization scheme for emergency responses, including the roles and responsibilities of the mine's personnel;

   iii. Changes to alerting and notification procedures;

   iv. Changes to the inventory of spill-response equipment, including the location of that equipment; and

   v. Ongoing training plan for mine's personnel.

4. The annual revisions of the Emergency Response Plan referred to in Part E, Item 3 shall be submitted to the Board as an addendum to the original plan as required in Part B, Item 6(iii).

5. If not approved by the Board, the Emergency Response Plan referred to in Part E, Item 1 shall be revised and resubmitted within thirty (30) days of receiving notification of the Board's decision.

6. If, during the period of this Licence, an unauthorized discharge of Waste and/or Effluent occurs, or if such a discharge is foreseeable, the Licensee shall:

   i. Employ the Emergency Response Plan;

   ii. Report the incident immediately via the 24-Hour Spill Reporting Line (867) 920-8130; and

   iii. Submit to an Inspector a detailed written report on each occurrence no later than thirty (30) days after initially reporting.

PART F: CONDITIONS APPLYING TO MODIFICATIONS AND CONSTRUCTION

1. The Licensee shall submit to the Board for approval, design drawings stamped by an Engineer prior to the construction of any dams, dykes or structures intended to contain, withhold, divert or retain Water or Waste.

2. The Licensee may, without written consent from the Board, carry out Modifications to the Water Supply Facilities and Waste Disposal Facilities provided that such Modifications are consistent with the terms of this Licence and the following requirements are met:

   i. The Licensee has notified the Board in writing of such proposed Modifications at least sixty (60) days prior to beginning the Modifications;

   ii. Such Modifications do not place the Licensee in contravention of the Licence or the *Act*;

   iii. The Board has not, during the ninety (90) days following notification of the proposed Modifications, informed the Licensee that review of the proposal will require more than ninety (90) days; and

   iv. The Board has not rejected the proposed Modifications.

3. Modifications for which all of the conditions referred to in Part F, Item 2 have not been met can be carried out only with written approval from the Board.

4. The Licensee shall provide as-built plans and drawings of the Modifications referred to in this Licence within ninety (90) days of completion of the Modification. These plans and drawings shall be stamped by an Engineer.

PART G: CONDITIONS APPLYING TO CLOSURE AND RECLAMATION

1. The Licensee shall notify the Board in writing of its intent to achieve Recognized Closed Mine status.

2. The Licensee shall submit to the Board for approval, within 30 days of issuance of this Licence, a **detailed** timetable for the submission of plans, appendices, studies, and/or reports referred to in this Licence. The Licensee shall comply with the timetable as and when approved by the Board, and any changes to it shall be approved by the Board.

3. The Licensee shall submit to the Board for approval a Final Closure and Reclamation

Plan which shall include:

i. General reclamation objectives for the site;

ii. Environmental characterization;

iii. Identification and description of operational components, infrastructure and utilities to be included in the closure plan;

iv. Potential closure issues and liabilities;

v. For each mine component, a discussion of available closure technology alternatives, and selection of preferred alternatives based on a risk-based approach that incorporates operations audit, engineering and environmental risk assessments, including human and ecological risk assessments;

vi. Preferred reclamation measures, to be supported with detailed documentation (text and engineering drawings);

vii. A detailed description of the final desired landscape; and

viii. Details of restoration scheduling and procedures for coordinating restoration activities with the overall restoration/remediation sequence and materials balance.

4. The Licensee shall submit to the Board for approval a report assessing the proposed covers which shall include but not be limited to:

i. A description of proposed materials;

ii. The results of field testing and the thermal modeling for covers over tailings, waste rock and landfill debris;

iii. Plans showing the pre and post cover topography using sufficiently detailed contour intervals;

iv. An assessment of cover performance under 1000 year return period (warm year) and global warming scenarios;

v. Confirmation of availability of materials for cover construction;

vi. The bathymetry of the sub-aqueous tailings in West Twin Lake Reservoir which shows the extent of tailings located within 1.0 m of the water surface, and plans for mitigation of wave action on these tailings;

vii. Quality Assurance/Quality Control measures for short and long term maintenance;

viii. A verification of cover thickness against extreme annual temperature variation (i.e., 1:100 yr warm event) verified within the boundaries already provided by global warming estimates;

ix. An evaluation of alternatives for increasing minimum water depth in the Reservoir with emphasis on possible effects of waves and winter ice cover on long term water quality; and

x. An assessment of cover thickness with reference to cover result available for Area 14 as a case study.

5. The Licensee shall submit to the Board for approval a report assessing the postulated Talik in the surface tailings cell and the test cell which shall include but not be limited to:

i. The results of drilling and other investigations to characterize the extent of the Talik;

ii. Thermal conditions and soil properties within the Talik;

iii. Identification of the potential for and extent of frost heave, pore water expulsion (volume, rate and water quality) and Pingo formation, and measures to mitigate the effects of any of these processes should they be expected to occur; and

iv. Water sampling requirements in conjunction with a water quality predictive model.

6. The Licensee shall submit to the Board for approval a report assessing all quarries required for cover construction which shall include but not be limited to:

i. Description of extraction method and rate of production;

ii. Identification of Waste/overburden volumes and disposal site;

iii. Description of final quarry geometry and reclamation measures; and

iv. Maps, where appropriate, showing sources and stockpile locations of all borrow materials.

