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NWB1NAN0208
Our file - Notre référence

April 26, 2004

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**Re: Technical questions derived from review of the Nanisivik Mine 2004
Reclamation and Closure Plan**

On behalf of Indian and Northern Affairs Canada (INAC), I would like to thank the Nunavut Water Board (NWB) for the invitation to submit questions derived from the Nanisivik Mine 2004 Reclamation and Closure Plan (RCP) to the NWB and CanZinco Limited (the Proponent) in advance of the technical meetings and pre-hearing, to be held May 4-6, 2004, in Yellowknife, NWT.

The RCP was submitted to the NWB by the Proponent in accordance with Section G of Water Licence NWB1NAN0208 (the current Water Licence). The RCP documents submitted, and their Section G requirement, are listed in Table 6 (Pg. 47) of the RCP. The RCP represents an important document for the successful reclamation and ultimate closure of the Nanisivik mine site, and INAC is pleased with the substantial progress made towards this goal in this most recent submission. With the assistance of EBA Engineering Consultants Limited, INAC undertook a technical review of the RCP and, in general, found it to comprise an appropriately comprehensive document. Several items, however, were found to be in need of further information, explanation, or clarification. Those identified at the time of writing are presented below however, should additional issues be identified, INAC reserves the right to expand on these information requests throughout the technical meeting and public hearing process.

Information requests derived from the *Nanisivik Mine 2004 Reclamation and Closure Plan Summary Document*

1. It is recommended that the Proponent provide Appendix, Section, and page number references to the information contained within the supporting documents that the technical statements throughout this report are based upon.

Section 6.5.1 - West Twin Disposal Area Talik Investigation

2. The Proponent is requested to provide an explanation as to why the dike was raised every year with the exception of 1994.

Section 6.6 Borrow Areas Development and Closure Plan

3. The Proponent is requested to provide justification for failing to attempt any sort of re-vegetation following reclamation.

Section 6.8 - Rock Piles and Open Pits Closure Plan

4. The Proponent is requested to provide an explanation of the ARD relative risk classification system used to determine the risk characterization assigned to each of the rock piles/open pits.
5. The Proponent is requested to clearly identify the contingency plan referenced herein.
6. The Proponent is requested to clarify the relocation of waste rock, and the means by which relocation will reduce surface reclamation requirements.

Section 6.10 - Environmental Site Assessment

7. The Proponent is requested to provide the values for both the SQRO's and CEQG's to facilitate comparisons between these guidelines and/or other contaminated soils.
8. INAC has previously indicated that the acceptable approach to the reclamation of concrete building foundations entails the removal of these foundations, and also of any surrounding contaminated soil, to the underground storage area (S. Hawkins, letter of October 31, 2003, to the NWB re: Underground Mine Solid Waste Disposal Plan). The Proponent is requested to provide a reasoned explanation in defense of their continued proposal to leave the concrete foundations in place, and of the absence of testing for contaminated soil below the concrete foundations. The Proponent is further requested to explain why the cover depths for the concrete

foundation may vary from the 2.2 m proposed (note Section 7.5.3, the 0.5 m of cover proposed for the concentrate storage shed foundation).

Section 6.13 - Underground Mine Waste Disposal Plan

9. It is requested that the Proponent clearly provide a summary table, including contaminant classification (metal, hydrocarbon, PCB, etc.) and volume estimates (including swell factors and contingencies), for *all* sources of contaminated soil onsite, including those below the concrete foundations, Tank Farm, and Dock areas.

Section 7.1.2 - Surface Cell and Test Cell Areas

10. The Proponent is requested to identify how the minor surface deformations that may occur on the Surface Cell will be repaired, and the length of time such repairs would be anticipated to take.

Section 7.1.5 - Reservoir/Polishing Pond

11. With regard to Steps 2 and 3 in the Reclamation Sequence (page 91), the Proponent is requested to clarify why these points are phrased “This *may* be accomplished by...” (emphasis ours). If alternate means of accomplishing these objectives exist, the Proponent is requested to identify and describe these means, and under what circumstances they would be utilized.

