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NUNAVUT WATER BOARD
NUNAVUT IMALIRIYIN KATIMAYINGI

Water Licence Application Supplementary Questionnaire for Mine Development

SECTION 1 :

GENERAL

1. Applicant **CanZinco Ltd., Nanisivik Mine**
(Company, corporation, owner)

PO Box 225, Nanisivik NU, X0A 0X0
(Postal address)

867-436-7401 867-436-7435
(Telephone number) (Fax)

kledrew@nu.breakwater.ca
(eMail)

Corporate Address (If different from above)

PO Box 56, Bathurst NB, E2A 3Z1
(Corporate Office Address)

506-546-1999 506-548-1100
(Telephone number) (Fax)

kwhalen@nb.breakwater.ca
(e-Mail)

Project Name Nanisivik Mine

Location North Baffin Region, Nunavut Territory

Closest Community Arctic Bay, NU

Latitude/Longitude ~73 03' North – 84 30' West
Show the location of the project on a general location map.

2. Environmental Manager Kevin G LeDrew 867-436-7401
(Name) (Telephone No.)

or Project Manager Ronald K Light, General Manager, Nanisivik Mine
(Title)

3. Indicate the status of the mine or mill on the date of application. (Check the appropriate space.) Indicate schedule or time table of project activities.

Design	
Under construction	
In operation	XX
Suspended	
Care and Maintenance	
Abandoned	

4. If a change in the status of the mine or mill is expected, indicate the nature and anticipated date of such change.

N/A

5. Indicate the proposed schedule for the Mine/Mill operating schedule.

Hours per week	168
Days per week	7
Weeks per year	52
Number of employees	190
Number of Inuit employees	25

6. How will the project affect the traditional uses on Inuit Owned Lands?

N/A

7. Have the Elders been consulted on effects to the traditional use on Inuit Owned Land? If so, list them. If not, why not?

Generally, communications have been carried to the community through the Ikajutit Hunters and Trappers Organization in Arctic Bay. The HTO members were asked to participate in the photo-documentation of the Nanisivik area with respect to the On Land Disposal Monitoring Plan. In February of 1998 a meeting was held in Arctic Bay to discuss this as well as other issues such as the Chronic Toxicity Testing proposal. No members of the HTO accepted the compensable proposal to come to Nanisivik and photograph the area weekly.

8. Has the proponent consulted Inuit Organization in the Area? If so, list them.

Ikajutit Hunters and Trappers Organization, Arctic Bay

9. Has the proponent consulted surrounding communities on traditional water use areas? If so, list them. If not, why not?

Ikajutit Hunters and Trappers Organization, Arctic Bay

10. Attach a detailed location map (1:50,000) drawn to scale showing all on site and off site facilities and activities. Show the relative locations of the (proposed) locations of the mine, mill, water treatment facilities, sewage and solid waste facilities, and tailings containment areas. The plan should include the water intake and pump-house, fuel and chemical storage facilities, any existing or proposed concentrate, ore and waste rock storage piles, any existing and proposed drainage controls, piping distribution systems, gas, electric and water utility route locations, and transportation access routes around the site. The map also should include elevation contours, water bodies and an indication of drainage patterns for the area.

See Attached – Figure1

11. If applicable, provide a brief history of property development, which took place before the present company gained control of the site. Include shafts, adits, mills (give rated capacity, etc.) waste dumps, chemical storage areas, tailings disposal areas and effluent discharge locations. Make references to the detailed map.

N/A

12. Give a short description of the proposed or current freshwater intake facility, the type and operating capacity of the pumps used, and the intake screen size.

Freshwater is drawn from the East Twin Lake approximately 4.5 kilometres from the Nanisivik Mine industrial Site and approximately 3 kilometres from the village of Nanisivik. (See plan attached) Pumps used are 2-10 horsepower staged vertical turbine pumps set inside the Potable Water Building as indicated on the attached Plan. Water is drawn from the pond to a wet well via underwater conduit. Each pump is capable of delivering approximately 300 cubic metres per day to the storage tank located ~0.5 kilometres southeast of Town-site.

13. At the rate of intended water usage for the exploration activity, explain water balance inputs and outputs in terms of estimated maximum draw down and recharge capability of the water source from fresh water will be drawn.

Water drawn from the East Twin Lake is replaced annually during spring freshet that ranges in volume from 7 – 10 million cubic metres depending on snow cover in the drainage basin of approximately 12 square kilometres. This volume is extrapolated from the runoff recorded at the SNP station 159-6, which is continuously measured during flow periods as required under the license.