7. The Licensee shall submit to the Board for approval a report on the proposed spillway which shall include but not be limited to:

i. Overview of alternative spillway designs and justification for the preferred alternative;

ii. Design hydrology;

iii. Spillway geometry, with emphasis on the geometry where the spillway meets the covered tailings;

iv. Geology along the centre line of the spillway;

v. Erosion protection measures;

vi. A discussion on the effects of permafrost formation in shallow regions of the reservoir portion, and of the effects of the entrainment of tailings within surface ice formation on the re-suspension of tailings and how these mechanisms will affect long term Water quality; and

vii. A discussion of how pore water expulsion from the freezing surface cell may affect the long-term Water quality of the reservoir portion of the West Twin Disposal Area.

8. The Licensee shall submit to the Board for approval a report assessing all waste rock which shall include but not be limited to:

i. Estimated volumes for recovery and/or remediation;

ii. Plans, sections and estimated volumes of potentially acid generating or metal leachable waste rock at the primary disposal areas;

iii. A description of the removal methodology, sequence, rate and disposal locations for material which cannot remain on surface;

iv. Assessment in relation to mine soils (waste rock, pit walls) under acidic and alkaline leaching conditions;

v. An estimate of the quantity of acid generating or metal leachable waste rock which cannot be practically removed and the scope of compensatory environmental protection measures;

vi. A description of areas, slope angles, and relevant topography of waste rock dumps reclaimed or otherwise; and

vii. A comparison between complete removal/excavation against leaving in place some of the waste rock adjacent to Twin Lakes Creek including geological mapping and geochemical characterization of residuals.

9. The Licensee shall submit to the Board for approval a report on monitoring requirements which shall include but not be limited to:

i. A description of how closure assessment, monitoring and treatment will be considered, including a description of any post-closure treatment potentially required for Effluent that is not acceptable for discharge as required by Part D, Item 6 from and Final Discharge Point(s);

ii. A description of the monitoring program for the reclamation and closure periods to be employed in relation to water quality, flow, thermal analysis, soil sampling relative to remediation objectives and geotechnical inspections to ensure long term stability of earthworks;

iii. Maps/drawing showing locations of all water quality monitoring and thermal analysis stations;

iv. A summary of monitoring stations, description, sampling requirements and analysis requirements for *in situ* and site specific parameters;

v. The geographical coordinates of sampling areas for Water quality monitoring, in degrees, minutes and seconds, and a description that is sufficient to identify the location of the sampling areas;

vi. The methodologies used to conduct Effluent characterization and Water quality monitoring, and the related method detection limits;

vii. A description of quality assurance and quality control measures that were implemented and the data related to the implementation of those measures;

viii. Additional measures to assess metal loading due to different sources adjacent to Twin Lakes Creek incorporating previous studies data and conclusion of the Metal Loading Studies already completed; (previous Licence NWB1NAN9702 Part G, Item 5);

ix. A proposal for additional sampling of marine sediments near the mouth of Twin Lakes Creek, the dock area and at greater distances from these points in the sound; and

x. Sampling and testing protocols for determining the success of restoration

measures undertaken should be documented. The program shall include, but not be limited to:

a. Areas with potentially acid/alkaline drainage and metal leaching;

b. Water quality trends in waste rock dump and ore stockpile seepage;

c. Methods, timing, and details respecting the placement of cover material and the development of permafrost in tailings material as part of tailings restoration; and

d. Stability of surface drainage channel(s) over reclaimed tailings and success of applying restoration research results.

10. The Licensee shall provide the reports requested under Part G, Item 4 to 9 as appendices to the Plan referred to in Part G, Item 3. The appendices shall be submitted to the Board for approval as scheduled by Part G Item 2 or as otherwise approved by the Board.

11. If not approved by the Board, the timetable or plan referred to in Part G, Item 2 or 3 shall be revised and resubmitted within thirty (30) days of receiving notification of the Board's decision.

12. The Licensee shall review the Final Closure and Reclamation Plan as required in Part G, Item 3 and the appendices as required under Part G, Item 10 annually, and shall modify the Plan/Appendices as necessary to reflect directions from the Board, changes in operations and technology, and results from restoration research and other studies. All proposed modifications to the Plan/Appendices shall be submitted to the Board for approval as an addendum to the original plans as required in Part B, Item 6(vi).

13. The Licensee shall submit to the Board for approval a report on a Phase II Environmental Site Assessment to conform to at least *CAN/CSA-Z769-00 Phase II Environmental Site Assessment- A National Standard of Canada (approved July 2002)*. This report shall include but not be limited to:

i. Assessment in relation to mine soils (waste rock, pit walls, roads, wind blown tailings, concentrate spills) under acidic and alkaline leaching conditions;

ii. An evaluation of the metal release rates from the site under assumed or estimated pre-mining conditions, current conditions, and upon completion of reclamation activities;

iii. An assessment of the closure alternatives for hydrocarbon contamination and the industrial landfill;

iv. Results of the Phase 2 investigation, including contamination of marine environment of the dock and loading facilities;

v. A description of the proposed approach including a comparison of the proposed approach to comparably contaminated industrial landfill remediation at DEW line and other northern sites; and

vi. A final report on the assessment of 'wind blown tailings' required in Part H, Item 7 (iii) of water licence NWB1NAN9702, which shall include but not be limited to:

a. Assessment of particle size distribution, chemical composition of particulate samples collected;

b. Historical ground photo documentation; and

c. Maps indicating location of monitoring equipment.

14. The Licensee shall submit to the Board for approval a Human Health and Ecological Risk Assessment conducted in accordance with Canadian Environmental Quality Guidelines and/or other acceptable industry standards.