Section 7.7.2 - Intermediate Day Tanks and Fueling Stations

12. The Proponent is requested to provide a plan for the decontamination processes of these, and all (i.e. vehicles, buildings, etc.) structures to be decontaminated. Such plans should include, at minimum: the materials to be used, type and volume of wastes to be generated (including wastewater), waste containment measures, treatment (if applicable), water quality testing prior to release (if applicable), and waste disposal.

Section 8 - Northern Community Benefits

The Proponent provides 6 specific areas where their A&R plan provides socio economic benefits to Nunavut and the residents of Arctic Bay:

- i) Improved access to and across the mine site.
- ii) Local sales of tools, computers, furniture and other items
- iii) Employment during the tear down and reclamation work.
- iv) Employment during the environmental monitoring work
- v) Training opportunities related to work and contracted services.
- vi) Possible transfer of infrastructure to GN for continued use.

The RCP offers few concrete examples of how the decommissioning will provide Arctic Bay and Nunavut with specific economic benefits.

What has been presented has not been thoroughly thought through or, in the case where some thought has been applied, has not been sufficiently developed to give INAC a clear assessment of the economic opportunities that exist.

13. The Proponent is requested to elaborate on how potential economic benefits will accrue, what specifically the benefits are (with a few obvious examples i.e employment and training), and the mechanisms by which the community and territory can maximise on this potential.

Unless the Proponent is willing to amend this section of the plan to more clearly and specifically spell out the type and scope of the benefits to be accrued, as well as any liabilities and costs associated with this part of the plan then INAC deems the socio - economic section of the A&R plan to be deficient and incomplete.

Section 8.1 - Land Use Benefits

The Proponent asserts that with reclamation the mine site will be made safe enough to allow a return to more traditional activities. Within the RCP, the Proponent makes no mention of what these activities might be, nor the economic benefit that will be derived from them returning to the Nanisivik mine site, nor do they identify any pre-mine historical levels of any activity types that could be re-introduced so it is difficult to assess the level of economic benefit (if any) that will be derived from the activity outlined in this section.

The Proponent noted that the road between the mine site and Arctic Bay will provide enhanced access and therefore economic benefit. That economic link again is not elaborated upon in any detail within the report. In addition the document does not provide any data regarding what the annual costs to Arctic Bay will be to maintain that road (plowing, repairs, and other regular maintenance) so there is no real way of assessing whether the road will provide economic benefit or liability to the community.

14. The Proponent is requested to provide a model and/or template through which a comprehensive quantitative analysis of economic benefit may be conducted

Section 8.2 - Sale of goods

The RCP states that access to the mine's surplus small goods like computers, tools and furniture will provide economic benefit to Arctic Bay residents. However the report does not clearly make the link beyond simple causal association between distributing surplus equipment within the community and the socio economic benefit derived from that process.

Simply distributing surplus material provides for limited socio economic impact. The report is also unclear as to whether Arctic Bay would be required to purchase these goods or whether they would be provided free of charge.

Any plan to have the Hamlet purchase these goods would in fact reduce what limited benefit is derived from this proposed action.

Section 8.3 - Employment and Contracting

The Proponent states that this project will provide community and territorial employment and economic benefit through the provision of jobs and contracts created by the activities in RCP. This benefit will be derived primarily through employment and contract opportunities related to the mine remediation work and through the participation of northern firms in bidding for site contracts.

The Proponent is requested to provide more substantive information with respect to:

15. What types of positions are anticipated for the tear down and reclamation process cleanup process and how many positions will be anticipated within each type or category?
16. Of the anticipated positions, which are likely to go to community residents?
17. Will the Proponent work with the hamlet and federal and territorial governments to produce a process that will be friendly to local hiring? Will the company work with the hamlet and federal and territorial government to develop job descriptions that will facilitate and not hinder local hiring and make it easier for Arctic Bay resident so obtain these jobs?
18. Does the Proponent plan to establish a contracting/employment office in Arctic Bay to facilitate the hiring of local firms and personnel?
19. Will the Proponent establish an NLCA style article 24 preferential contacting process for this project to ensure that northern and local firms are competitive in bidding for contracts?

