
NUNAVUT WATER BOARD

Reasons for Decision

For

**Licence Application for the Closure and Reclamation of
the Nanisivik Mine filed by CanZinco Limited**

Date of Decision: October 10, 2002

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I. SUMMARY

On February 11, 2002, the Nunavut Water Board received from CanZinco Limited an application for the renewal of licence NWB1NAN9702 for the closure and reclamation of the Nanisivik Mine. The application was forwarded to the Nunavut Planning Commission for conformity with the approved regional land use plan, and to the Nunavut Impact Review Board for environmental assessment. The Board gave notice of the application, and held a pre-hearing in Arctic Bay on June 6, 2002 to discuss the scope of the hearing, procedural issues and other relevant matters. The Board held a hearing in Arctic Bay on July 22-24, 2002 to hear evidence from CanZinco and interested parties. After the hearing, the Board gave CanZinco and interested parties additional time to submit supplemental evidence, and CanZinco was given the opportunity to make a final rebuttal.

The Board decided to issue Licence NWB1NAN0208 valid from October 1, 2002 to May 1, 2008. The Licence requires CanZinco to furnish and maintain a security deposit of \$17.6 million, which shall be guaranteed by Breakwater Resources Incorporated, CanZinco's parent company. The Licence authorizes CanZinco to use a maximum of 180,000 cubic metres of water annually, and imposes on the Licensee a comprehensive monitoring program. The Licensee is also required to submit to the Board for approval a Final Closure and Reclamation Plan, along with details on monitoring, waste rock, postulated talik, proposed covers, quarries, spillway design, a Phase II Environmental Site Assessment, an Ecological Human Health Risk Assessment, and plans for underground waste disposal, and closure plans for landfills and the West Twin Disposal Area.

II. APPEARANCES

June 5, 2002 Pre-Hearing

CanZinco Limited

Bill Heath

Nanisivik Community Liaison Coordinator

Levi Barnabas

DIAND

Paul Smith

Department of Justice, Government of Nunavut
(Legal Counsel for GN)

Susan Hardy

Residents of Arctic Bay

Tommy Tatatuapik
Sakaisa Qaunaq
Toutalik Ejangiaq
Aimo Muckpaloo
Olajuk Nakitavik
David Kalluk

Deputy Major of Arctic Bay

Mucktar Akumalik

MLA High Arctic

Rebekah Williams

July 22, 23, 2002 Public Hearing

CanZinco Limited

Bill Heath
Bob Carreau
Steve Keenan
Fred Bailey

Breakwater Resources Limited

Godfrey McDonald
Ken Ball

Fasken Martineau DuMoulin LLP
(Legal Counsel for CanZinco)

David Searle

Gartner Lee
(Consultant for CanZinco)

James William Cassie
Eric Denholm

Mayor of Arctic Bay

Joanasie Akumalik

DIAND

Paul Smith

Department of Justice Canada
(Legal Counsel for DIAND)

Lee F. Webber

BRODIE Consulting Ltd.
(Consultant for DIAND)

John Brodie

Department of Fisheries & Oceans (DFO)

Jordan DeGroot

Department of Sustainable Development, Nunavut

Bernie MacIsaac
Paul Partridge

Department of Health & Social Services, Nunavut

Bruce Trotter

Department of Justice, Nunavut
(Legal Counsel for GN)

Susan Hardy

EBA Engineering
(Consultant for DIAND and DSD)

Brent Murphy
Don Hayley

Department of CG&T, Nunavut

Rosemary Kenainak

MLA High Arctic

Rebekah Williams

NTI Cambridge Bay

Stefan Lopatka

Arctic Bay Residents

Amo Muckpaloo
Female Elder
Moses Akumalik
Leah Oqallak
Olayuk Kigutikakjuk
Simon Qaumayulik
Tommy Tatatuapik
Tommy Kilabuk
Anna Qaunaq
Female Resident
Kaujak Pauloosie
Ataqtak Ipeelie
Levi Barnabas
Male Resident
Aimo Muckpaloo
Rhoda Tungilik
Moses

III. BACKGROUND

The Nanisivik Mine is a zinc, lead and silver underground mine owned by CanZinco Ltd., a wholly owned subsidiary of Breakwater Resources Ltd. The mine is located in the Canadian Arctic on northern Baffin Island. The mine site lies on the south shore of Strathcona Sound, on the Borden peninsula, at latitude 73° 02'N and longitude 84°31'W. The environment around the mine site is typical of the High Arctic region, characterized by extremely cold temperatures, low precipitation, continuous permafrost and largely barren surface soils, which results in the mine area having minimal vegetation coverage and wildlife usage.

The mine is located 1,650 kilometres north of Yellowknife, 750 kilometres north of the Arctic Circle, and approximately 25 kilometres by road from the Hamlet of Arctic Bay located on the shore of Arctic Bay on Adams Sound. This community, with a population of about 700 people composed of a majority of Inuit, is located west of Nanisivik. Access to the mine site and to Arctic Bay is *via* scheduled air service twice weekly from Iqaluit to the Nanisivik airport, 9 kilometres south of Nanisivik, which can handle Boeing 727 and 737 jet aircrafts on a 1,950-metre gravel airstrip. Freight is delivered to Nanisivik and mine concentrates are exported to Europe by ship during the short summer open water season, which usually runs from July to November.

Nanisivik is an Inuktitut word that means "the place where one finds things." The ore body was first discovered in 1910 by Arthur English, a prospector on Captain Joseph Bernier's second Canadian government expedition to the High Arctic. The area around the Nanisivik mine was mapped for the Geological Survey of Canada (GSC) in 1954 and the occurrence of galena and sphalerite in pyrite zones was noted. Based on the work of the GSC, Texasgulf Inc. initiated exploration work in 1957. In 1972, Mineral Resources International Limited (MRI) purchased the property and after completing a positive feasibility study on the project, formed Nanisivik Mines Ltd. MRI ultimately became a wholly owned subsidiary of AEC West Limited, formerly Conwest Exploration Company Limited. At the time of startup, mine life was estimated to be 12 years. In July 1996,

Breakwater Resources Limited (Breakwater) acquired Nanisivik Mines Ltd. from AEC West Limited. In 1997, the mine was sold to CanZinco Limited (CanZinco), a wholly owned subsidiary of Breakwater.

The Main Lens mined at the Nanisivik mine is flat lying and outcrops on surface at both ends of the zone. The geometry of the mineralized body and the presence of permafrost permit large underground excavations and the use of large-scale mining equipment. In the Main Zone, the primary mining method was mechanized room-and-pillar. Sulphide ore was mined primarily by underground methods and milled on site to produce lead and zinc concentrates. The mill operated at a nominal 2,200 tonnes per day. Mine personnel reside in the Town of Nanisivik, which was constructed as part of the mine facilities. The Nanisivik Town facilities include a school, church, post office, recreation center, dining hall, houses and apartments.

During 2001, Nanisivik produced 113.6 million pounds of zinc in concentrate as well as 539,380 ounces of silver from 774,920 tonnes of ore milled. Minesite operating costs *per* tonne of ore milled were \$50.33 in 2001 compared with \$38.88 and total cash costs in 2001 were US\$0.42 per pound of payable zinc compared with US\$0.41 per pound of payable zinc in 2000. The mine had an operating loss of \$20.3 million in 2001 compared with an operating profit of \$15.7 million in 2000. Operating cash outflow was \$15.9 million on gross sales revenue of \$54.5 million in 2001 compared with a cash flow of \$19.9 million in 2000 on gross sales revenue of \$82.8 million. Capital expenditures in 2001 were \$3.9 million compared with \$8.2 million in 2000¹.

As a consequence of the low zinc price, CanZinco developed a new mining plan to optimize mine performance. The plan eliminated the mining of the lower grade portions of the ore body and has resulted in the early closure of the mine in September 2002. The Nanisivik Mine is situated on land leased from the Government of Canada under the Territorial Lands Act and Regulations. Mineral title to the Nanisivik Mine is held under mineral leases. Surface title is also required for certain operations mostly on Crown Lands under the control of DIAND. However, at mine start-up, the surface rights

¹ From Breakwater Resources Ltd.'s Internet web site (<http://www.breakwater.ca>)

to one block, called the Block Transfer, were transferred to the Government of the Northwest Territories, subsequently the Government of Nunavut following the creation of the Territory of Nunavut on April 1, 1999. The operation of the Nanisivik Mine is governed by an Agreement signed on June 18, 1974 (Master Agreement) between Nanisivik Mines Ltd. (as assignee of Mineral Resources International Limited (MRI)) and DIAND which provided for the development and operation of the Nanisivik Mine.

The Nanisivik mine facilities consist of an underground mine and a 2,200 tonne *per* day concentrator using conventional crushing, rod and ball mill grinding, differential lead and zinc flotation, and concentrate drying. Breakwater recently installed a dense media separation (DMS) plant at Nanisivik that came on-stream in July 2001.

Main mine components include the following:

Open Pits

The West Open Pit is adjacent to the north bank of Twin Lake Creek, about 500 metres east of the industrial plant. The south side of the pit is along the bank of Twin Lakes Creek adjacent to the West Adit of the main underground mine. The East Open Pit is at the east end of the underground workings adjacent to the East Adit. The north and east limits of the pit are defined by the surface contours where mining intersected the moderately sloping topography. The south and west sides are vertical walls containing some sulphide. The west pit wall connects to the primary underground workings. Runoff from the surrounding topography drains to the East Adit Treatment Facility (EATF). The Ocean View Pit is a flat lying sulphide zone adjacent to the Ocean View decline about 5 kilometers east of the industrial plant. The site slopes gently north and solar heating effects are considered moderate. The Ocean View area in general contains high metal concentrations in the overburden.