15. The Licensee shall submit to the Board for approval a West Twin Disposal Area Closure Plan, which shall include but not be limited to:

i. A brief description of historical operating practices, water movement and overall function of the system;

ii. An updated water balance for the system;

iii. Current site assessment including characterization of all tailings both for physical properties (gradation, density, mineralogy) and thermal conditions in the surface cell, dyke and possibly the reservoir;

iv. Cover design and description of all construction activities associated with the closure plan, predictions of site stability and water quality with details of analyses that support the plan;

v. Contingency plans for dealing with uncertainties and adverse performance during the post-closure monitoring period. These plans need to include a discussion of events that trigger their implementation;

vi. A monitoring program that includes: permafrost stability, deformations of both the dyke and soil cover as well as water quality determinations; and

vii. An appendix that constitutes a construction plan with material specifications, a quality control plan and as-builts drawings stamped by an Engineer.

16. The Licensee shall submit to the Board for approval an Underground Mine Solid Waste Disposal Plan which shall include but not be limited to:

i. Standard operating procedures for the decontamination and disposal of equipment to the underground including quality assurance and quality control measures for cleaning equipment and environmental mitigation measures for disposal activities;

ii. A simple classification system for Waste designated for underground disposal based on type and future risk;

iii. Criteria for segregation of material according to the classification system adopted;

iv. Identification and allocation of available space, based on the premise that those materials posing the greatest risk will be stored in the deepest portions of the workings;

v. Placement methods and schedules for the various material types;

vi. Maps and sections showing typical or critical components of the disposal areas both before and after filling;

vii. Plans and sections showing the extent of the proposed disposal areas including coordinate grid on all plans showing underground openings and exact coordinates of all surface openings (shafts, adits, ramps, etc);

viii. An estimate of the percentage of each void space to be filled;

ix. An evaluation of those locations that pose the greatest risk of long-term instability including monitoring requirements if applicable;

x. Summary of conclusions and recommendation of existing stability assessments; and

xi. An outline of the documentation that will confirm compliance that will be on file following closure.

17. The Licensee shall submit to the Board for approval a Landfill Closure Plan which shall include but not be limited to:

    i. Overview of site conditions such as physical setting, geology, thermal regime and water balance;

    ii. Final cover design including assessment of alternatives, geothermal assessment, cover design objectives to shed water and assessment of cover thickness with respect to design objectives and final landfill contours;

    iii. Identification of spatial limits of Waste;

    iv. Chemical and physical characteristics of waste;

    v. Incorporation of results of the Phase I/Phase II Environmental Site assessment (Part G, Item 4 of water licence NWB1NAN9702);

    vi. Incorporation of historical and new water quality information and construction history into the design;

    vii. Assessment of the need for a leachate collection system;

    viii. Short term and long term monitoring requirements;

    ix. Preliminary design plan and drawings stamped by an Engineer; and

    x. Timetable of implementations of construction and monitoring.

18. The Licensee shall implement the plans referred to in Part G, Item 15 to 17 as and when approved by the Board in accordance with the timetables and procedures specified in the plans.

19. If not approved by the Board, the plans referred to in Part G, Item 15 to 17 shall be revised and resubmitted within thirty (30) days of receiving notification of the Boards decision.

20. The Licensee shall review the plans referred to in Part G, Item 15 to 17 annually and modify them as necessary, or as requested by the Board, to reflect changes in operation and technology. Any proposed modification shall be submitted to the Board for approval as an addendum to the original plan as required in Part B, Item 6(iii).

21. The Licensee shall submit to the Board for approval, annually by March 31st for the preceding year, an updated estimate of the total mine closure restoration liability using the

current version of RECLAIM, its equivalent or other similar method approved by the Board. The estimate shall be based on third party contractor rates for materials and labour.

22. The Licensee shall submit to the Board for approval by May 1, 2007, the Terms of Reference for completion of a Comprehensive Assessment of Mine Site Remediation in terms of remediation objectives and the need for ongoing monitoring and long term monitoring and follow-up remediation measures requirements.

PART H: CONDITIONS APPLYING TO THE MONITORING PROGRAM

GENERAL

1. All analyses shall be conducted in accordance with methods prescribed in the current edition of "*Standard Methods for the Examination of Water and Wastewater*", or as prescribed by the *Metal Mining Effluent Regulations* or other accepted standards.

2. All analyses shall be performed in a laboratory approved by the Analyst.

3. The Licensee shall install meters or such devices, or use such methods as approved by the Board for measuring the volumes of Water used and Effluent discharged. The meters and measuring devices or methods shall be operated and maintained to the satisfaction of an Inspector.

4. The Licensee shall continue to maintain the necessary signs to identify the stations of the Monitoring Program. All signs shall be located and maintained to the satisfaction of an Inspector.

5. The Licensee shall collect the samples of effluent referred to in this Part without delay when the circumstances permit if, at any time, the period specified for collecting samples was extended due to:

    i. Unforeseen circumstances cause safety concerns or access problems and render the collection of samples of effluent impracticable; or

    ii. The Licensee notifies an inspector of the circumstances.

GEOTECHNICAL INSPECTION

6. An inspection of the earthworks, the geological regime, and the hydrological regime of the West Twin Disposal Area, East Adit Treatment Facility, and fuel containment berms shall be carried out annually during the summer by a Geotechnical Engineer. The Geotechnical

Engineer's report shall be submitted to the Board within sixty (60) days of the inspection, with a covering letter from the Licensee outlining an implementation plan to respond to the Engineer's recommendations.