14. Will any work be done that penetrates regions of permafrost?

Yes __X__ No_____

15. If "YES" above, is the permafrost continuous or discontinuous?

The permafrost is continuous in the Nanisivik area. Underground drill data indicates permafrost exists beyond 500 metres of depth.

16. Were (or will) any old workings or water bodies (be) dewatered in order to conduct the exploration activity?

Yes___ No__X__

Although not required for exploration and/or mining, runoff water is pumped from the sump at West Open Pit and removed to the West Twin Disposal Area via the Mill Tailings system. This volume depends on snow pack, runoff and precipitation but is typically less than 8000 cubic meters. Water will be removed from West Open Pit seasonally as this opening is being used as a sump to collect and divert runoff water. The sump collects runoff water that has contacted exposed sulphides as well as prevents this water from contacting waste rock on pit perimeter. This water is then diverted to the WTDA via the Mill Tailings system for pH modification and metal precipitation prior to release.

17. If "YES" above, indicate the name of the water body, the total volume of water to be discharged and the chemical characteristics of the water. Also included should be the receiving water body and expected schedule of the dewatering.

18. Was (or will) the above discharge (be) treated chemically?
Yes_____ No__**X**__

19. If "YES" above, describe the applied treatment.

SECTION 2 :

GEOLOGY AND MINERALOGY

20. Physiography; Provide an analysis and interpretation of the geologic and hydrologic environment in the immediate vicinity of the mine or plant. The investigation should extend from ground surface downward to the base of the glacial drift. Include large-scale topographic map(s) covering the area where the mine, mill and waste disposal basin are (or were to be) located. The map(s) should provide information on groundwater patterns and permafrost variations in the area.

The host rock is part of the Society Cliffs Formation comprising of laminated and bedded to massive light to medium grey dolostone. Permafrost is continuous in the area and deep drilling indicates permafrost below 500 metres of depth. The overburden consists of dolostone and shale/dolomitic shale.

21. Briefly describe the physical nature of the ore body, including known dimensions and approximate shape.

The Nanisivik deposit is approximately 3200 m in the east-west direction and 125 m in the north-south direction. The deposit consist of the Main Ore Zone which accounts for the majority of the mine's "foot print". The Satellite Zones are located under the Main Ore Zone with exception of Shale Hill to the north and Oceanview and K-Baseline to the east of the Main Ore Zone. The thickness of the deposit is approximately 90 metres but varies throughout the orebody. The Main Ore Zone is lenticular or "flattened cigar" shape, while the Satellites Zones are far more irregular.

22. Briefly describe the host rock in the general vicinity of the orebody (from the surface to the mineralized zone.)

The host rock is part of the Society Cliffs Formation comprising of laminated and bedded to massive light to medium grey dolostone. Breccias and crackle zones are normally healed with interstitial white sparry dolomite.

23. Provide a geological description of the ore minerals of the deposit. (If possible, include the percentage of metals.)

The major ore minerals are sphalerite (zinc), galena (lead) and silver. Their relative percentages are 6.5% zinc, 1.0%, lead, and 35 g/t silver.

24. Describe the geochemical tests, which have been (or will be) performed on the ore, host rock, and waste rock to determine their relative acid generation and contaminant leaching

potential. Outline methods used (or to be used) and provide test results in an attached report (ie. Static, Kinetic tests.)

Extensive information was provided to the Water Board under separate cover in September 1999 (*Acid Generation Potential of Tailings and Shale Cover Material,* Lorax Environmental Services Ltd., report. Other information on waste rock acid generation potential, was completed by the Research and Productivity Council (rpc) of New Brunswick and Coastech of British Columbia, and submitted to the Board as an appendix in the Interim Abandonment and Reclamation Plan.

SECTION 3:

THE MINE

25. Indicate the type of mining method to be used on the property:

Open Pit _____X_____
Underground _____X_____
Strip mining _____

26. Outline any possible operational changes and when that might occur.

No operational changes from the current underground and open pit methods are anticipated. The majority of reserves will be mined underground and open pit reserves represent 5-10% of the total reserves.

27. Describe the type(s) of explosives to be used in mining operations.

The mine utilizes primarily ANFO as the blasting agent and a semi-gelatine dynamite for priming purposes. The ANFO is mixed on-site as a mixture of Ammonium Nitrate and Fuel Oil.

28. Indicate the number of shafts or other openings that are presently on the property. Signify whether or not the openings are presently in use. (Submit measurement in metres) Indicate if used seasonally.

Access and egress to the main ore body is gained via the west portal (00), 01 portal, 39N and 17N ramps as well as the 88 portal. The ocean view and K-Baseline ramps are not active presently. Openings average approximately 3.5 * 3.5 metres. There is one raise at the Shale Hill area, which is inactive and capped.