Solid Waste Disposal Sites

There are three sites that have been used as waste disposal areas: a “bone-yard” area used for scrap metal and other pieces of equipment located west of the tank farm and east of Twin Lakes Creek. A second bone-yard is located at the Maintenance shop. The last site

is the current waste disposal site that has been used for both municipal and industrial waste.

Underground Workings

There are eight openings to the main underground workings in addition to the main underground access. Other portals are located at Ocean View, K-Baseline and Area 14 and are separate from the main underground workings. There is also a ventilation raise to the surface at Ocean View.

Tailings Disposal and Treatment

Tailings resulting from the mining and milling process were deposited in the West Twin Disposal Area (WTDA), which consists of the Surface Cell, Reservoir, Test Cell Area, West Twin Dyke, the polishing pond, and the decant structure, as well as tailings and water return pipelines.

Mill tailings were deposited subaqueously (under water) for the first 14 years of operation, and on the surface since 1990. The West Twin Dyke, currently 18 metres high at a nominal elevation of 388 metres above sea level, divides West Twin Lake into the subaerial or Surface Cell in the western portion of the original lake, and the subaqueous cell or Reservoir and Test Cell area and dyke in the eastern portion of the lake. The Reservoir receives and stores water decanted from the Surface Cell and runoff water from the watershed and the Test Cell areas.

Waste Rock Storage Areas

Waste rock dumps are associated with portal and open pit development, and waste rock has been used to build roads. There are waste rock piles at 02 South Dump, 09 South Dump, 39 North Dump (East Adit), K-Baseline, Ocean View, and Area-14. Sulphide bearing waste rock has been produced by mining and placed around the site.

Water Management Structures

Runoff from the East Adit waste rock disposal area and the East Open Pit area is collected and directed to the East Adit Treatment Facility (EATF) where it is treated with lime and processed through a series of retention ponds.

Dump Ponds

Two dump ponds, one east of the town site along the pipeline right of way and the other near Twin Lakes Creek below the mill, have been established within the WTDA system to collect tailings when the mine drains sections of the tailings line during emergency shutdowns and other maintenance operations.

Borrow Pits, Stockpile Pads, Roads and Other disturbed Areas

Several borrow pits are located throughout the mine site. There are also stockpile pads adjacent to the portals at Area 14, K-Baseline, and Ocean View for temporary broken ore storage. Local roads service the airport, dock, East Twin Lake and the town Site. Other roads service the mine, the EATF, WTDA, Ocean View, K-Baseline and Area 14. Portions of the mine service roads were constructed with mine waste. Other surface disturbances include storage areas, vehicle parking spaces, and building foundations.

Surface Structures

Surface structures include the industrial complex and concentrator, DMS circuit, power plant, maintenance shops, warehouse, administration and technical offices. The industrial building complex was built on bedrock and reinforced with a concrete foundation. The concentrate storage building in the dock area includes a truck weight scale, several conveyors and the ship loader used to load concentrates from the storage building to the ships. The town site consists of residences, bunkhouse, PAMO building, ice rink, church, Dome, carpenter shop/food storage building, a generating station, NorthwestTel equipment trailers, government garage, and central government buildings/recreation centre.

Petroleum and Chemical Storage Areas

Many chemicals such as mill reagents (hydrated lime used to control the process pH), copper sulphate and xanthate (used to control the flotation grade and recovery of final concentrates), bulk ammonium nitrate, bulk calcium chloride salt, are stored on the dock area. The tank farm comprises 19 steel tanks of various sizes located in a lined and dyked enclosure, which is adjacent to the concentrate storage shed. There is sufficient storage for 13.9 million litres of P60 diesel, 1.1 million litres of Jet A1, 0.6 million litres of gasoline and a waste products tank for motor oil, glycol, etc. The intermediate day tanks consist of two 105,000-litres diesel tanks and one 47,000-litre gasoline tank located in a dyked and lined enclosure adjacent to the industrial building. Numerous end user tanks are located around the mine site for different uses. Two concrete buildings associated with the ANFO explosive facility. A 1,000 L fuel tank is also part of the infrastructure. The mill concentrator requires a number of bulk chemicals for efficient recovery of metals from the ore fed to the mill. Other petroleum products such as lubricants, solvents and minor specialty products are also located on the mine site. Paints are kept and mixed in the carpenter shop. Janitorial supplies and kitchen cleaning agents are kept in the warehouse or near the point of use. Specialty chemicals used in the assay and metallurgical laboratories are stored in the work areas.

Other Disturbed Areas

The stolport is a small airstrip that was used during exploration and construction of the mine. Only the runway strip and light posts remain.

NorthwesTel has satellite dish antennas, small electrical equipment buildings, and radio antennas adjacent to the STOLport.

Both the stolport and NorthwesTel equipment are located approximately half a kilometer directly north of the landfill/landfarm site.

A landfarm was created adjacent to the landfill approximately one kilometer west of town to remediate the fuel spill at the carpenter shop in 2000.

IV. PROCEDURAL HISTORY

The first water licence for the Nanisivik Mine, licence N5L3-0159, was issued by the Northwest Territories Water Board on July 5, 1976 pursuant to the Northern Inlands Waters Act, and subsequently renewed in 1978, 1983, 1988, and 1991. The previous licence, NWB1NAN9702, was issued on July 31, 1997 by the Nunavut Water Board (NWB) after a hearing held in Arctic Bay on September 24, 1996 and an extensive *ad hoc* post-hearing procedure followed by the NWB to allow interested parties to review the application and make comments to the NWB. That licence authorizes the then-owner of the mine, Nanisivik Mines Ltd. (NML), to use water for industrial purposes at its lead/zinc mining and milling operations located in Nanisivik, Northwest Territories for an original term of five years until July 31, 2002, and required of CanZinco to post and maintain a financial security of \$ 1 million within 30 days of issuance of the licence and \$1 million annually thereafter for the term of the licence. The Qikiqtani Inuit Association (QIA) sought to have that decision set aside by filing an application pursuant to section 18.1 of the *Federal Court Act* for judicial review². The decision under review was challenged under two main headings: the procedure followed by the NWB did not comply with the rules of natural justice or with the statutory standard required of the NWB; the NWB ignored evidence that was before it and failed to exercise its jurisdiction, particularly with regard to the dumping of raw sewage into Northwest Territories waters and the development of guidelines to govern the payment of compensation for environmental degradation caused by the mine's use of water pursuant to the licence. In her October 8, 1997 decision, Justice J. Reid dismissed the applicant's request that the NWB's decision be quashed.

Amendments were approved by the NWB on December 9, 1999 to allow for open pit operations at Ocean View, and on March 20, 2002 to allow the conduct of exploration drilling activities. On December 7, 2001 the NWB extended the expiry date of the licence to September 30, 2002 to coincide with the proposed end of mining and milling operations and the beginning of closure and decommissioning activities.

² *Qikiqtani Inuit Assn. v. Canada (Attorney General)*, (1998-10-09) FC T-2019-97

On February 2, 2001, CanZinco filed an application for licence renewal for continued mining and milling operations. However, later that year, Breakwater announced in a press release dated October 29, 2001 that due to continued depressed metal prices, the Nanisivik mine would be closing in September 2002. In that press release, Breakwater stated that during the first six months of 2001 the Nanisivik mine had an operating loss of \$8.3 million and a cash outflow of \$6.1 million. As a result of historic weak zinc prices and the likelihood that prices would remain weak a new mining plan was developed for the Nanisivik mine, which focused on the accelerated removal of the mine pillars but no mining of lower grade reserves and resources.

The February 2001 application for licence renewal was then withdrawn when CanZinco formally notified the NWB in a letter dated November 13, 2001 of the permanent cessation of mining and milling operations at the Nanisivik Mine. In accordance with Part H, Item 8 of Licence NWB1NAN9702, CanZinco then filed an application for a water licence on February 12, 2002 and submitted its final closure and decommissioning plan in support of the application on February 28, 2002. The Application and the Closure and Reclamation Plan (Application) were forwarded to the Nunavut Planning Commission (NPC) for conformity to the regional land use plan as required under S. 11.5.10 of the Nunavut Land Claims Agreement (NLCA), and simultaneously to the Nunavut Impact Review Board (NIRB) for the purpose of environmental assessment. The NPC concluded that the Application was in conformity with the approved regional land use plan; NIRB then determined that the project could proceed with only a screening and recommended that the NWB hold a comprehensive Hearing³. NIRB issued its screening decision containing specific terms and conditions to guide reclamation activities after the Hearing⁴.

Before approving the Application, the NWB held a pre-hearing meeting in Arctic Bay on June 5, 2002 to discuss the scope of the Application and various procedural

³ Letter dated May 10, 2002 from Elizabeth Copland, NIRB Chairperson, to Minister Robert D. Nault.

⁴ NIRB Decision dated October 7, 2002.

matters in preparation of the July 2002 hearing. Written interventions were submitted by CanZinco, Indian and Northern Affairs Canada, the Government of Nunavut, Fisheries and Oceans, Environment Canada, and Nunavut Tunngavik Incorporated. A public hearing was then held in Arctic Bay on July 22, 23, and 24, 2002 (Hearing). A public site visit was also conducted as part of the Hearing. During the Hearing, the Board heard evidence from CanZinco, Indian and Northern Affairs Canada, the Government of Nunavut, Fisheries and Oceans, Nunavut Tunngavik Incorporated, the Hamlet of Arctic Bay and several citizens of Arctic Bay. Following the Hearing, the NWB allowed for additional submissions and undertakings to be submitted before a final decision on the Application could be made by the Board. CanZinco was given the opportunity to submit a final rebuttal of all written interventions filed with the Board.