EFFLUENT MONITORING

7. The Licensee shall collect a grab sample or composite sample of effluent daily from Station No. 159-4 during periods of discharge and without delay, record the pH and concentration of substances as required by Part D, Item 6, except for Nickel and Radium^{226}. Samples for Nickel and Radium shall be collected in accordance with Part H, Item 10 or Part H, Item 11.

8. The Licensee shall collect a grab sample or composite sample of effluent daily for the initial 14 days of discharge and weekly thereafter at Station No. 159-12 during periods of discharge and without delay, record the pH and concentration of substances as required by Part D, Item 6, except for Nickel and Radium^{226}. Samples for Nickel and Radium shall be collected in accordance with Part H, Item 10 or Part H, Item 11.

9. If additional Final Discharge Points are identified as required by Part D, Item 10, sampling frequency shall comply with Part H, Item 10 and Part H, Item 11.

10. The Licensee shall not less than once per week and not less than four days apart, collect from each Final Discharge Point a grab sample or composite sample of effluent and without delay, record the pH and concentration of substances as required by Part D, Item 6.

11. The Licensee shall increase the frequency of sampling if the substance's monthly mean concentration is equal to or greater than 10% of the value set for the Maximum Monthly Mean Concentration as required under Part D, Item 6.

12. Testing conducted under Part D, Item 6 shall comply with the analytical requirements set out in Schedule 3 of the MMER and for Cadmium in accordance with the analytical requirements outlined in the Environment Canada "*Guidance Document for the Sampling and Analysis of Metal Mining Effluents*" EPS 2/MM/4-April 2001.

13. The Licensee shall maintain records relating to effluent monitoring equipment that contain:

    i. A description of the equipment and, if applicable the manufacturer's specification and the year and model number of the equipment; and

    ii. The results of the calibration tests of the equipment.

ACUTE LETHALITY AND *DAPHNIA MAGNA* TESTING

14. The Licensee shall collect from each Final Discharge Point a grab sample and conduct an Acute Lethality Test in accordance with the requirements and procedures specified in

Environment Canada's "*Biological Test Method: Reference Method for Determining Acute Lethality of Effluents to Rainbow Trout*" Reference Method EPS 1/RM/13;

i. Monthly in accordance with the Section 5 or 6 of the specified reference;

ii. Without delay in accordance with procedure set out in Section 6 if a deposit of deleterious substance occurs.

15. The Licence shall select and record the sampling date not less than 30 days in advance of collecting the grab sample as required in Part H, Item 14 and collect the samples not less than 15 days apart.

16. If a sample of Effluent is determined to be acutely lethal the Licensee shall:

i. Without delay conduct Effluent Characterization as required by Part H, Item 33 on an aliquot of the monthly sample required by Part H, Item 14 (i);

ii. Collect from each Final Discharge Point a grab sample twice a month and conduct sampling in accordance with Section 6 of Reference Method EPS 1/RM/13 referred to in Part H, Item 14;

iii. Collect grab samples not less than seven days apart.

17. The Licensee may resume sampling and testing as required in Part H, Item 14 if the effluent is determined not to be acutely lethal in three consecutive tests conducted in accordance with Part H, Item 16 (ii).

18. The Licensee shall ensure the grab sample taken as required in Part H, Item 14 is of sufficient volume to conduct all sampling requirements of Part H, Item 14, 16 and 19, where applicable and if necessary.

19. The Licensee shall conduct *Daphnia magna* monitoring tests in accordance with Environment Canada's "*Biological Test Method: Reference Method for Determining Acute Lethality of Effluents to Daphnia magna*" Reference Method EPS 1/RM/14;

i. At the same time as acute lethality test are required under Part H, Item 14 or 16;

ii. On aliquots of samples collected as required in Part H, Item 14 or 16.

20. The Licensee shall record without delay the information required by S. 8.1 of the reference methods referred to in Part H, Item 14 and 19.

VOLUME AND EFFLUENT FLOW RATE

21. The daily quantity of water pumped from East Twin Lake for industrial purposes shall be recorded in cubic metres.

22. The volume of effluent discharged from Station No. 159-4 and Station No. 159-12 shall be measured and recorded daily during periods of flow.

23. If new Final Discharge Points are identified in accordance with Part D, Item 10, the Licensee shall measure and record the total monthly volume of effluent deposited from each new final discharge point.

24. The Licensee shall measure and record the flow at Station No. 159-4 and Station 159-12 as required by Part H, Item 25(i).

25. The Licensee shall record the total monthly effluent volume deposited from each final discharge point. The total monthly volume deposited shall be based on the average of the flow rates and the Licensee shall:

    i. Measure flow rates at the same time samples are collected as required in Part H, Item 7 to 11 where applicable unless the licensee uses a system that takes continuous measurements;

    ii. Use monitoring equipment that is accurate to within 15 % of measured flow; and

    iii. Calibrate the monitoring equipment not less than once in each year and record the results.

CALCULATION OF LOADING

26. The Licensee shall record in kilograms the mass loading of the substances required by Part D, Item 6 contained in the effluent deposited from each final discharge point for each day on which a sample is collected for the substance under Part H, Item 7 to 11 where applicable.

27. The Licensee shall determine mass loading by multiplying the concentration of the substance recorded as determined Part H, Item 7 to 11 where applicable by the total volume of effluent deposited from each final discharge point on the day on which the sample is collected.

28. The Licensee shall determine the mass loading for each calendar month by multiplying the average of all mass loadings determined for that month under Part H, Item 27 by the number of days in that calendar month during which there was a deposit.