Section 8.4 - Training

The Proponent asserts that they will be “mindful” of training opportunities and work with the community liaison officer and the GN to provide training for local residents who are interested and qualified to enter training programs.

While the Proponent offers a framework as to the type of jobs that will be included in a training program this list is at best an outline.

What is presented in the RCP cannot be considered a training plan per se, but rather a commitment toward establishing one.

20. The Proponent is requested to delineate a more comprehensive training plan that

addresses issues such as recruitment, timelines, partners, funding and associated costs, responsibilities.

Without addressing the items noted above, the Proponent's proposed RCP should be considered deficient and incomplete with respect to the establishment of a training program.

Section 8.5 - Possible Uses of Mine Facilities

The Proponent is correct in asserting that many groups have expressed interest in keeping some of the mine facilities open as they may benefit the community and the Territorial Government.

It is insufficient for the Proponent to simply state that the retention of specific structures could provide a benefit to the community and territorial government without providing the following:

21. The proponent is therefore requested to provide:
 - a) An inventory of buildings on site which could possibly be retained
 - b) A list of uses developed in partnership with the hamlet and territorial government of those potential alternative uses. This list should include some assessment of the feasibility or likelihood that these would or could be actioned.
 - c) A list of liabilities associated with each building including an assessment of its current state of repair, data indicating annual cost of operation, and levels of contamination if any associated with the buildings on site.

It is insufficient for the Proponent to simply commit to supporting GN and Hamlet activities in alternate uses of the mine facilities. If the Proponent is to list this as potential economic benefit arising from the decommissioning of the Nanisivik mine site, then it is incumbent upon the Proponent to produce a plan that clearly spells this out and does not assign this work to others while claiming credit in the RCP.

Section 9.0 - Closure and Reclamation Monitoring

22. While INAC is supportive of the immediate monitoring schedule proposed by the Proponent, we would like to re-emphasize the necessity of the Proponent fulfilling their commitment to flexible and additional monitoring as required. INAC would also like to reiterate that the cessation of monitoring activities in 2010, as suggested by the Proponent, will be contingent not only on the absence of negative effects in the monitoring conducted to that date, but also on the strength of evidence that no possibility for future negative effect exists. INAC therefore looks forward to both the submission of the *Terms of Reference for a Comprehensive Performance Review* in 2007, and the *Comprehensive Assessment Report* in 2010.

Information requests derived from technical documents accompanying the RCP

2003 Phase 3 Environmental Site Assessment (ESA), Nanisivik Mine, Nunavut

23. The Proponent is requested to provide a sampling program for polychlorinated biphenyls (PCBs) in soil, as well as a sampling program for ammonium nitrate and nitrogen compounds in the soil surrounding the ANFO facility.

Section 2.3.3 - Contaminants of Concern

24. The Proponent is requested to present a sampling program to confirm the presence/absence of polycyclic aromatic hydrocarbons (PAHs) beyond naphthalene. If the Proponent believes that such a sampling program is not required, the associated justification is requested.
25. The Proponent is requested to justify the continued absence of chlorinated ethenes from the of *Contaminants of Concern* list.
26. The Proponent is requested to list all sampling undertaken to identify any additional compounds not included on the *Contaminants of Concern* list.

Section 2.3.8 - Roads

27. The Proponent is requested to clearly indicate the Figure in the RCP that identifies the roads requiring remediation.

Section 2.3.14 - Air Quality Monitoring

28. The Proponent is requested to clearly identify the section in the RCP addressing the need, or lack thereof, for continued air quality monitoring at the Nanisivik site.

Section 4.3.3 - Installation of Seepage Sampling Wells and Water Sampling

29. The Proponent is requested to clearly identify the location of test pit TP03-373.

Section 4.3.5 - Analytical Laboratory

30. The Proponent is requested to clarify if the same analytical laboratory was used for soil and water analyses in both the Phase 2 and Phase 3 ESA's. If a different laboratory was used, it is requested that the Proponent provide a rationale for the change.