ISSUES

1. **Burden of Proof**

The question of who bears the onus for discharging the burden of proof is addressed in Section 8.13 of the NWB Rules of Practice, which states:

In cases in which the Board accepts evidence, any Party offering such evidence shall have the burden of introducing appropriate evidence to support its position. Where there is conflicting evidence, the Board will decide which evidence to accept and will generally act on a balancing of the evidence.

This section makes it clear that the burden of proof falls upon the Applicant, CanZinco Ltd. (“CanZinco”). The Applicant must provide convincing evidence to persuade the NWB of the merits of its position in order to successfully discharge this burden.

2. **Does CanZinco meet the s. 57 financial responsibility requirement?**

CanZinco has applied for a renewal of their water licence for Nanisivik Mine closure and reclamation activities. Section 57 of the *Nunavut Waters and Nunavut Surface Rights Tribunal Act* (“NWNSRTA”) requires “financial responsibility” as a condition for the issuance of licences. Subsection 57(b) states:

57. The Board may not issue a licence unless the applicant satisfies the Board that
- (a) any waste produced by the appurtenant undertaking will be treated and disposed of in a manner that is appropriate for the maintenance of the water quality standards and effluent standards that are prescribed by the regulations or, in the absence of such regulations, that the Board considers acceptable; and
 - (b) the financial responsibility of the applicant, taking into account the applicant’s past performance, is adequate for:
 - (i) the completion of the appurtenant undertaking;
 - (ii) such measures as may be required in mitigation of any adverse impact; and
 - (iii) the satisfactory maintenance and restoration of the site in the event of any future closing or abandonment of that undertaking.

An assessment of CanZinco's compliance with the conditions contained in water licence NWB1NAN9702 during the period between January 1, 2002 and August 14, 2002 is contained in the federal government's 2002 Compliance Report for Nanisivik Mine.⁵ Although the report concluded that the company was "mostly in compliance" with the terms of the licence, a number of non-compliance issues were noted (see issue # 9 for a complete analysis), the most significant of which was the failure of the licensee to provide the \$1 million security bond required in Part B, Item 2 of licence NWB2NAN9702 before the July 31, 2002 due date.

A letter from René Galipeau, Executive Vice President and Chief Financial Officer of CanZinco's parent company, Breakwater Resources Ltd., ("Breakwater") to the Department of Indian Affairs and Northern Development, ("DIAND") attempts to justify CanZinco's failure to provide the \$1 million security bond by outlining reclamation expenditures already made. The letter states:

"...[T]hese expenditures, combined with the reclamation supplies on site far exceed the \$1,000,000 requirement for July 31, 2002, and as such meet our requirement to post security."⁶

However, under the NWNSRTA and the terms of the water licence itself, the expenditures and supplies referred to by Breakwater do not constitute security. The failure to post security on July 31, 2002 has, in our opinion, constituted a breach of the licence.

The NWB received submissions from several parties concerning this issue. DIAND's position, which is included in their August 23, 2002 submission to the NWB, notes the July 31, 2002 default and proposes that, in response, the NWB require the Applicant to give "...proof of its financial responsibility – its current and future ability to

⁵ 2002 Compliance Report – Nanisivik Mine – Water Licence NWB1NAN9702. Prepared by Constantine Bodykevich, Water Resources Officer, INAC. August 14, 2002.

⁶ Letter dated August 2, 2002, from René Galipeau, of Breakwater Resources Ltd., to DIAND.

discharge its obligations – which is more compelling, more concrete and more reliable that the evidence it has put forward to date.”⁷

In their August 14, 2002 submission, the Government of Nunavut (“GN”) states that although the NWB must be satisfied with the financial resources of the company, this concern must be balanced with that of imposing disincentives against mining in Nunavut by imposing excessive security amounts. In addition, the GN points out that, in conformity with past NWB decisions, questions of financial responsibility must be considered “...on a case-by-case basis, so that the security is responsive to the site-specific information that accompanies an application, the type of activity to be undertaken, and the particular evidence provided regarding the stage of production and financial health of the company.”⁸ GN notes that, while the breach of the security obligation has the unfortunate effect of placing the NWB in a position where an adverse finding regarding past performance and financial responsibility may be unavoidable, caution is advisable with respect to the exercise of other possible remedies.⁹

The primary purpose of the NWB’s security requirement is “...to prevent, counteract, mitigate or remedy any resulting adverse effect on persons, property or the environment...”¹⁰ A refusal by the NWB to issue the Applicant a water licence for closure and reclamation activities would be directly opposed, not only to fulfilling this purpose, but also to the very mandate of the NWB. Indeed, the benefits of issuing the licence to allow water related components of the mine to be reclaimed, greatly outweigh the costs of not issuing the licence at all. Therefore, notwithstanding the fact that the NWB still has great uncertainty regarding the Applicant’s financial responsibility due to past non-compliance and other actions discussed below, the licence will be issued subject

⁷ Reply Submission Letter dated August 23, 2002, from Mr. L. Webber of Justice Canada for the Department of Indian Affairs and Northern Development at p. 9.

⁸ Government of Nunavut. *Public Hearing Submission to the Nunavut Water Board on the Application by CanZinco Ltd. for a Water Licence, and for Approval of their Closure and Reclamation Plan*. July 2002, at p. 27.

⁹ Government of Nunavut, *Follow-Up Submission to the Nunavut Water Board on the Application by CanZinco Ltd. for a Water Licence, and for Approval of their Closure and Reclamation Plan*. August 14, 2002, at p. 16.

¹⁰ See section 89(1) of the NWTA

to a future NWB hearing once CanZinco submits its final closure and reclamation plan and related studies as required in the renewed licence. We anticipate the submission of these documents and the corresponding final hearing to take place in Arctic Bay in the first quarter of 2003.

3. What is the term of the licence?

The Applicant's previous licence expired at the end of September 2002. CanZinco has applied for a renewal licence with a seven-year term in order to cover two years of closure work and five years of post closure monitoring.

In addressing the issue of the appropriate term of licence renewal, some parties have raised questions relating to the difficulties involved in setting a fixed term when some information, critical to reclamation activities, has not yet been received. The information that still needs to be filed is: (a) the Phase II Environmental Site Assessment, (b) the Ecological and Human Health Risk Assessment, and (c) an interim agreement between GN and CanZinco on the future use of the mine.

GN's submission, while recognizing the necessity for a new term, suggests that, in the absence of all required studies, reports, and analyses, flexibility should be built in to allow the NWB to respond creatively, yet within the limits of natural justice, to new issues as they arise.¹¹

Similarly, Environment Canada recommends that, since it is unlikely that five years will be long enough to establish water quality stabilization, a longer term should be issued, with the qualification that if results of any new data warrant, the term can be shortened or lengthened.¹²

Correspondingly, DIAND proposes that a renewed water licence be issued for a

¹¹ Government of Nunavut, *supra*, note 4, at p. 30.

¹² Environment Canada. *Submission to the NWB on an Application for Renewal of Water Licence NWBINAN9702*, July 7, 2002 at p. 3.

term of ten years, which can be extended if an assessment of monitoring results reveals more monitoring is warranted.¹³ As it turn out, many points found in DIAND's hearing submission have been incorporated into CanZinco's new licence, as the NWB felt that the DIAND submission accurately described the information that the NWB believed was needed at this point in time.

Section 45 of the NWTA provides for a licence or renewal term of up to twenty-five years. Additionally, section 43 provides for the amendment or cancellation of licences in situations where the NWB deems it to be in the public interest. Section 43(1) states:

- 43. (1)** Subject to this Act, the Board may
- (a) on application by the licensee, renew a licence, with or without changes to the conditions of the licence;
 - (b) amend, for a specified term or otherwise, any condition of a licence
 - (i) on application by the licensee,
 - (ii) to deal with a water shortage, or
 - (iii) where the Board considers the amendment to be in the public interest; and
 - (c) cancel a licence
 - (i) on application by the licensee,
 - (ii) where the licensee, for three successive years, fails to exercise the licensee's rights under the licence, or
 - (iii) where the Board considers the cancellation to be in the public interest.

The NWB has concluded that the licence will be valid for a term of five years. Due to the fact that all necessary studies have yet to be filed, this licence will be subject to amendment and variation by the NWB as and when required under subsection 43(1). In other words, the NWB, after another public hearing tentatively scheduled for the first quarter of 2003, will determine amendments based upon additional information received from currently pending studies. From those studies, the NWB will amend the licence based upon whatever is presented and the NWB deems at that time to be in the public interest.

¹³ Department of Indian Affairs and Northern Development. *Written Intervention*. July 7, 2002, at p. 26.

4. Who should be named as licensee?

The issue of who to name as licensee is directly related to the issue of security in this case. The main purpose of the NWB's security requirement is to ensure that the company involved, and not the government, pays the costs of reclamation associated with the water-related elements of a site's abandonment. CanZinco Ltd. is a wholly owned subsidiary of Breakwater Resources Ltd. ("Breakwater"). Currently, the licensee is identified as "Nanisivik Mine, a Division of CanZinco Ltd." The NWB has received submissions asking that Breakwater be named along with CanZinco as guarantor of security. The reasoning behind this request is the perception of some parties that Breakwater exercises a substantial amount of effective control over the Nanisivik Mine, which it appears to do so at least through the direction of written submissions to the Board. In fact, it has been suggested that CanZinco may not be, in actuality, a distinct corporate entity, but rather an agent of Breakwater, the parent company.¹⁴

Additionally, CanZinco's admission of financial difficulties and their non-compliance with the July 1, 2002 security payment has resulted in a significant amount of uneasiness regarding the company's ability to fulfill their obligations under the approved Closure and Reclamation Plan ("the Plan"). Some parties feel it necessary to secure Breakwater as an additional licensee in order to guarantee full payment of the security, so closure and reclamation activities can properly conform to the Plan's water-related environmental and socio-economic objectives.