29. If the analytical result from any test conducted under Part H, Item 7 to 11 where applicable is less than one-tenth of the method detection limit as required under Part H, Item 12, the test result shall be considered to be zero for the purpose of performing a calculation under Part H, Item 27.

REPORTING REQUIREMENTS

30. The Licensee shall submit to the Board an effluent monitoring report for all tests and monitoring conducted during each calendar quarter not later than 45 days after the end of the quarter (i.e., February 14, May 14, August 14, and November 14). The **Effluent monitoring report** shall include:

    i. The information as required by Part H, Item 20;

    ii. The concentration and monthly mean concentration of each substance set out in Part D, Item 6 that is contained in effluent samples collected under Part H, Item 7 to 11 where applicable;

    iii. The pH of the effluent samples as required by Part H, Item 7 to 11 where applicable;

    iv. Whether a composite or grab sample collection method was used for each effluent sample as required by Part H, Item 7 to 11 where applicable;

    v. The daily water use volumes as required by Part H, Item 21;

    vi. The total volume of effluent deposited daily as required by Part H, Item 22 and 23 if applicable for each month of the reporting quarter;

    vii. The mass loading of the substances set out in Part D, Item 6 as recorded under Part H, Item 26; and

    viii. The results of the effluent characterization conducted as required by Part H, Item 16(i).

31. The Licensee shall submit to Board annually, no later than March 31, a report summarizing the Effluent monitoring results for the previous calendar year as required in Part B, Item 6(ix)(b).

32. The Licensee shall notify an Inspector without delay and provide a written report of the test results to the Inspector within 30 days after the tests have been completed if the results of the effluent monitoring tests conducted under Part H, Item 7 to 11 and/or Part

H, Item 14 to 16 where applicable indicate that limits set in Part D, Item 6 and 7 have been exceeded.

EFFLUENT CHARACTERIZATION

33. The Licensee shall conduct Effluent characterization by analyzing a sample of effluent and recording the hardness and alkalinity of the sample and the concentrations, in total values, of the following:
    i. aluminum;
    ii. cadmium;
    iii. iron;
    iv. subject to Part H, Item 35, mercury;
    v. molybdenum;
    vi. ammonia; and
    vii. nitrate.

34. The effluent characterization as required in Part H, Item 33 shall be conducted four times per calendar year and not less than one month apart, on aliquots of effluent sample collected under Part H, Item 7 to 11, with the first characterization to be conducted on an aliquot of effluent sample collected not later than June 6, 2003.

35. The recording of the concentration of total mercury in effluent referred to Part H, Item 33 may be discontinued if that concentration is less than 0.10 µg/L in 12 consecutive samples collected under Part H, Item 34.

36. Quality assurance and quality control measures shall be implemented that will ensure the accuracy of the effluent characterization data.

SUBLETHAL TOXICITY

37. The Licensee shall conduct sublethal toxicity testing in accordance with the applicable methods referred to in Schedule 5-S.5 of the *Metal Mining Effluent Regulations* and record the results for:

    i. A fish species, an invertebrate species, a plant species and

    ii. An algal species, in the case of effluent deposited into fresh waters; and

    iii. A fish species, an invertebrate species and an algal species, in the case of effluent deposited into marine or estuarine waters.

38. The sublethal toxicity tests shall be conducted on the aliquots of effluent sample collected in accordance with Part H, Item 34 from the mine's *final discharge point that has*

potentially the most adverse environmental impact on the environment, taking into account the mass loadings of the substances set out in Part D, Item 6 as determined under Part H, Item 27 and the manner in which the effluent mixes within the exposure area.

39. The Licensee shall conduct the sublethal toxicity tests in accordance with Part H, Item 37 and 38, two times each calendar year for three years and once each year after the third year, with the first testing to occur on an effluent sample collected not later than June 6, 2003.

WATER QUALITY MONITORING

40. The Licensee shall collect water samples beginning June 6, 2003:

    i. Four times per calendar year and not less than one month apart on the samples of water collected the exposure area surrounding the point of entry of effluent into water from each final discharge point and from the related reference areas, and

    ii. At the same time that the biological monitoring studies are conducted on samples of water collected in the areas that are selected in accordance with Part H, Item 43.

41. For the samples required in Part H, Item 40 the Licensee shall record:

    i. The temperature of the water and the dissolved oxygen concentration in the water in the exposure and reference areas where the samples are collected;

    ii. The pH, hardness and alkalinity of the water samples and the concentration of the substances set out in Part H, Item 33; and

    iii. The concentration of the substances set out in Part D, Item 6.

42. The Licensee shall submit to the Board the exact location of water sampling reference areas as referred to in Part H, Item 40 (i) within 30 days of identifying such areas.

43. The Licensee shall implement quality assurance and quality control measures that will ensure the accuracy of water quality monitoring data required in Part H, Item 41.

BIOLOGICAL MONITORING

44. The Licensee shall within six (6) months of written notification as referred to in Part H, Item 1 submit to the Board for approval the Biological Monitoring studies as required by Part 2 of Schedule 5 of the *Metal Mining Effluent Regulations*.