29. Are any entrances to shafts, adits, etc. below ground water level.

No.

30. Are permafrost conditions expected?

Yes.

31. Indicate the expected life of the mine.

Four to five years.

32. Indicate the present average rate of production from all ore sources on the property.

2,500 Tonnes per day.

33. Indicate the expected maximum rate of production from all ore sources on the property.

3,500 Tonnes per day.

34. Outline all water usage in the mine. Indicating the source and volume of water for each.

Water usage in the mine is limited to diamond drilling activities; this water is recirculated and is generally reclaimed and reused in all drilling activities. Water is reclaimed from the WTDA and makeup potable water is taken from separate water mains in the Mineral Processing plant. Annual use is expected to be approximately 10,000 – 20,000 m3 for underground exploration activities.

35. Indicate the volume of natural ground water presently gaining access to the mine workings.

0 M^3/day

36. Outline methods used (planned) underground to decrease minewater flow. (For example: recycling)

Recycling on diamond drill water, there is no natural water flow in the mine.

37. Indicate the average daily volume of water to be discharged from the mine during normal operations.

No water is discharged from the mine.

38. If a mill will be operating on the property in conjunction with mining, will all mine water (underground, open pit, etc.) be directed to the mill for reuse?

Runoff water collected in the west open pit is recycled to the mill.

39. If not, indicate the proposed point and volume of discharge for the minewater.

Water recovered from the Ocean View pit and east adit area is pumped or trucked to the East Adit Treatment Facility. Historically the volume of water treated and discharged from the east adit treatment facility is in the range of 31,000 to 55,000 cubic metres.

40. What are the chemical and physical characteristics of the preceding mine water?

159-19 (Ocean View Pit)

pH	Zn	Pb (ppm)	Cd
6.94	160.2	0.040	0.020

NML-25 (East Adit Area)

pH	Zn	Pb (ppm)	Cd
7.34	61.5	0.002	0.001

159-12a (East Adit Area)

pH	Zn	Pb (ppm)	Cd
7.06	11.1	0.009	0.017

41. Are there any treatment plans for mine-water and will any chemicals be used in such treatment? Explain.

East Adit treatment facility uses hydrated lime to control pH values and precipitate metals from runoff water flowing in the vicinity of the waste rock storage piles as well as in the area of the East Open Pit.

Water discharged from the EATA is within the criteria outlined in the license.

SNP Station 159-12

Cd mg/L	<0.001
Pb mg/L	0.005
Zn mg/L	0.138
pH	9.47
Temp (C)	8.3
Conductivity (umho)	763

SECTION 4:

THE MILL (PROCESSING PLANT)

42. Attach a copy of the (proposed) mill flow sheet., Indicate the points of addition of all the various reagents (chemicals) that are (or will be) used.

43. If milling is in progress on the property at the present time, indicate the rate of milling.

_____ not applicable (check) OR 2250 tonnes/day

44. What is the present (or proposed) maximum capacity of the mill?

793,000 mt/yr

45. List the types and quantities of all reagent used in the mill process (in kg/tonne.)

Lime	2400 g/tonne	CaOH2 (pH modifier)
Copper Sulphate	550 g/tonne	CuSO4 (zinc mineral activator)
Potassium Amyl Xanthate	115 g/tonne	PAX (sulphide collector)
Methyl Isobutyl Carbinol	3 g/tonne	MIBC (frother)

46. Is the (proposed) milling circuit based on autogenous grinding?

Yes _____ No __X__ Partially _____

47. Indicate the amount(s) of concentrate(s) produced in the mill.

105,000 tonnes of Zinc Concentrates
1,200 tonne of Lead Concentrates

48. Will fresh water undergo treatment prior to use in the mill process? Explain.

No.

49. Indicate all uses of water in the mill. Include, quantity and source of water for each use.

Use	Source	Volume m^3/day
Processing	West Twin Disposal Area	3650
Processing/Domestic	East Twin Lake	450

50. Indicate the total volume of water discharged from the mill.

4000 m3/day

51. Of the preceding volume, what quantity is (will be) recycled to other areas on the property (mine, mill, etc.)? Indicate location of use and quantity.

3900 m3/d of water are deposited into the WTDA and subsequently recycled for mineral processing.

52. Based on yearly production, indicate the average quantity of tailings (Dry weight) discharged from the mill.

687,000 tonnes of tailings

53. What is the average liquid-solid ratio of tailings leaving the mill?

By weight: **2:1** (Liquid: Solid) By volume: **10:1** (Liquid: Solid)

54. If applicable, identify any chemical treatment applied to the liquid phase before being discharged to the tailings area. (Attach flow sheet if available.)