A submission to this effect was received from DIAND in a letter dated August 14, 2002. The letter recommends that, in order to provide for the continuity of licensee obligations, it may be desirable to formally assign the licence from CanZinco to Breakwater or to both jointly. The possible options suggested are:

- (a) "CanZinco Ltd."
- (b) "CanZinco Ltd., a wholly owned subsidiary of Breakwater Resources Ltd."
- (c) "CanZinco Ltd. (Nanisivik Mine Division)"

¹⁴ See the August 23, 2002 submission from Mr. Webber (Department of Justice), legal counsel to DIAND, to the NWB, pp. 4-8. CanZinco however disagrees with this characterization.

The letter states:

“In each case, the primary purpose of the change would be to make it absolutely clear that the obligations attach to CanZinco as a whole and not just to CanZinco’s Nanisivik Mine Division.”¹⁵

Again, in their August 23, 2002 letter to the NWB, DIAND proposes an additional measure to effectively deal with this concern. DIAND requests that the NWB consider ruling that the Applicant give further, solid, reliable proof of its financial responsibility by providing a letter from Breakwater containing the firm promise that the parent company will guarantee the full amount of CanZinco’s security requirement.¹⁶ This request seems wholly appropriate in the circumstances.

The NWB has received contrasting opinions concerning whom to name as licensee. The GN proposes that “...to respond appropriately to gaps in the availability of or assess to reclamation security, the Board should award Security jointly for the benefit of both DIAND and the Government of Nunavut.”¹⁷

Section 43(1) of the NWTAA states that the NWB may renew, amend or cancel a licence on application by the *licensee*. Since this is an application for the renewal of an existing water licence and the named licensee is CanZinco, the NWB finds that only CanZinco can be named on the renewal licence. However, sections 43(b)(iii), 57 and 70 of the NWTAA give the NWB the power to amend any terms or conditions of the licence deemed by the NWB to be in the public interest. Since the security amount is one such item—perhaps the most important item in this licence—and in the public interest, the NWB finds that a new condition in the licence should be added to include the guarantee of security offered by the parent company, Breakwater Resources Limited (see Licence NWB1NAN0208, Part B, Item 4).

¹⁵ Letter dated August 14, 2002, from Mr. Webber (Department of Justice), legal counsel to DIAND, to the NWB.

¹⁶ Mr. Lee F. Webber, *supra* note 10, at p. 9.

¹⁷ Government of Nunavut, *supra*, note 5 at p. 10.

5. Amount of Security

One of the primary issues in this case is the amount of security required for the closure and reclamation of the Nanisivik mine site. Two groups of consultants, one hired by DIAND and the other a representative of CanZinco, have estimated the reclamation costs, resulting in two significantly different amounts. DIAND's consultant, Brodie Consulting Ltd., ("Brodie"), in a preliminary reclamation cost estimate, initially quoted the amount of 29.5 million.¹⁸ This total, based upon air transportation, third party contracting, critical monitoring and maintenance, 1.5 metre tailings covers, and a ten-year work period, was the highest quoted. The report submitted by Brodie concluded that the Applicant's Closure and Reclamation Plan is inadequate as it contains uncertainties and optimistic elements many of which, but not all, Brodie has identified and adjusted for accordingly.¹⁹

CanZinco's consultants calculated closure and reclamation costs to total approximately \$9.1 million. The disparity between the estimates was explained by CanZinco to be primarily the result of differing transportation costs for both reclamation workers and the lime necessary for water treatment at the mine site. CanZinco's estimate is based on an annual sealift for lime and regular commercial airline transportation for workers. Brodie's estimate assumes the use of air transportation to bring in the lime and that charter flight arrangements will be necessary for transporting workers in and out of the site.

After a public hearing which dealt extensively with the issue of security, Brodie reduced its estimate to 24.5 million, and then again to 18.9 million. The re-calculations are based upon air transportation reductions and credits for the exclusion of land-only related components.

¹⁸ *Nanisivik Mine Reclamation Cost Estimate*. Prepared for DIAND by Brodie Consulting Ltd., June 29, 2002.

¹⁹ *Ibid*, at pp. 10-11.

Subsequent to the hearing, the NWB concludes that the appropriate figure for the costs of reclamation ranges between \$18.2 and \$20.1 million.

The NWB finds reassurance in using DIAND's lower estimate done by Mr. Brodie and rejects CanZinco's estimate specifically because CanZinco:

- (a) Provided an inadequate cost estimate for interim care and maintenance. The cost estimates varied widely for this component with Brodie's set much too high (\$3,183,280) and CanZinco's much too low (\$21,513). The discrepancy was primarily due to the fact that Brodie's estimate was based on a four year period instead of the required two years, and on the use of higher than necessary air freight rates. CanZinco's estimate relies on the assumption that cargo service by sea to Nanisivik will still be available after the closure of the mine. Even if this method of transportation is available, access to the site is limited to summer months making the shipment of lime, which has a six to twelve month shelf life, impracticable and unworkable. The Board revised both estimates to a figure of \$1,106,000.²⁰
- (b) Provided an inadequate (10%) contingency estimate. Considering the significant amount of concern raised by the public and the local community, the uncertainty due to incomplete studies and reports, and the credibility of the Applicant in already failing to comply with the terms of security, the NWB finds that a contingency of this size is much too small. The Board finds that a larger contingency should apply.
- (c) Provided inadequate post-closure site maintenance cost estimates. CanZinco's estimate (\$378,284) is based on a five-year period, while Brodie's estimate (\$6,945,291) accounts for ten years of post-closure site maintenance. However, the discrepancy is also due to the fact that Brodie based his figure on a ten-year application of lime. In addition, there is no mention of water treatment for tailings in the West Twin Dyke Area in CanZinco's estimate. The Board estimates \$3,473,000 for post-closure site maintenance based on a ten-year period as recommended by INAC, and on two years of active water treatment, followed by eight years of reduced treatment for tailings disposal.²¹
- (d) Provided no cost estimate for monitoring and maintenance. CanZinco completely ignored the costs of an ongoing monitoring program necessary for carrying out inspections and studies such as annual geotechnical inspections, water level surveys and soil quality monitoring.

²⁰ *Ibid*, at p. 9.

²¹ *Ibid*, at pp. 10-11.

- (e) Failed to base their estimate on third party cost estimates. The newly released Mine Site Reclamation Policy for Nunavut, which applies to existing mines, states that:

“The total financial security for final reclamation required at any time during the life of the mine should be equal to the total outstanding reclamation liability for land and water combined. Estimates of reclamation costs, for the purposes of financial security, should be based on the cost of having the necessary reclamation work done by a third party contractor if the operator defaults. The estimates should also include contingency factors appropriate to the particular work to be undertaken.”²²

However, the NWB believes Brodie’s original estimate of \$29.5 million was far too high for the following reasons:

- (i) Breakwater understandably knows the site better than Brodie and has studies from test cells and cover designs that Brodie and perhaps even other mines do not have;
 - (ii) Air shipment estimates for the transportation of lime were not based on cargo rates, rates that are considerably lower than those used in Brodie’s calculations.
- (f) Calculated mobilization and demobilization costs without including an amount for the mobilization of equipment. Since reclamation costs must be based on third party costs due to possible operator default, CanZinco cannot rely on their on-site equipment in order to eliminate mobilization of equipment costs.

An additional, and perhaps more significant, reason for the NWB’s decision to require the higher amount of security is the mine’s non-compliance with the July 31, 2002 payment of security which, notwithstanding Breakwater’s explanation, leaves the NWB without the normal reassurances necessary to feel confident about accepting the mine’s reclamation and financial figures. Had the applicant not missed the \$1,000,000 payment on July 31, 2002, the Board could have attributed more credibility to its submission.

The NWB therefore sets the total amount of security at \$ 17.6 million (see Licence NWB1NAN0208, Part B, Item 2), which includes any security already furnished

²² Indian Affairs and Northern Development Canada, *Mine Site Reclamation Policy for Nunavut*. July 2002.

and maintained under previous licences. In reaching this figure, the NWB has accepted substantially the Brodie estimate of 18.9 million, but has subtracted 1.25 million for the reduction of tailings cover from a depth of 1.5 to 1.25 metres. This amount includes a contingency of 25% because the Applicant has still left doubts in the NWB's mind with regard to its financial strength, or that of Breakwater, its parent company. While Breakwater purported, and in our opinion intended, to guarantee the whole security, it unreasonably placed a ceiling on its responsibilities. In a letter to NWB, Colin Benner, the President and CEO of Breakwater states:

“In his letter to you dated August 30, 2002 my colleague, Bill Heath, committed that Breakwater Resources Ltd. would contact you regarding its possible guarantee of any reclamation costs for the clean up of CanZinco's Nanisivik Mine. Please accept this as written confirmation that Breakwater Resources Ltd. will guarantee to the Nunavut Water Board any reclamation costs beyond those secured to the existing water licence, to a maximum of CanZinco's estimate of the reclamation costs as submitted to the Board during your recent public hearing.”²³ (emphasis added).

6. The Closure and Reclamation Plan

In support of its Application, CanZinco submitted to the NWB a closure and reclamation plan (Plan)²⁴. In its Plan, CanZinco proposes to carry out reclamation activities in two years following mine closure beginning in October 2002. The Plan identifies the environmental baseline setting of the mine site, describes current environmental conditions, the mine facilities and mine operations, proposes specific reclamation measures and rationales for their selection, a reclamation and closure monitoring plan, and the anticipated reclamation schedule. In the Plan and at the Hearing, CanZinco told the NWB that its Plan was still incomplete and that additional data would have to be collected, analyzed, and submitted to the NWB.