TABLE 1 – SUMMARY OF MONITORING REQUIREMENTS

TABLE 1: SUMMARY OF MONITORING REQUIREMENTS

Station Number	Description	Sampling Requirements	Analysis Requirements							
			COLUMN (A) Deleterious Substance [1] [2]	COLUMN (B) Required Effluent Characterization and Water Quality Monitoring Parameters [2] [4]	COLUMN (C) Required Additional Water Quality Monitoring Parameters [6]	COLUMN (D) Site-Specific Parameters [7]	COLUMN (E) Acute Lethality Ref: EPS1/RM/13[8]	COLUMN (F) *Daphnia magna* Toxicity Assessment Ref: EPS1/RM/14[9]	COLUMN (G) Measure Flow [10] And Mass Loading [11]	COLUMN (H) Sublethal Toxicity [12]
159-1	Mill tailings at pump box in the mill	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required
159-2	Mill tailings at pump house in the wet well at the West Twin Disposal Area.	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required
159-4	**Final Discharge Point** Effluent from the West Twin Disposal Area at decant structure.	**Column (A) (G) & (D) (C)** Daily during decant [13] **Column (B) (C)** Four times/year not less than one month apart [14] **Column (B)** Required immediately if effluent Acutely lethal [15] **Column (E) (F)** Monthly [14] during decant **Column (H)** Two times/yr for three years then once/year [17]	Arsenic Copper Lead Nickel Zinc Total Suspended Solids Radium 226 pH Oil & Grease (visual)[3] Cadmium	Aluminium Cadmium Iron Mercury [5] Molybdenum Ammonia Nitrate Alkalinity Total Hardness	Temperature pH Conductivity	Ammonia	Required	Required	Required	Potentially required refer to Note [12]

Station Number	Description	Sampling Requirements	Analysis Requirements							
			COLUMN (A) Deleterious Substance [1] [2]	COLUMN (B) Required Effluent Characterization and Water Quality Monitoring Parameters [2] [4]	COLUMN (C) Required Additional Water Quality Monitoring Parameters [6]	COLUMN (D) Site-Specific Parameters [7]	COLUMN (E) Acute Lethality Ref: EPS1/RM/13 [8]	COLUMN (F) *Daphnia magna* Toxicity Assessment Ref: EPS1/RM/14 [9]	COLUMN (G) Measure Flow [10] And Mass Loading [11]	COLUMN (H) Sublethal Toxicity [12]
159-4a	Receiving environment Exposure area surrounding point of entry of effluent from Final Discharge Point Station 159-4	Column (A) (B) & (C) Four times/year not less than one month apart [14]	Arsenic Copper Lead Nickel Zinc Total Suspended Solids Radium 226 pH Oil & Grease (visual) [3] Cadmium	Aluminium Cadmium Iron Mercury [5] Molybdenum Ammonia Nitrate Alkalinity Total Hardness	Dissolved oxygen Temperature pH Conductivity	Not Required	Not Required	Not Required	Not Required	Not Required
159-4b	Reference Area [13] with respect to Station 159-4a									
159-6	Twin Lakes Creek, approximately 10 m/day upstream from its mouth at high tide	Column (C) (D) Weekly during periods of flow	Not Required	Not Required	Temperature pH Conductivity	Lead Cadmium Zinc Dissolved Lead Dissolved Cadmium Dissolved Zinc Suspended Solids Ammonia	Not Required	Not Required	Not Required	Not Required
159-9	Twin Lakes Creek, directly north of the emergency tailings dump point by Dump Pond	Column (C) (D) Bi-Weekly during periods of flow	Not Required	Not Required	Temperature pH Conductivity	Lead Zinc Suspended Solids Dissolved Zinc Dissolved Lead	Not Required	Not Required	Not Required	Not Required

Station Number	Description	Sampling Requirements	Analysis Requirements							
			COLUMN (A) Deleterious Substance [1] [2]	COLUMN (B) Required Effluent Characterization and Water Quality Monitoring Parameters [2] [4]	COLUMN (C) Required Additional Water Quality Monitoring Parameters [6]	COLUMN (D) Site-Specific Parameters [7]	COLUMN (E) Acute Lethality Ref: EPS1/RM/13 [8]	COLUMN (F) *Daphnia magna* Toxicity Assessment Ref: EPS1/RM/14 [9]	COLUMN (G) Measure Flow [10] And Mass Loading [11]	COLUMN (H) Sublethal Toxicity [12]
159-10	Twin Lakes Creek, 10 metres upstream of the west tributary from Nanisivik townsite	Column (C) (D) Bi-Weekly during periods of flow	Not Required	Not Required	Temperature pH Conductivity	Lead Cadmium Zinc Suspended Solids	Not Required	Not Required	Not Required	Not Required
159-11	Twin Lakes Creek, downstream of old waste-rock disposal area located 350 metres upstream of Station 159-10.	Not required	Not required	Not required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required

Station Number	Description	Sampling Requirements	Analysis Requirements							
			COLUMN (A) Deleterious Substance [1] [2]	COLUMN (B) Required Effluent Characterization and Water Quality Monitoring Parameters [2] [4]	COLUMN (C) Required Additional Water Quality Monitoring Parameters [6]	COLUMN (D) Site-Specific Parameters [7]	COLUMN (E) Acute Lethality Ref: EPS1/RM/13 [8]	COLUMN (F) *Daphnia magna* Toxicity Assessment Ref: EPS1/RM/14 [9]	COLUMN (G) Measure Flow [10] And Mass Loading [11]	COLUMN (H) Sublethal Toxicity [12]
159-12	**Final Discharge Point** East Portal Creek at the East Adit Treatment Facility discharge point (formerly at roadway from east portal).	**Column (A) (G) & (D)** Daily for initial fourteen (14) day weekly thereafter [13] **Column (B) (C)** Four times/year not less than one month apart [13] **Column (B)** Required immediately if effluent Acutely lethal [16] **Column (E) (F)** Monthly [15] during decant **Column (H)** Two times/yr for three years then once/year [17]	Arsenic Copper Lead Nickel Zinc Total Suspended Solids Radium 226 pH Oil & Grease (visual) [3] Cadmium	Aluminium Cadmium Iron Mercury [5] Molybdenum Ammonia Nitrate Alkalinity Total Hardness	Temperature pH Conductivity	Ammonia	Required	Required	Required	Potentially required refer to Note [12]
159-12a	East Portal Creek, upstream of the East Adit Treatment Facility	Not required	Not required	Not required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required