No treatment is made directly to this slurry although the milling process requires the use of lime and therefore; the slurry is alkaline having a pH of ~11.0 at the discharge. The long retention times allow dissolved metals to precipitate from solution and the water achieves a more neutral state having a pH of approximately 7.5 - 8.0 prior to discharge to the environment.

55. Based on present production or bench test results, describe the chemical and physical characteristics of liquid mill wastes directed to the tailings area.

Tailings are discharged in a slurry form at an approximate density of 1300 kg/cubic meter. The liquid fraction typical analysis indicates a pH of 11.0 – 11.9, conductivity in us/cm of 4000 – 7000 at a temperature of 11 degrees Celsius. The slurry typically has dissolved metal content; 0.1 Cd, 0.5 Pb and 2.5 Zn mg/L.

56. Provide a geochemical description of the solid fraction of the tailings.

The tailing material is mostly sulphide (>90%) in nature with minor amounts of shale and dolomite, both being net acid consumers. The sulphides are made up of pyrite, sphalerite and galena. The tailings solids have been static tested and are known to be acid generating. They typically average; 0.05% Pb, 0.32% Zn and 32.0% Fe. The tailings water typically reaches discharge quality criteria once the solid fraction has settled out and dissolved metals have precipitated and are retained in the reservoir.

57. Identify the current source of power production.

Power is generated onsite using diesel generators for a maximum power capacity of 11 megawatts per year and an operating production of 6 megawatts per year.

58. At present, is the mill handling custom lots of ore from other properties (or will the mill be handling any in the future)?

No custom milling has been carried out on the property and none is planned.

59. If so, specify ore characteristics and describe any mill processes, which will change as a result.

60. If tailings are being recovered in the mill or elsewhere for use as backfill etc.), indicate the quantity of solid tails (tonnes/day) recovered from the mill process.

61. Will exits be bermed to prevent spills from escaping the mill?

Curbing exists around the inside perimeter of the process building basement to prevent liquids escaping the plant.

62. Will all sumps for process tanks have the required 110% holding capacity of the largest tank?

Yes, the zinc thickener is the largest tank on site and the basement area under it will contain the entire volume plus approximately 25% excess.

SECTION 5:

THE CONTAINMENT AREAS

63. Is the tailings containment area (being) designed for total containment?

Yes

64. Attach detailed scale plan drawings of the proposed (or present) tailings area. The drawings must include the following: (See Figures 1-1 to 3-2 attached)

a. details of pond size and elevation;

b. precise details of all retaining structures (length, width, height, materials of construction, etc.);

c. details of the drainage basin, and existing and proposed drainage modification;

d. details of all decant, siphon mechanisms etc,. including water treatment plant facilities;

e. the plan for tailings deposition and final tailings configuration;

f. details with regard to the direction and route followed by the flow of wastes and/or waters from the ore; and

g. indication of the distance to nearby major watercourses.

Note: Individual detailed large scale drawings of any facility (dam, decant system, ditch, dike, water treatment plant, etc.) (to be) constructed must be attached. Specific details with regard to the methods of construction, materials (to be) used, etc., are required.

65. Explain your choice of location for the tailings pond design by rationalizing rejection of other options. Consider the following criteria in your comparisons; subsurface strata, permeability, abandonment of tailings, recycling/reclaiming waters, and assessment of runoff into basins. Attach a brief summation.

It is our intention to continue using the area, which has been in use for approximately 25 years. This area was chosen as there was enough storage volume for the projected tailings generation and there was no evidence of fish contained within it.

66. The total area for the existing tailings basin in hectares and for any proposed tailings area is 70 Hectares.

67. The average depth of the tailings basin is __7__ metres.

68. Indicate the total capacity for the existing tailings area by using water balance and stage volume calculation and curves. (Attach a description of inputs and outputs along with volume calculations.)

See Volumes page 28 – 29.

69. Indicate the total capacity for the proposed tailings area using water balance and stage volume calculation and curves. (Attach a description of inputs and outputs along with volume calculations.)

See Volumes Page 28 - 29.

70. Will the present tailings area contain the entire production from the mine-mill complex for the life of the project?

Yes, as per the recent mine plan all tailings produced are expected to be stored in the tailings disposal area.

71. If "NO' above, or if production output increases tailings volumes. Indicate what plans have been made for future tailings disposal on the property.

72. Has any land in the immediate area been identified as native or crown land or withdrawn pending native claim settlement?