²³ Letter dated September 10, 2002, from Colin K. Benner, President and Chief Executive Officer of Breakwater Resources Ltd., to NWB.

²⁴ Nanisivik Mine Closure and Reclamation Plan. Two Volumes. February 2002. Prepared by Gartner Lee Ltd. For CanZinco Limited.

In their submission to the Board, CanZinco confirmed that it would conduct additional studies, to be submitted to the Board for review and approval. One of these studies is Phase II ESA, specifically identified in the Plan, to complete the quantification and characterization of contaminants in the local environment. Another study is referred to as an Ecological and Human Health Risk Assessment (EHHRA). Finally, CanZinco confirmed that it was its intention to submit specific plans to focus on (a) the West Twin Disposal Area, (b) Underground Solid Waste Disposal, and (c) Landfill Closure.

All parties at the Hearing agreed that these additional studies were necessary in order to gain a better understanding of the closure and reclamation issues and proposed reclamation alternatives for every component of the mine. The Board agrees, and requests of CanZinco to submit to the Board for approval the following studies: a Phase II ESA in accordance with at least the Canadian Standards Association national standard²⁵; an Ecological and Human Health Risk Assessment (EHHRA) prepared in accordance with Canadian Environmental Quality Guidelines and/or other acceptable industry standards; a West Twin Disposal Area Closure Plan; an Underground Solid Waste Disposal Plan; and a Landfill Closure Plan.

In their submissions to the Board before and after the Hearing, several interveners identified other gaps in several categories of the Closure and Reclamation Plan, and recommended to the Board that additional studies be conducted.

For example, DIAND noted in their submissions several information gaps, and requested that the Board ask CanZinco to present in its final closure and reclamation plan a detailed assessment of proposed covers, a detailed assessment of the postulated talik in the Surface Tailings Cell and the Test Cell, an assessment of metal release rates from mine soils, a detailed assessment of all contaminated areas, and a detailed assessment of the waste rock inventory. GN expressed similar concerns regarding the state of the current Plan.

²⁵ CAN/CSA-Z769-00 *Phase II Environmental Site Assessment-A National Standard of Canada* (approved July 2002).

Similarly, DFO identified concerns with respect to the environmental effects of the mine on the marine environment, as well as the decommissioning of components of the dock and related facilities, the waste rock piles adjacent to Twin Creek, the West Open Pit and adjacent roadways, the West Twin Disposal Area.

Likewise, EC identified in their submission a number of technical concerns and questions arising from the Closure and Reclamation Plan and asked the Board to direct CanZinco to provide further information before approving CanZinco's Plan, such as: an assessment of road bed samples, spill sites, laydown areas, the warehouse yard, mill, dock, ANFO factory, and vehicle parking areas; a discussion of current understanding of the marine environment with particular emphasis on marine sediments; a discussion on the proposed method for the disposal of PCBs stored on site, and of other hazardous materials; additional hydrological study on the Tailings Management; and designs for engineered structures such as the proposed spillway.

The Board agrees that more information is needed before final approval of the Closure and Reclamation Plan is granted. While the Board recognizes that CanZinco's Plan presents a good basis for closure and reclamation planning, it considers that the planning process is iterative, and that a closure plan is a dynamic tool that must evolve throughout the life of the mine, from an initial statement of intent to what is now required of CanZinco: a definitive sets of final designs and technical specifications for each mine component. Consequently, the Board directs CanZinco to submit a Final Closure and Reclamation Plan (Licence NWB1NAN0208, Part G, Item 3) that will include, among several critical categories of information, a full environmental characterization, an identification and description of operational components, infrastructures and utilities to be included in the Closure Plan, a discussion of potential closure issues and liabilities, and the selection of closure technology alternatives and justification for the selection and design for closure of each mine component based upon assessment of effectiveness, risk of failure, long-term stability, and cost.

In addition, the Board requests that CanZinco submit as appendices to the Final Closure and Reclamation Plan or as stand alone documents, the following studies or reports (see Licence NWB1NAN0208, Part G, Item 4 to Item 9): (1) an assessment of the proposed covers; (2) an assessment of the postulated talik in the Surface Tailings Cell and the Test Cell; (3) an assessment of the quarries required for cover construction; (4) the details of the proposed spillway; (5) an assessment of all waste rock; and (6) an assessment of all monitoring requirements.

Finally, the Board requests that CanZinco submits a detailed timetable for the submission of the Final Closure and Reclamation Plan and other studies and reports required under the Licence (see Licence NWB1NAN0208, Part G, Item 2).

7. Monitoring

The Applicant has proposed a post-closure monitoring period of seven years, the first two of which will take place during reclamation work, and the next five after reclamation work is completed. At the hearing, the Hamlet asked the NWB to ensure the protection of the long-term health of the environment through regular monitoring for a lengthy period of time. The submission of Joanasie Akumalik, Mayor of Arctic Bay states:

“We remain concerned about the proposed method of containing contamination at the tailings pond and at the dumpsite using cover or berms and relying on the permafrost. We need to ensure that monitoring happens for a very, very long time of places like the tailings pond and the dumpsite. In the past we have not received the results from monitoring programs on a regular basis. It is crucial that people from Arctic Bay be trained to be a part of this ongoing monitoring program...

How the environmental cleanup work is done will impact us for a very long time. It will impact my children and my children’s children long into the future...many generations. This will be the environmental legacy of this mine. Please understand you have a responsibility to make very wise decisions about the future of my children and my children’s children. If you make the wrong decisions many of you will not be impacted. We will.”²⁶

²⁶ Letter dated August 28, 2002, from Joanasie Akumalik, Mayor of Arctic Bay, to NWB, at pp. 1-2.

The issue of monitoring was raised at the hearing and dealt with in detail in the party's submissions. The GN argues for longer and more rigorous monitoring periods due to the fact that possible negative results from improper reclamation activities, such as permafrost encapsulation, will take longer than five years to become evident. They point specifically to the potential risks associated with the unknown contents of the landfill site.²⁷

While agreeing with the Applicant that post-closure monitoring should be dynamic to reflect changes occurring in the system over time, DIAND has expressed concern that the monitoring program, as outlined in the Closure and Reclamation Plan, is too short in duration. They point to scientific evidence confirming that, because the arctic environment responds very slowly due to cold conditions, impacts are often not noticeable over the short-term. Therefore, like the GN, DIAND asserts that longer monitoring programs, as well as more frequent sampling procedures, are necessary until "environmental stability" can be demonstrated.²⁸

Similarly, the Nunavut Tunngavik Inc. also expressed concern over the length of time that monitoring programs are proposed to continue. In a submission to NWB, Mr. Lopatka stated: "...[P]roblems related to such issues as acid rock drainage and permafrost effectiveness can often take long periods of time to develop and identify, and with a short monitoring period, these problems can go undetected."²⁹

In response to some confusion over the issue of monitoring, Bill Heath, Vice President of Nanisivik Mine, clearly stated in a submission to the NWB that they are willing to adopt a flexible approach to post-closure monitoring. The letter states:

"...CanZinco is not advocating a fixed duration approach to post-closure monitoring. Instead, CanZinco is suggesting that the duration of the monitoring period take into consideration the results of the monitoring exercise...If there are

²⁷ Government of Nunavut, *supra* note 4, at pp. 21-22.

²⁸ Letter dated August 19, 2002, from Michael Roy, Qikiqtani Regional Coordinator, Water Resources, DIAND, and sent by email to NWB, at p. 3.

²⁹ Letter dated July 7, 2002, from Stefan B. Lopatka, Senior Advisor of Environmental, Water and Marine Management for Nunavut Tunngavik Inc., to NWB, at p. 4.

concerns on the part of the regulators involved, the seven-year period may be expanded at their discretion, provided there is good and sufficient reason for doing so.”³⁰

The NWB agrees that reliable and frequent monitoring must not be limited to a fixed term, but must continue until there is proof that the mine site poses no further threat to the community. To this end, the NWTAA allows the NWB to include conditions in licences requiring, not only the applicant, but also NIRB and the Crown to monitor closing and abandonment activities. Section 70 states:

70. (1) Subject to this *Act* and the regulations, the NWB may include in a licence any conditions that it considers appropriate, including conditions relating to

- (a) the manner in which waters may be used;
- (b) the quantity, concentration and types of waste that may be deposited and the manner of depositing waste;
- (c) the studies to be undertaken, works to be constructed, plans, including contingency plans, to be submitted, and monitoring programs to be undertaken; and
- (d) any future closing or abandonment of the appurtenant undertaking.

(2) The monitoring programs referred to in paragraph (1)(c) may specify responsibilities of the applicant, the Nunavut Impact Review Board or Her Majesty the Queen in right of Canada.

Therefore, the NWB, under section 70(1) and (2), requires the Applicant to monitor specifically in the categories listed in the licence, including all applicable requirements of the MMER.

Additionally, the Board notes that Section 73 of the *Act* states: “Where the Board issues a licence in respect of any waters to which regulations made under subsection 36(5) of the *Fisheries Act* apply, any conditions in the licence relating to the deposit of waste in those waters shall be at least as stringent as the conditions prescribed by those regulations. To ensure that the renewed licence would comply with all provisions of the *Act*, the Board undertook at the Hearing to confirm the applicability of any regulation made pursuant to the *Fisheries Act*, and in particular the *Metal Mining Effluent Regulations*³¹ (MMERs), to the closure and decommissioning of the Nanisivik Mine.

³⁰ Letter dated August 13, 2002, from Bill Heath, Vice President CanZinco Ltd., to NWB, at pp. 5-6.