Station Number	Description	Sampling Requirements	Analysis Requirements							
			COLUMN (A) Deleterious Substance [1] [2]	COLUMN (B) Required Effluent Characterization and Water Quality Monitoring Parameters [3] [4]	COLUMN (C) Required Additional Water Quality Monitoring Parameters [8]	COLUMN (D) Site-Specific Parameters [7]	COLUMN (E) Acute Lethality Ref: EPS1/RM/13 [6]	COLUMN (F) *Daphnia magna* Toxicity Assessment Ref: EPS1/RM/14 [9]	COLUMN (G) Measure Flow [10] And Mass Loading [11]	COLUMN (H) Sublethal Toxicity [12]
159-12b	Receiving environment Exposure area surrounding point of entry of effluent from Final Discharge Point Station159-12	Column (A) (B) & (C) Four times/year not less than one month apart [13]	Arsenic Copper Lead Nickel Zinc Total Suspended Solids Radium 226 pH Oil & Grease (visual) [3] Cadmium	Aluminium Cadmium Iron Mercury [5] Molybdenum Ammonia Nitrate	Dissolved oxygen Temperature pH Conductivity	Not Required	Not Required	Not Required	Not Required	Not Required
159-12c	Reference Area [15] with respect to Station 159-12b									
159-13	Chris Creek, 50 metres downstream from the confluence of East Portal and Chris Creek.	Not required	Not required	Not required	Not required	Not required	Not Required	Not Required	Not Required	Not Required
159-14	Chris Creek, 50 metres upstream from the confluence of East Portal and Chris Creek.	Not required	Not required	Not required	Not required	Not required	Not Required	Not Required	Not Required	Not Required
159-15	Chris Creek, upstream form where Area 14 drainage enters Chris Creek (at the culvert)	Column (C) (D) Bi-Weekly during periods of flow	Not Required	Not Required	Temperature pH Conductivity	Lead Cadmium Zinc Suspended Solids	Not Required	Not Required	Not Required	Not Required

Station Number	Description	Sampling Requirements	Analysis Requirements							
			COLUMN (A) Deleterious Substance [1] [2]	COLUMN (B) Required Effluent Characterization and Water Quality Monitoring Parameters [3] [4]	COLUMN (C) Required Additional Water Quality Monitoring Parameters [4]	COLUMN (D) Site-Specific Parameters [7]	COLUMN (E) Acute Lethality Ref: EPS1/RM/13[8]	COLUMN (F) *Daphnia magna* Toxicity Assessment Ref: EPS1/RM/14[9]	COLUMN (G) Measure Flow [10] And Mass Loading [11]	COLUMN (H) Sublethal Toxicity [12]
159-16	Below Area 14 on Chris creek (formerly referred to as Chris Creek # 1 in Licensee's database).	**Column (C) (D)** Bi-Weekly during periods of flow	Not Required	Not Required	Temperature pH Conductivity	Lead Cadmium Zinc Suspended Solids	Not Required	Not Required	Not Required	Not Required
159-17	Above the outflow of Chris Creek to Strathcona Sound	Not required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required
159-18	Ocean View Open Pit Runoff	**Column (C) (D)** Twice during periods of flow	Not Required	Not Required	Temperature pH Conductivity	Lead Cadmium Zinc Suspended Solids	Not Required	Not Required	Not Required	Not Required
159-19	Ocean View Open Pit-Sump	**Column (C) (D)** Twice during periods of flow	Not Required	Not Required	Temperature pH Conductivity	Lead Cadmium Zinc Suspended Solids	Not Required	Not Required	Not Required	Not Required

Station Number	Description	Sampling Requirements	Analysis Requirements							
			COLUMN (A) Deleterious Substance [1] [2]	COLUMN (B) Required Effluent Characterization and Water Quality Monitoring Parameters [2] [4]	COLUMN (C) Required Additional Water Quality Monitoring Parameters [6]	COLUMN (D) Site-Specific Parameters [7]	COLUMN (E) Acute Lethality Ref: EPS1/RM/13 [8]	COLUMN (F) *Daphnia magna* Toxicity Assessment Ref: EPS1/RM/14 [9]	COLUMN (G) Measure Flow [10] And Mass Loading [11]	COLUMN (H) Sublethal Toxicity [12]
159-XX	Additional Final Discharge Points [20] identified in accordance with Part D, Item 10	**Column (A) (G) & (D)** Weekly [14] **Column (B) (C)** Four times/year not less than one month apart [18] **Column (B)** Required immediately if effluent Acutely lethal [16] **Column (E) (F)** Monthly [15] during decant	Arsenic Copper Lead Nickel Zinc Total Suspended Solids Radium 226 pH Oil & Grease (visual) [3] Cadmium	Aluminium Cadmium Iron Mercury [5] Molybdenum Ammonia Nitrate Alkalinity Total Hardness	Temperature pH Conductivity	To be set by the Board upon notification by the Licensee in accordance with Part D, Item 10	Required	Required	Required	Potentially required refer to Note [12]
159-XXa 159-XXb	Receiving environment Exposure area surrounding point of entry of effluent from Final Discharge Point Station 159-XX Reference Area [19] with respect to Station 159-XXa	**Column (A) (B) & (C)** Four times/year not less than one month apart [18]	Arsenic Copper Lead Nickel Zinc Total Suspended Solids Radium 226 pH Oil & Grease (visual) [3] Cadmium	Aluminium Cadmium Iron Mercury [5] Molybdenum Ammonia Nitrate Alkalinity Total Hardness	Dissolved oxygen Temperature pH Conductivity	To be set by the Board upon notification by the Licensee in accordance with Part D, Item 10	Not Required	Not Required	Not Required	Not Required