No

73. Do the tailings area and all related treatment facilities lie on company held claims?

Yes

74. If not, indicate mine claim boundaries (and owners) on tailings area plan map. Also, attach a copy of all pertinent agreements signed with the owners of the claims not held by the company.

75. Will the proposed tailings area engulf or otherwise disturb any existing watercourse?

No

76. If "YES", attach all pertinent details (name of watercourse, present average flow, direction of flow, proposed diversions, etc.).

77. If any natural watercourse will gain access to the proposed tailings area, what methods will be used to decrease the amount of runoff water entering the containment area? Indicate the volume of water, which will enter the tailings area from the source(s) in question and attach all pertinent details of proposed diversions.

The tailings area receives approximately 250,000 cubic meters of recharge annually depending on snowloading and rainfall.

78. Indicate on the tailings area plan drawing all sources of seepage presently encountered in the vicinity of the tailing area, the volume of each seepage flow (m3/day), and the direction of each flow.

There are no known current areas of seepage in the tailings area.

79. Are the seepage flows from the property presently being treated chemically? _____ If so, describe how.

80. If NOT, explain.

81. Please attach a conceptual abandonment and restoration plan for all tailings areas being developed. Describe the measures that have been (or will be) taken to contain and stabilize the tailings area(s) against leaching and seepage after operations on the property cease.

Cover materials of shale and resilient boulder armour is to be applied to promote permafrost aggradation and prevent water percolation and mobilization of tailings materials or leachate. Please refer to Part H, Item 1 of the license and submissions made in this regard on March 15, 2000.

82. Describe the proposed or present operation, maintenance and monitoring of the area.

At present 2 personnel maintain tailings discharge and water balance inventory daily performing routine checks and reporting of observances. Daily, weekly, and monthly water level monitoring, dyke inspections are performed as per the Dyke Inspection Program submitted August 23, 1999 under Part D, Item 9 of the license. Annual Geotechnical Inspections are completed as per Part D, Item 10 of the license, by contract engineer certified to carry out these duties in the Northwest Territories. Unusual observances made during the daily, weekly and monthly monitoring campaign are reported to the Geotechnical engineer for consultation and recommendations.

SECTION 6:

WATER TREATMENT

83. Describe the methods of chemical treatment that are presently being used and/or will be used to control the quality of the tailings effluent. Attach engineering drawings where applicable and a process flow chart. If a pilot test has been conducted please attach description of methodology and results.

Precipitation of metals from solution prior to discharge occurs due to elevated pH from the residual lime remaining in the mill tailings stream. Prolonged retention times within the disposal area assists with this process.

Other water treatment includes runoff waters in the vicinity of the East Adit mining areas as well as the Ocean View Sump water, (trucked to the East Adit Treatment Facility). At this facility, runoff water is mixed with hydrated lime at a treatment pond to raise the pH to ~ 10.0 and pumped to a retention pond capable of storing 35,000 cubic meters of water. With the elevated pH, soluble metals begin to precipitate from solution achieving allowable discharge levels of 0.250 mg/L of Zinc metal prior to discharge. (See Figure attached)

84. List the names of chemicals to be used in the water treatment process.

Hydrated Lime is used in the treatment of water at the East Adit Treatment area.

85. What is the proposed or present average rate of effluent treatment of the plant (if applicable)?

Approximately 45,000 cubic meters per year from the East Adit area are treated & released.
In 2000 there were 244,000 cubic meters of water released from the West Twin Disposal area.

86. What is the proposed or present maximum effluent treatment capacity of the plant (if applicable)?

Water at the EATA is treated at 2000 litres per minute, additional pumping capacity to the retention pond exists on standby at up to 2000 litres per minute.

87. Will treated effluent be discharged directly to a natural water body or will polishing or settling ponds be employed? Describe location control structures and process of water retention and transfer. Attach any relevant design drawings.

A polishing pond is employed in the West Twin Disposal Area prior to discharging into Twin Lakes Creek.

At the EATA a retention pond is used as a settling/polishing pond to remove suspended solids and soluble metals. Once discharged the effluent travels approximately 3 kilometers to Strathcona Sound via local topographic relief, with no significant stream volume. See Figure attached.

88. Name the first major watercourse the discharge flow enters after it leaves the area of company operations.

Water released from the West Twin Disposal Area enters Twin Lakes Creek approximately 1 kilometre downstream from the headwaters at East Twin Lake. (this location is identified in the SNP as 159-4)., Travelling north approximately 5 kilometres, Twin Lakes Creek passes through the industrial site before discharging into Strathcona Sound.

Waters released from the East Adit Retention Pond travel north to Strathcona Sound a distance of approximately 3 km in no established watercourse.