³¹ *Fisheries Act. Metal Mining Effluent Regulations*. P.C. 2002-987. 6 June, 2002

The Board concluded that the Nanisivik Mine is subject to the provisions of these new Regulations and, furthermore, that any term and condition in the licence shall be at least as stringent as conditions prescribed in the MMERs.

Consequently, the Board has incorporated in the licence (see Licence NWB1NAN0208, Part H) additional monitoring requirements such as:

- (a) Identification of Final Discharge points;
- (b) Effluent Monitoring;
- (c) Acute lethality and *Daphnia Magna* testing;
- (d) Recording volume of Effluent and Flow Rate;
- (e) Calculation of loading;
- (f) Reporting requirements; and
- (g) Addition of Environmental Effects monitoring requirements including:
 - a. Effluent characterization,
 - b. Sublethal toxicity testing,
 - c. Water quality monitoring, and
 - d. Biological monitoring.

8. Non-compliance.

Additional water-related non-compliance issues, other than the Applicant's failure to provide the July 31, 2002 security bond as discussed earlier, have been brought to the attention of the NWB. Non-compliance issues were recorded in the 2001 Compliance Report regarding sampling and efficiency of water treatment, and the 2002 Report noted that Nanisivik Mine had further difficulty complying with discharge requirements and data collection.³² For example, samples taken during inspection at the East Adit Treatment Facility indicated that values in excess of the maximum allowable by licence might have been exceeded at this location. In addition, the Mine directly contravened NWB conditions by discharging wastewater from Ocean View Open Pit to abandoned underground operations without authorization.

However, the NWB finds that only a few non-compliance matters relate directly to water and its ecological link. The *main* compliance issue, which greatly troubles the NWB, is CanZinco's failure to post the July 31, 2002 security bond. That breach of the licence should be entirely in the hands of DIAND to review for what the NWB believes would be grounds for potential enforcement action.

9. Cost-Benefit Analysis of Alternatives to Tailings Disposal

At the public hearing, the community of Arctic Bay inquired into the possibility of reviewing the cost-benefits of tailings removal. Excavation and removal, a costly, but some feel, superior solution to local contamination concerns, would entail barging the tailings out of the community to a disposal centre in southern Canada. Presently, a program of *in situ* reclamation is proposed which involves the accepted method of covering the tailings with 1.0 metres of shale and .25 metres of armour surfacing, as well as a program of follow-up monitoring. This reclamation technology is normally accepted in Canada and throughout the world for the restoration of tailings containment areas.

Yet, in addition to the communities' inquiries, a submission received from the DFO calls for a cost-benefit analysis of alternate options for tailings disposal; options the Department feels were never adequately identified in the Applicant's Closure and Reclamation Plan. These concerns were relayed to the Applicant in a letter from DFO which asks "...[W]ould the potential risk of long-term exposure of tailings be reduced if tailings were excavated and shipped to a disposal centre in southern Canada?"³³ The submission goes on to propose:

"A cost-benefit analysis should be submitted indicating the relative cost associated with excavation and removal of tailings from the WTDA, and the potential costs of maintenance of the West Twin Disposal Area over a 100 and 1000 year time period. Maintenance of the site should include annual water

³² See the comments of Constantine Bodykevich in the Conclusion of the 2002 Compliance Report: Nanisivik Mine – Water Licence NWBNAN9702 at p. 12.

³³ Letter dated August 9, 2002, from Jordan DeGroot, Habitat Management Biologist, Department of Fisheries and Oceans, to Bob Carreau, CanZinco Ltd., at p. 5.

quality sampling, geotechnical inspections, and repairs to ensure that contaminants are not released into Twin Creek.”³⁴

While the NWB agrees that the Applicant’s Closure and Reclamation Plan does not adequately deal with alternative options for tailings disposal, the Board anticipate that the costs of complete excavation and removal of tailings as suggested by some interveners will be far higher than the proposed method. The Board leaves it up to CanZinco to provide in its final closure and reclamation plan a review and discussion of possible tailings reclamation alternatives technically and financial available, which would include among other factors a rough estimate of the long-term costs associated with ongoing inspection and monitoring of *in situ* disposal, and a full justification regarding the preferred alternative (see Licence NWB1NAN0208, Part G, Item 3 (v)).

10. Environmental Unity

Regarding reclamation activities and the posting of security, the principle of environmental unity, which the NWB articulated in *BHP Diamonds*³⁵, is restated in this case. This principle is based, not only on the interconnected biophysical nature of the environment, but also on the broad and liberal interpretation consistently afforded to environmental water jurisdiction by the courts.³⁶ In finding that the separation of land from water reclamation activities is an artificial distinction, and that their mandate includes both direct and indirect water related impacts, the NWB in the BHP Diamond case summarized the holistically connected nature of the environment by concluding:

“Given that ecosystems operate on the principle that water supports all forms of life, and that fishing is linked to water quality, and that aquatic organisms are linked to water quality, and that public health is linked to water quality; that the local Inuit customs including harvesting is based in part on land use activities, and this is also linked to water quality, we must therefore accept the several

³⁴ *Ibid.*

³⁵ *BHP Diamonds Inc., Re* (1999), 29 C.E.L.R. (N.S.) 248.

³⁶ See: *Qikiqtani Inuit Assn. V. Canada (Attorney General)* (1998), 155 F.T.R. 161 (Fed. T.D.); *Curragh Resources Inc. v. Canada (Minister Of Justice)* (1992), 8 C.E.L.R. (N.S.) 94 (Fed. T.D.), on appeal, (1993), 11 C.E.L.R. (N.S.) 173 (Fed. C.A.); *Friends of the Oldman River Society v. Canada (Minister of Transport)* (1992), 7 C.E.L.R. (N.S.) 1 (S.C.C.); *Quebec (Attorney General) v. Canada (National Energy Board)* (1994), 14 C.E.L.R. (N.S.) 1 (S.C.C.)

submissions in this hearing cautioning the Board not to separate water from land in the assessment of the security deposit required by BHP.”³⁷

In the present case, the GN urges the NWB to again use a purposive approach in carrying out its mandate by re-emphasizing the “unity of the environment” principle.³⁸ The GN maintains that this principle necessitates the complete remediation of adverse effects caused by the Applicant’s activities, and that this must be ensured in establishing the amount and terms of security.

The NWB agrees with this submission and reaffirms its position as stated in the BHP Diamond case. Further, the extensive and pervasive freshwater link to the entire northern environment via the freshwater *permafrost* leaves little doubt that a holistic approach to the NWB’s jurisdiction is entirely proper and scientifically defensible.

Having said this, the issue of environmental unity is not really in dispute in this case because the NWB agrees with DIAND that in this case it is possible to make a distinction between most water-related versus land-related components of the mine.

11. Marine issues at the dock should be studied.

In response to concerns regarding the deposition of deleterious substances into the marine environment of Strathcona Sound, the NWB recommends that additional studies be conducted to document metal concentrations in marine sediments, and contamination around the dock and marine foreshore area. Section 41 of the NWTA provides that:

41. The Board may, either jointly with the Nunavut Planning Commission, the Nunavut Impact Review Board and the Nunavut Wildlife Management Board, as established by the Agreement, acting as the Nunavut Marine Council referred to in section 15.4.1 of the Agreement, or on its own, advise and make recommendations respecting any marine area to any department or agency of the Government of Canada or the Government of Nunavut, and those governments shall consider that advice and those recommendations when making any decision that may affect that marine area.

³⁷ *BHP Diamonds*, at p. 264.

³⁸ Government of Nunavut, *supra*, note 5 at p. 12.

In a letter from Jordan DeGroot, DFO Habitat Management Biologist, to CanZinco, the DFO expresses concerns regarding metal loading in Twin Creek and Strathcona Sound. Mr. DeGroot recommends that, based on evidence demonstrating that past operation of the mine has resulted in a significant amount of metal loading, CanZinco conduct additional sampling of marine sediments. Specifically, he suggests that two additional studies be conducted to document metal concentrations in sediments:

- (a) metal loading due to different sources adjacent to Twin Creek, and
- (b) metal concentrations in marine sediment adjacent to Twin Creek, the dock and foreshore area.

The letter states:

“Information from these two studies will be useful in documenting the success of the reclamation activities and can be used to improve management decisions related to long term effects of Nanisivik and other northern metal mines.”³⁹

The NWB agrees and requires CanZinco to conduct these studies as recommended by DFO (see Licence NWB1NAN0208, Part G, Item 9, (viii) and (ix)).

V. CONCLUSION

For the reasons listed above, the Board approves CanZinco’s licence application for the closure and reclamation of the Nanisivik Mine, subject to the terms and conditions contained in Licence NWB1NAN0208 issued by the Board on October 10, 2002.

³⁹ DFO Letter, *supra*, note 27 at p.2.

APPENDIX A – LIST OF SUBMISSIONS AND CORRESPONDENCE

Application:

1. Cover letter and initial application dated January 28, 2002, received February 11, 2002 with an attached executive summary in English and Inuktitut.