Station Number	Description	Sampling Requirements	Analysis Requirements							
			COLUMN (A) **Deleterious Substance** [1] [2]	COLUMN (B) **Required Effluent Characterization and Water Quality Monitoring Parameters** [3] [4]	COLUMN (C) **Required Additional Water Quality Monitoring Parameters** [5]	COLUMN (D) **Site-Specific Parameters** [7]	COLUMN (E) **Acute Lethality Ref: EPS1/RM/13** [8]	COLUMN (F) ***Daphnia magna* Toxicity Assessment Ref: EPS1/RM/14** [9]	COLUMN (G) **Measure Flow** [10] **And Mass Loading** [11]	COLUMN (H) **Sublethal Toxicity** [12]
SAMPLE TYPE/RESTRICTIONS/ANAYLSIS			Grab or Composite [17]	Grab-Aliquots of sample taken in Column (A)[17] Column (B)-Required immediately if effluent Acutely lethal [16] take grab (not less than seven days apart) twice a month Column (B) Four times/year not less than one month apart [18]	*In Situ* [17]	Grab or composite	Grab Select and record sampling date not less than 30 days in advance of collecting the sample. Collect samples not less than 15 days apart. Ensure sample sufficient size to conduct analysis requirements of Column (B), Column (F) and Note (9)	Grab Use same sample as Column (E) for analysis use Aliquots of samples collected as required in Column (E).	Flow: Measure flow at same time as samples collected unless Licensee uses system that takes continuous measurements. Monitoring equipment accurate within 15% and calibrate yearly.	Grab - Aliquots of sample taken in Column (B) Analysis-Two times/yr for three years then once/year [17]
REPORTING REQUIREMENTS [21]			Quarterly & Annually	Quarterly & Annually	Quarterly & Annually	Quarterly & Annually	Quarterly & Annually	Quarterly & Annually	Quarterly & Annually	Annually

(1) List of Regulated parameters as per Part D, Item 6. Cadmium and Oil/Grease are not 'deleterious substances' but historically regulated parameters.
(2) All concentration are in Total values unless otherwise indicated. Effluent loading will also be calculated and reported. Refer to Column G.
(3) If a visual sheen is present, Oil Grease MAC in Grab shall be equal to or less than 30 mg/L. (Part D, Item 8)
(4) List of parameters required for effluent characterization and water quality monitoring as required in Part H, Item 33.
(5) Analysis of mercury may be discontinued if the concentration of total mercury in effluent is less than 0.10 ug/L in 12 consecutive samples of effluent. Refer to Part H, Item 35
(6) *In Situ* measured parameters.
(7) Site Specific parameters based on historical monitoring data required under the water licences.
(8) Biological Test Method for Determining Acute Lethality of Effluents to Rainbow Trout. Refer to Part H, Item 34.
(9) Biological Test Method for Determining Acute lethality of Effluents to Daphnia magna. Refer to Part H, Item 19.
(10) Record flow in accordance with Part H, Item 25.
(11) Part H, Item 27: Mass Loading = (Concentration of substances in Column A) x (volume effluent discharged at each station on day which sample taken) conditional on Part H, Item 29. Monthly average calculated in accordance with Part H Item 28
(12) In accordance with applicable methods in Schedule 5, Section 5 of the *Metal Mining Effluent Regulations*. Refer to Part H, Item 37 to 39. Test to be performed on a single Final Discharge Point that is the " final discharge point that has potentially the most adverse environmental impact on the environment" which is to be determined by the Licensee.
(13) Except for Nickel and Radium sample as noted in (14)
(14) Sampling not less than once/week and not less than 4 days apart unless monthly mean concentration ≥ 10% max. monthly mean concentration as required in Part D, Item 6.
(15) Monthly test in accordance with Part 5 or 6 of document in Note (9). If deleterious substance deposit occurs, test is required immediately in accordance with Section 6 of document referred to in Note (9).
(16) If acutely lethal, take grab (not less than seven days apart) twice a month and sample in accordance with Section 6 of document in Note (9). Resume monthly sampling if three consecutive tests determine effluent not acutely lethal.
(17) First characterization/testing on aliquot of effluent sample collected no later than June 6, 2003.
(18) Water samples collected four times/year and not less than one month apart and at the same time as required in Part H, Item 44 (Biological Monitoring Studies - yet to be determined).
(19) Reference Areas are to be determined by the Licensee. The licensee shall notify identifying information for related reference areas (existing or new stations) within 30 days. Exposure area and Reference Area sampling on water only not effluent
(20) Submit new information required in Part D, Item 9 within 30 days after a discharge point is identified and at least 60 days prior to depositing effluent.
(21) Annual reporting in accordance with Part B, Item 6(ix); Quarterly reporting in accordance with Part H, Item 30. Immediate notification with written report within 30 days in accordance with Part H, Item 32 if limits set in Part D, Item 6 are exceeded and if in non compliance with Part D, Item 7.