89. In terms of rate of effluent release and volume and flushing rate of the receiving watercourse, estimate the extent of the mixing zone within the receiving waters and where background levels of constituents for that watercourse will be attained.

Water is discharged from SNP 159-4, the polishing pond, at the WTDA approximately 1.5 km to SNP 159-9 where water quality generally indicates background levels.

Water treated at East Adit contains metal values upon discharge very near background levels found in similar runoff waters in the area, and is lower than background levels in waters found locally at the Ocean View site.

90. Describe the present (proposed from pilot tests) chemical and physical characteristics of the tailings effluent (Decant).

	SNP Station 159-4	SNP Station 159-9
Cd mg/l	<0.001	<0.001
Pb mg/l	0.005	0.002
Zn mg/l	0.080	0.095
pH	7.5	7.6
Temp (C)	8.0	8.6
Conductivity (umho)	1000	900

SECTION 7:

ENVIRONMENTAL MONITORING PROGRAM

91. Have elders been consulted in the establishment of the monitoring program?

The Ikajutit Hunters and Trappers Organization of Arctic Bay have been consulted a number of times over the past number of years with regards to activities at the Nanisivik Mine. In particular the members were concerned with waters discharging from the east end of the mine, especially north of the East Open Pit and Adit areas. During the Chronic Toxicity Sampling and Testing program presented to the HTO in 1998, it was agreed that Nanisivik Mine would carry out additional sampling efforts at the mouth of Chris Creek. The sampling campaign has been delayed due to sea ice, and accessing a reliable watercraft in conducting this sampling. This campaign is scheduled to be conducted in the summer of 2001.

92. Has Traditional Knowledge of the area been considered?

Yes, as discussed above the HTO was concerned about the water in the Chris Creek area.

93. Has any baseline data been collected for the main water bodies in the area prior to development?

BC Research, conducted a sampling campaign in 1974 on waters surrounding the minesite prior to development. A copy was previously submitted to the NWT Water Board and has also been attached for review.

94. If "YES" include all data gathered on the physical, biotic and chemical characteristics at each sampling location. Identify sampling location on a map.

See BC Research documents attached.

95. Provide an inventory of hazardous materials on the property and storage locations.

See Attached, Figures 3-6 to 4

96. Attach the present or proposed contingency plan, which describes course of action, mitigative measures and equipment available for use in the event of system failures and spills or hazardous materials.

See submission made to the Nunavut Water Board on July 28, 2000 under Part E, Item 1 of the license.

97. Provide a conceptual abandonment and restoration plan for the site, detailing the costs to carry out the plan, and a proposal for a financial assurance, which covers the costs to carry out the plan.

See submission made to the Nunavut Water Board on March 15, 2000 under Part H, Item 1 of the license.

98. Provide a detailed emergency response plan for the project.

See Attached Figures 5 to 7

99. Provide a description of the pollution control systems and environmental management procedures.

For EMS - See Attached

Pollution Control Mechanisms:

- Water consumption in the plant is minimized by recycling 90-95% of the process water through the WTDA reservoir and reclaim system.
- QA/QC program established for Water Sampling Program
- Secondary Containment of Fuel Tankage
- Water Collection and Treatment at the East Treatment Facility
- Recycling and Management of Batteries (offsite)
- Waste Oil reuse, through certified waste oil burner
- Waste Rock Removal program established to remove waste dumps to underground as backfill.
- First Person Response Orientation program for new employees.
- Active Tailings Management Program to cap/cover exposed tailings as discharge pipelines advance.
- Fuel Conservation by using power plant exhaust for concentrate drying and waste heat distributed via hot water radiators in the industrial plant as well as ancillary buildings.
- Concentrate Dryers are exhausted through dry cyclones and wet scrubbers to remove fine particles from the stacks.
- Contaminated Soil Containment Site (Landfarm) established for oil stained soils.

SECTION 8:

ENVIRONMENTAL ASSESSMENT AND SCREENING

100. Has this project ever undergone an initial environmental review, including previous owners.

BC Research completed baseline data gathering of surrounding vegetation, water-sheds and marine organisms, in 1974.

101. Has any baseline data collection and evaluation been undertaken with respect to the various biophysical components of the environment potentially affected by the project (e.g. wildlife, soils, air quality), i.e. in addition to water related information requested in this questionnaire?

See above.

102. Describe any cumulative impacts the project may create?

There is no other Industry in the Nanisivik area.

103. Has any meteorological data been collected at or near the site? (E.g. precipitation, evaporation, snow, wind).

a) If so, please include the data and attach copies of reports or site titles, authors and dates.