Initial Submissions and Correspondence:

2. Licence Decision NWB1NAN9702. This is the decision of the NWB with respect to an application for a licence renewal dated January 17, 1996 by Nanisivik Mines Ltd.
3. Letter to Steven Keenan, Nanisivik Mine dated February 12, 2002 re Application Acknowledgement for Nanisivik. Rita Becker, Licensing Administrator, NWB, Gjoa Haven.
4. Letter to Distribution dated February 12, 2002 re. Part 1 of Renewal Application for Nanisivik. Rita Becker, Licensing Administrator, NWB, Gjoa Haven.
5. Letter to Brian Aglukark, NPC dated February 12, 2002 re Nanisivik Mine – Land Use Plan Conformity Review – Renewal. Rita Becker, Licensing Administrator, NWB, Gjoa Haven.
6. Letter to Gladys Joudrey, NIRB re Nanisivik Mine - Request for Screening - Renewal dated February 12, 2002. Rita Becker, Licensing Administrator, NWB, Gjoa Haven.
7. Letter to Philippe di Pizzo, Executive Director, NWB dated February 28, 2002. Bill Heath, General Manager, Nanisivik Mine.
8. Letter to Philippe di Pizzo dated March 1, 2002; re. Closure and Reclamation plan on ftp site by March 8, 2002. Steven C Keenan, Environmental Superintendent, Nanisivik Mine.
9. Letter to Luke Coady, NPC and Stephanie Briscoe, NIRB dated March 1, 2002; re Decommissioning of the Nanisivik Mine Industrial Water Licence NWB1NAN9702. Philippe di Pizzo, Executive Director, Nunavut Water Board, Gjoa Haven.
10. Letter to Distribution dated March 8, 2002 re Part 2 of Renewal Application for Nanisivik – Abandonment and Restoration Plan. Rita Becker, Licensing Administrator, NWB, Gjoa Haven.
11. Letter to Rita Becker dated March 8, 2002 re Nanisivik Mine/Renewal Application – NWB File#NWB2NAN9702. Brian Aglukark, Manager, Regional Planning, NPC.
12. Letter to Gladys Joudrey, NIRB re Nanisivik Mine - Request for Screening - Renewal dated March 13, 2002. Rita Becker, Licensing Administrator, NWB, Gjoa Haven.
13. Letter to Land Manager DIAND dated March 15, 2002 received March 22, 2002; re Progressive Reclamation and Underground Disposal to Nanisivik Mine. Steven C. Keenan, Environmental Superintendent, Nanisivik Mine.

14. Letter to Godfrey W. McDonald, Vice President, Breakwater dated March 20, 2002 re Screening of the Closure and Reclamation Plan for the Nanisivik Mine. Stephanie Briscoe, Executive Director, NIRB.
15. Letter to Stephanie Briscoe, Executive Director, NIRB dated March 22, 2002 re Screening of the Closure and Reclamation Plan for the Nanisivik Mine. Stefan B. Lopatka, Senior Advisor, NTI, Cambridge Bay.
16. Letter to Stephanie Briscoe, Executive Director, NIRB dated March 27, 2002 re Screening of the Closure and Reclamation Plan for the Nanisivik Mine. Stefan B. Lopatka, Senior Advisor, NTI, Cambridge Bay.
17. Letter to Stephanie Briscoe, Executive Director, NIRB dated April 03, 2002 re questions asked/response. Bill Heath, General Manager, Nanisivik Mine.
18. Letter to Stephanie Briscoe, Executive Director, NIRB dated April 12, 2002 re Screening of the Closure and Reclamation Plan for the Nanisivik Mine. Bernie MacIsaac, Senior Advisor, Mineral Development, DSD.
19. Letter to Stephanie Briscoe, Executive Director, NIRB dated April 12, 2002 re Screening of the Closure and Reclamation Plan for the Nanisivik Mine. Stephen Harbicht, Head, Assessment and Monitoring, EC, Yellowknife.
20. Letter to Stephanie Briscoe, Executive Director, NIRB dated April 12, 2002 re Screening of the Closure and Reclamation Plan for the Nanisivik Mine. Stephen Traynor, Director, Operations, DIAND.
21. Letter to Godfrey W. MacDonald, Vice President, Breakwater Resources dated April 26, 2002 re Update on Screening of the Closure and Reclamation (A & R) Plan for the Nanisivik Mine. Stephanie Briscoe, Executive Director, NIRB.
22. Letter to Stephanie Briscoe, Executive Director, NIRB dated May 3, 2002 re Screening of Nanisivik Abandonment and Restoration Plan. Stephen Traynor, Director Operations, DIAND.
23. Letter to Robert Carreau, Manager Environmental Affairs, Breakwater Resources dated May 3, 2003 re Underground Disposal of Materials at Nanisivik Mine. Paul Smith, Manager, Water Resources, DIAND.
24. Letter to Stephanie Briscoe, Executive Director, NIRB, dated May 6, 2002 re NIRB's Screening of the A & R Plan for the Nanisivik Mine. Paul Partridge, Coordinator, Environmental Assessment, DIAND.
25. Letter to Honourable Robert D. Nault, PC, MP dated May 10, 2002 re Screening Decision of the Closure (A & R) of the Nanisivik Mine. Elizabeth Copland, NIRB.
26. Letter to Godfrey W. McDonald, Breakwater Resources Ltd. dated May 10, 2002 re NWB Decision for Hearing of the Nanisivik Mine Closure Application. Philippe di Pizzo, Executive Director, NWB.
27. Letter to Local Organizations dated May 15, 2002 re Notice of Public Hearing in Arctic Bay. Phyllis Beaulieu, A/Licensing Administrator, NWB, Gjoa Haven.
28. Letter to Godfrey W. McDonald, Breakwater Resources Ltd. dated May 21, 2002 re Nanisivik Mine Closure Application – Licence NWB1NAN9702. Phyllis Beaulieu, A/Licensing Administrator, NWB, Gjoa Haven.

29. Letter to Phyllis Beaulieu, A/Licensing Administrator dated May 29, 2002 re Application for Renewal of Water Licence for Nanisivik Minesite; Attendance at Pre-hearing Meeting. Lee F. Webber, Legal Counsel for DIAND.
30. Letter to Distribution dated May 30, 2002 re Meetings and Workshop for the Closure of Nanisivik Mine. Philippe de Pizzo, Executive Director, NWB.
31. Letter to Philippe di Pizzo, Executive Director, NWB dated June 5, 2002 re Application for renewal of water licence for Nanisivik minesite; Pre-hearing meeting scheduled for June 6, 2002. Paul Smith, Manager, Water Resources, DIAND.
32. Letter to Distribution dated June 13, 2002 re June 6, 2002 Pre-Hearing Conference – Application for Licence Renewal Licence # NWB1NAN0204 – Nanisivik Mine Abandonment and Restoration. Philippe di Pizzo, Executive Director, NWB.
33. Letter with attachment to Bill Heath, Mine Manager and Ken Ball, Reclamation Manager, Nanisivik Mine/Breakwater Resources, dated June 20, 2002 re Issues requiring further clarification on the Nanisivik Closure and Reclamation Plan. Dionne Filiatrault, Senior Technical Advisor, NWB.
34. Letter to Nunavut Land Advisory Committee dated June 27, 2002 re Nanisivik Abandonment and Restoration Plan, CanZinco Ltd. Nanisivik, Nunavut. Carl McLean, Manager, Land Administration, DIAND.
35. Letter to Constantine Bodykevich, Water Resources Officer, DIAND dated July 2, 2002 re Pumping of Ocean View Sump Water. Steven C. Keenan, Environmental Superintendent, Nanisivik Mine.
36. Letter to Bill Heath, General Manager, Nanisivik Mine dated July 5, 2002 re Review of 2001 Annual Report – Nanisivik Mine – NWB1NAN9702. Michael Roy, Qikiqtani Regional Coordinator, Water Resources, DIAND.
37. Letter to Hon. Robert Nault, DIAND dated July 8, 2002 re Continuation of Board Members until Hearing Concluded in re: Polaris, Jericho and Nanisivik. Thomas Kudloo, Chairman.
38. Letter to Steven C. Keenan, Environment Superintendent, Nanisivik Mine dated July 11, 2002 re Screening of Quarry Permits. S. Briscoe, NIRB.
39. Letter to Paul Partridge, DSD dated July 17, 2002 re Cost-Sharing Arrangements of Charter to Nanisivik for Public Hearing-July 22 & 24, 2002. Alexandra Thomson, Nanisivik Coordinator, NWB.
40. Letter to Bill Heath, Mine Manager, CanZinco Ltd re Review of Submissions Nanisivik A & R Plan, CanZinco Ltd. Nanisivik, NU dated July 18, 2002. Carl McLean Manager, Land Administration. DIAND.

Public Hearing Submissions:

41. Letter to Thomas Kudloo, Chairman, NWB dated July 5, 2002 re License Application & Plan for Reclamation (2002) Nanisivik Mine – No. NWB1NAN9702. Attachment – Public hearing submission to the Nunavut Water Board on the application by Canzinco Ltd. for a water license, and for approval of their closure and reclamation plan, Government of Nunavut, July 2002. Susan Hardy, Legal Counsel for GN.

42. Spill reports from the Government of Nunavut, Department of Sustainable Development received July 7, 2002.
43. Letter to Philippe di Pizzo dated July 7, 2002 re Nanisivik Water Licence (NWB1NAN9702) Renewal - DIAND Intervention. Attachment – Nanisivik Mine Reclamation Cost Estimate, prepared for DIAND by Brodie Consulting Ltd., dated June 29, 2002. Paul Smith, Manager, Water Resources, DIAND.
44. Letter to Philippe di Pizzo dated July 7, 2002 re Nanisivik Mines Water Licence renewal (NWB1NAN0204); NTI submission for the hearing. Stefan B. Lopatka, Senior Advisor, NTI.
45. Letter to Thomas Kudloo, Chairperson, NWB dated July 7, 2002 re their submission. Attachment – Environment Canada's submission to the Nunavut Water Board on an application for renewal of water licence NWB1NAN9702, by Canzinc Ltd. for abandonment and restoration of Nanisivik Mine, dated July 7, 2002. Laura Johnston, Manager, Northern Division, EC, Yellowknife.
46. Facsimile Transmittal Sheet to Bill Tillemann, Legal Counsel for NWB dated July 8, 2002 re Response Document. Attachments – 1. A two page memorandum from Gartner Lee; 2. A three page table prepared for the Chief Inspector of Mines; 3. A four page compilation of maps and drawings; 4. A four page report prepared by Mr. Guy Lauzier; 5. A one page inventory of PCBs currently on site; 6. A four page letter sent by Mr. Steve Keenan to Dionne Filiatrault dated November 15, 2001; 7. A one page map showing various exploration drill holes, drilled over the life of the operation.
47. Letter to Bob Carreau, Canzinc Ltd. dated July 12, 2002 re Nanisivik Abandonment and Reclamation Plans. Jordan DeGroot, Habitat Management Biologist, DFO.*
48. Letter to Philippe di Pizzo, Executive Director, NWB dated July 14, 2002 re Application for renewal of water licence for Nanisivik minesite, and re 1) site visit; 2) Who should be named as licensee?; 3) GN's request for documents. Lee F. Webber, Legal Counsel to DIAND.