Please see the attached documents continued as Section 103.

104. If no, are such studies being planned? Briefly describe the proposals.

105. Has authorization been obtained or sought from the department of fisheries and oceans for dewatering or using any water bodies for containment of waste?

N/A

106. Please attach an outline briefly describing any options or alternatives considered or reflected for the various mine components outlined in this questionnaire (e.g. mill site, water supply sources, location for ore and waste piles).

Presently, there are no options available for Infrastructure placement as the Mine is currently in operation.

107. Has a socio-economic impact assessment or evaluation of this project been undertaken? (This would include a review of any public concerns, and water and cultural uses of the area, implication of land claims, compensation, local employment opportunities, etc.)

There has been no recent socio-economic impact assessment or evaluations, although it is recognized that the Nanisivik Mine has been in operation for 25 years and during that time Inuit employment has an average rate of approximately 15-20% of the workforce. In this period the direct and indirect contribution of wages to the Baffin Region and the north in general is estimated to have been in the order of $40 million dollars, (this does not include special events, rush equipment purchase, contracts or rentals).

The mine's economic benefit to the Inuit of Arctic Bay is in the order of $3 million dollars per year through direct and indirect employment. The Territory and the Inuit of Nunavut benefit directly from the mine's operation through the employee payroll taxation system which adds over $0.3 million dollars annually to the Nunavut Government's budget. Other social and economic benefits include training and skill development of the Inuit employed at Nanisivik Mine in trades and career selections that can be taken back to their community for further employment elsewhere in Nunavut.

Over 200 people enjoy the economic benefits from the operation of the Nanisivik Mine. By continuing mining operations it may be expected that additional training and skill development will continue to be provided and expanded, and the community of Arctic Bay, as well as the Territory of Nunavut, will realize additional economic benefit.

The prosperity of the Nanisivik Mine, Breakwater Resources Ltd, its employees and the people of the Nunavut Territory are expected to continue to share in the wealth of the land's natural resource. The responsible exploitation, recovery and utilization of the remaining reserves at Nanisivik will continue to procure the maximum benefit of the resource for all involved.

108. If yes, please describe the proposal briefly.

109. If no, is such a study being planned? Yes_____ (When) OR No __X__

110. Does the project alter the quantity or quality or flow of waters through Inuit Owned Lands?

N/A

111. If yes, has the applicant entered into an agreement with the Designated Inuit Organization to pay compensation for any loss or damage that may be caused by the alteration.

112. If no compensation arrangement has been made, how will compensation be determined?

See response to question 107

1.03 (continued) **Meteorological Data**

Climatic data has been collected by Atmospheric Environmental Services (AES) of Environment Canada since 1976 at the Nanisivik Airport, which is located approximately 10 km south of the Nanisivik Site and is approximately 250 meters higher in elevation. The recorded climate data were analyzed to provide a basis for deriving the climate parameters such as precipitation, air temperatures and evaporation to characterize the existing climate conditions at the project site.

The following is a summary of the main climatic parameters:

- The mean annual air temperature is equal to –15.2°C.
- The mean annual precipitation totals 240 mm.
- The 100-yr period extreme annual precipitation value amounts to 380 mm.
- The mean annual lake evaporation value, as measured at the West Twin Lake near the community of Nanisivik, amounts to 200 mm.

Table 1
Mean Monthly and Annual Precipitation
(Period of Record: 1977 to 1998)

Month	Total Precipitation[1] (mm)	
	Long-term	1998
January	8.3	13.6
February	3.8	4.8
March	6.6	1.2
April	9.6	5.2
May	18.1	28.6
June	23.8	0.4
July	35.6	46.2
August	41.2	46.2
September	41.8	17.4
October	31.7	7.2
November	13.8	13.2
December	7.7	8.0
Annual	242	192

(1): Precipitation data at the Nanisivik climate station are not corrected for snowfall under-catch.

Table 2
Derived Extreme Annual Precipitation Values
(Period of Record: 1977 to 1998)

Return Period (Years)	Annual Precipitation[1] (mm)
2	232
5	275
10	302
20	327
50	357
100	380
200	402
500	431

(1): Precipitation data at the Nanisivik climate station, not corrected for snowfall under-catch.

Table 3

Estimated Mean Monthly [1] and Annual Lake Evaporations (Reid, 1996)

Month	Lake Evaporation (mm)
January	0
February	0
March	0
April	0
May	0
June	51
July	101
August	31
September	20
October	0
November	0
December	0
Total	**203**

(1). Distribution of monthly lake evaporation, based on mean monthly temperatures.

Reid B, Water Resources Division, Indian and Northern Affairs Canada, Evaporation Studies at the Nanisivik Mine Tailings Pond, Northwest Territories, Canada, November 1998.

Table 4

Data from Nanisivik Airport meteorological station.

	Temperature Means Degrees Celsius		
	Maximum	Minimum	Average
January-98	-23.6	-39.1	-31.4
February-98	-25.6	-34.6	-30.1
March-98	-19.3	-29.3	-24.3
April-98	-8.5	-23.2	-15.9
May-98	-1.5	-12.0	-6.8
June-98	8.5	0.0	4.3
July-98	13.1	3.1	8.1
August-98	8.8	-0.8	4.0
September-98	1.4	-3.2	-0.9
October-98	-4.1	-16.8	-10.5
November-98	-9.8	-20.8	-15.3
December-98	-14.5	-31.2	-22.9
Average Annual	**-6.3**	**-17.3**	**-11.8**

	Historical Temperature Means Degrees Celsius
	Average
January	-29.2
February	-30.4
March	-27.9
April	-20.0
May	-10.3
June	-0.4
July	4.8
August	1.2
September	-5.7
October	-14.7
November	-23.0
December	-26.6
Average Annual	**-15.2**

Volumes from Survey Data of October 2000

Contour elevation	Area m2	Volume m3
387.0	280,566	
386.0	239,346	259,956
385.5	206,549	111,474
384.5	139,483	173,016
383.5	111,431	125,457
382.5	76,865	94,148
381.5	54,587	65,726
380.5	30,643	42,615
379.5	14,385	22,514
378.5	2,485	8,435

Total (387m) Volume in Surface Cell =	**903,341**	cubic metres
Winter Water Volume Required =	**350,000**	cubic metres
Available Storage Volume	**553,341**	cubic metres

Annual Tailings Volume Prod.	**300,000**	cubic metres
Surface Cell Active Storage with Winter H2O	**1.8**	years

Tailings at saturated conditions at depth contains ~23% H2O by vol.
Tailings deposition therefore has a relative density of ~2.342 m3/t

4.2 Year Tailings Prod **2,846,605** tonnes
1,215,459 cubic metres

Volume difference between Surface Cell and requirements **662,118** cubic metres

Projected volume in test cell area without construction **110,000** cubic metres
(Assumes present containment area with 2.5m of tailings storage height.)

Projected vol in South-west reservoir area **125,000** cubic metres
(2 metre bermed area with 1 metre H2O depth for 2.5m of tailings storage height.)

Projected volume differential	**427,118**	cubic metres
Equivalent Storage Volume Required	**1.42**	years

Projected Surface Cell Winter Storage Volume Remaining	**310,000**	cubic metres
Projected volume differential	**117,118**	cubic metres
Projected storage differential	**0.39**	years

Note: There is contingency storage Volume of approximately 100,000 cubic metres available in the reservoir area below the abandonment water level of 369 metres.

Tailings area inventory

Volumes from survey data of October 2000

Contour elevation	Area m2	Storage Volume m3
387	280,566	
386	239,346	259,956
385.5	206,549	111,474
384.5	139,483	173,016
383.5	111,431	125,457
382.5	76,865	94,148
381.5	54,587	65,726
380.5	30,643	42,615
379.5	14,385	22,514
378.5	2,485	8,435

Total (387m) Volume in Surface Cell =	**903,341**	cubic metres
Winter Water Volume Required =	**350,000**	cubic metres
Available Tailings Storage Volume	**553,341**	cubic metres

~ Annual Tailings Volume Prod.	**300,000**	cubic metres
Surface Cell Active Storage with Winter H2O	**1.8**	years

Tailings deposition has a relative density of ~2.342 m3/t

4.2 Year Tailings Prod **2,846,605** tonnes
1,215,459 cubic metres

Volume difference between Surface Cell and requirements	662,118	cubic metres
Projected volume in test cell area with 2m construction	**289,000**	cubic metres

(Assumes additinonal 2 metre dyke with tailings storage thickness of 3.5m)

Projected vol in South-west reservoir area	**125,000**	cubic metres

(2 metre bermed area with 1 metre H2O depth for tailings storage thickness of 2.5m)

Projected volume differential	248,118	cubic metres
Equivalent Storage Volume Required	0.83	years
Projected Surface Cell Winter Storage Volume Remaining	**310,000**	cubic metres
Projected volume differential	**61,882**	cubic metres
Projected storage differential	**0.21**	years

Note: There is contingency storage Volume of approximately 100,000 cubic metres available in the reservoir area below the abandonment water level of 369 metres.

Tailings area inventory with 2 m Dyke Construction