Post hearing Submissions:

49. Letter to distribution dated July 29 re Nanisivik Mine Ltd./CanZinc Ltd. Water Licence Renewal (#NWB1NAN9702) for Closure and Reclamation-Follow-up to the Public Hearing, July 22-24, 2002. Alexandra Thomson, Nanisivik Coordinator, NWB.
50. Letter to distribution dated July 29, 2002 re NIRB Screening of the Closure (A&R) of Nanisivik Mine. Stephanie Briscoe, Executive Director, NIRB.
51. Letter to Distribution dated July 29, 2002 re Nunavut Impact Review Board (NIRB) Screening of the Closure (A&R) of Nanisivik Mine. Stephanie Briscoe, Executive Director, NIRB.
52. Letter to Stephanie Briscoe, Executive Director, NIRB dated August 8, 2002 re Closure and reclamation of Nanisivik Mines, Arctic Bay, NU. Barry Putt, A/Inspections Supervisor, Navigable Waters Protection.

53. Letter to Alexandra Thomson, Nanisivik Coordinator, NWB dated August 8, 2002 re Nanisivik Mine: Considerations for Water Licence Terms and Conditions. Paul Smith, Manager, Water Resources, DIAND.
54. Letter to Breakwater Resources Ltd., Attention Mr. Rene R. Galipeau, Executive Vice President and Chief Financial Officer, dated August 8, 2002 re Security installment required by Water Licence NWB1NAN9702 (Nanisivik Mine). Letter includes attachment; letter of August 2, 2002 to Robert Lauer, Chief, Financial Analysis & Royalty Administration, DIAND from Rene R. Galipeau, Breakwater Resources Ltd. Paul Smith, Manager, Water Resources, DIAND. Letter to Bob Carreau, CanZinco Ltd. Dated August 9, 2002 re Nanisivik Closure and Reclamation Plans. Jordan DeGroot, Habitat Management Biologist, DFO.
55. Letter to Philippe di Pizzo, Executive Director, NWB dated August 9, 2002 re Nanisivik Mine Closure and Reclamation Plans. Jordan DeGroot, Fish Habitat Management, DFO.
56. Letter to Mr. Thomas Kudloo, Chairman, NWB dated August 13, 2002 (follow-up to the public hearing examining the Nanisivik Mine Closure and Reclamation Plan). Bill Heath, Vice President, CanZinco Ltd.
57. Letter to Thomas Kudloo, Chairman, NWB dated August 14, 2002 re License Application & Plan for Reclamation (2002) Nanisivik Mine – No. NWB1NAN9702. Follow-up submission. Susan Hardy, Legal Counsel for GN. With attachment of “Final Report, Soil Sampling Program, Nanisivik Town Site, Nanisivik, Nunavut, August, 2002”.
58. Letter to Nunavut Water Board, Attention Thomas Kudloo, Chairperson dated August 14, 2002 re Application for renewal of water licence for Nanisivik minesite; Submissions on behalf of DIAND. Letter includes excerpt from “Practice and Procedure Before Administrative Tribunals, Volume 1 by Robert W. Macaulay, Q.C. and James L.H. Sprague, B.A., L.L.B.” Lee F. Webber, Legal Counsel to DIAND.
59. Letter to Phyllis Beaulieu, Acting Licensing Administrator, NWB dated August 19, 2002 re Nanisivik Mine Water Licence Renewal. Includes attachment Appendix A, Letter from Brodie Consulting to Michael Roy, DIAND, dated August 16, 2002. Michael Roy, Qikiqtani Regional Coordinator, Water Resources, DIAND.
60. Letter to Phyllis Beaulieu, Acting Licensing Administrator, NWB dated August 23, 2002 re Comments on August 20, 2002, Technical Meeting regarding Nanisivik Mine Closure and Reclamation Plan. Michael Roy, Qikiqtani Regional Coordinator, Water Resources, DIAND.
61. Letter to Thomas Kudloo, Chairperson, NWB dated August 23, 2002 re Application for renewal of water licence for Nanisivik minesite; Second (reply) submissions on behalf of DIAND. Lee F. Webber, Legal Counsel to DIAND.
62. Letter to Thomas Kudloo, Chairman, NWB dated August 23, 2002 re License Application & Plan for Reclamation (2002) Nanisivik Mine – No. NWB1NAN9702. Susan Hardy, Legal Counsel, GN.

63. Letter to Thomas Kudloo, Chairman, NWB dated August 28, 2002 re Closure of Nanisivik Mine. Joanasie Akumalik, Mayor, Hamlet of Arctic Bay.
64. Letter to Thomas Kudloo, Chairman, NWB dated August 30, 2002 re Extension time limits granted to CanZinco Ltd. To make final Submission. Bill Heath, Vice President, CanZinco Ltd.
65. Memorandum to David Searle, Legal Council for Breakwater dated August 30, 2002 re Business Cards – CanZinco vs. Breakwater. Bill Heath, General Manager, Nanisivik Mine.
66. Letter to Lee Webber, Legal Counsel, DIAND dated September 5, 2002 re Application for renewal of water licence for Nanisivik Minesite (NWB1NAN9702). Brian Gibson, Senior Advisor, Land and Water Management and Renewable Resources.
67. Letter to Thomas Kudloo, Chairman, NWB dated September 10, 2002 (no subject line). Colin K. Benner, President and Chief Executive Office, Breakwater Resources.
68. Letter to Thomas Kudloo, Chairman, NWB dated September 10, 2002 re Reclamation costs for the Clean-up of CanZinco's Nanisivik Mine. Colin K. Benner, President and Chief Executive Officer, Breakwater Resources Ltd
69. Letter to Stephen Keenan, Environmental Superintendent, Breakwater Resources Ltd. dated June 19, 2002, received by NWB October 1, 2002 re Metal Mining Effluent Regulations (MMER) becoming law on June 6, 2002. Paul Blackall, Director, Environmental Protection.
70. Letter to David H. Searle, C.M., Q.C. dated August 9, 2002 re Business Cards/Corporate Identity. William A. Tilleman, Legal Counsel for NWB.
71. Letter to William A. Tilleman, Legal Counsel for NWB, dated August 12, 2002 re Business Cards/Corporate Identity. David H. Searle, Fasken Martineau DuMoulin LLP.
72. Letter to William A. Tilleman, Legal Counsel for NWB dated August 13, 2002 re Application for renewal of water licence for Nanisivik minesite (Nunavut Water Board file NWB1NAN9702; and re: Business Cards. Lee F. Webber, Legal Counsel to DIAND.
73. Letter to William A. Tilleman, Legal Counsel for NWB dated August 19, 2002 re Application for renewal of water licence for Nanisivik minesite (Nunavut Water Board file NWB1NAN9702); And re: Request regarding business cards and associated information. Lee F. Webber, Legal Counsel to DIAND.

APPENDIX B – LIST OF EXHIBITS FILED AT OR FOLLOWING THE JULY 22, 2002 PUBLIC HEARING

- Exhibit 1 Bill Heath, Canzincos – Opening comments to the NWB, July 22 & 23, 2002 at Arctic Bay, Nunavut.
- Exhibit 2 Canzincos presentation entitled Nanisivik Mine A Division of CanZincos Ltd., date stamped July 22, 2002
- Exhibit 3 Letter to Brian Gibson, DIAND re Nanisivik Mine, a division of CanZincos Ltd. Reclamation Security – Water Licence NO. NWB1NAN9702, date stamped July 23, 2002. Norman L. Calder, Treasurer, Breakwater Resources Ltd.
- Exhibit 4 Letter to Philippe de Pizzo dated September 12, 2001 re Security Deposit – Licence NWB1NAN9702, date stamped July 23, 2002. Norman L. Calder, Treasurer, Breakwater Resources Ltd.
- Exhibit 5 Review of Aquatic Studies Related to Nanisivik Mine, Baffin Island, prepared by D.B. Stewart on behalf of Department of Fisheries and Oceans, dated 1998, date stamped July 23, 2002
- Exhibit 6 Heavy Metals in Ringed Seals From the Canadian Arctic, prepared by R. Wagemann, Department of Fisheries and Oceans, on behalf of DIAND, date stamped July 23, 2002.
- Exhibit 7 Paul Smith, DIAND – Opening comments for Nanisivik Public Hearing – July 22-24, 2002.
- Exhibit 8 Partial remarks of M.J. Brodie, date stamped July 24, 2002.
- Exhibit 9 Mine Site Reclamation Policy for Nunavut, published under the authority of the Minister of Indian Affairs and Northern Development, Ottawa, 2002.
- Exhibit 10 Letter to R. Halim, P.Eng, Acres International Limited, dated June 21, 2002 with attachment – Bacterial and chemical oxidation of pyretic mine tailings at low temperatures. Bo Elberling, Institute of Geography, University of Copenhagen. Date stamped July 24, 2002.
- Exhibit 11 Hamlet of Arctic Bay Working Group – Submission to the Nunavut Water Board July 22, 2002; date stamped July 24, 2002.