Section 4.4.6 - Industrial Complex and Warehouse Yard, and;

Section 4.4.8 - Landfill Area

31. The Proponent is requested to provide a rationale for the absence of measurements for BTEX compounds (benzene, toluene, ethyl benzene, and xylenes) in the water samples measured for total petroleum hydrocarbons (TPH), given that regulatory guidelines do not exist for TPH measurements, and the detection of BTEX compounds would have also provided evidence of hydrocarbon contamination.

Quarry Development and Reclamation Plan

32. The Proponent is requested to fix the Table of Contents in the *Quarry Development and Reclamation Plan*.

Section 4.1 - General

33. The Proponent is requested to clarify why the second paragraph mentions the productivity rates encompassed in Appendix III, and the Appendix III table mentions the use of Area 14 for Quarrying, yet Area 14 is not mentioned as a quarrying location on page 11.

Section 4.5 - Landfill Quarry

34. Throughout the text, the quarried totals appear higher than the approximate totals on page 11. In section 8.0, Contingency Plans, the uncertainty of the amount of shale required is mentioned, however there is a large difference in the approximation (~2x). The Proponent is therefore requested to provide a more precise approximation of the shale required, as INAC will require this information for the Quarrying Permits on crown land and the calculation of the associated dues.

Section 5.3 - Water Management

35. The Proponent is requested to identify any criteria, including limiting criteria, to be used in determining the final locations of swales and berms.
36. The Proponent is requested to provide a geochemical QA/QC plan to confirm that the visual selection of quarried materials suitable for use in reclamation is accurate.

Waste Disposal Plan

Disposal Plans, Table 7 (pg. 11)

37. The Proponent is requested to correct the calculation for Utility Vehicles to 450 m³.
38. It is unclear if the materials identified in the Waste Disposal Plan are sufficient to stabilize the underground mine site. The Proponent is requested to identify, with supporting documentation, any potential (or lack thereof) for subsidence following the completion of reclamation activities.

Detailed Design of the West Twin Dyke Spillway

Section 2.2.2 - WTDA Closure Concept

39. The Proponent is requested to provide further justification for the minimum 1.0 m water cover, as well as the variability in the range of water cover thicknesses that can be expected in the Reservoir.

Engineering Design of Surface Reclamation Covers

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40. The Proponent is requested to identify what QA/QC will be conducted on sand obtained from the airport for use in reclamation covers (Page ii).
41. The Proponent is requested to provide quantitative evidence to support the statement that the "...proposed [cover] thickness *appears* adequate..." (emphasis ours) (Page iv, paragraph 1).

Section 4.1 - Reactive Mine Wastes

42. Clarification of meanings with regard to the two conclusions presented at the end of the second paragraph are requested.

Section 5.2.1.1 - Till

43. The Proponent is requested to expand upon the possibility of, and conditions under which, till will be used in closure and reclamation activities.

Nanisivik Mine Landfill Closure Plan

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44. The Proponent is requested to identify the existence and/or detail of contingency plans in place, in the event poor performance is detected in the closure/post-closure monitoring period. Of the four contingencies identified, it is requested that the Proponent provide a framework identifying in what order, and under what circumstances, these contingencies will be employed (page iii, paragraph 3).

Section 2.2.1 - Overview

45. As only 25% of the soil in the landfarm cell currently meets the federal guidelines for the petroleum hydrocarbons in soil, the Proponent is requested to identify the fate of this soil, and also that of the remaining 75% of soil that does not currently meet the federal guidelines.

Additional Information Requests

46. The Proponent is requested to provide, for review, a report on the short and long term stability of the underground mine site.
47. The Proponent is requested to reexamine the contouring of rock piles and pits where the faces of these formations are steep. Reclamation guidelines indicate that the land should be returned, as much as is possible, to the pre-development state.
48. In addition to addressing hydrocarbon contaminated soil below the Tank Farm, the Proponent is requested to provide evidence that groundwater contamination in the

active layer beneath and/or surrounding the Tank Farm has not occurred. If groundwater contamination has been detected, a remediation plan to address is contamination is requested.

We thank the Proponent in advance for the further clarification and/or explanations to our above queries. INAC looks forward to discussing these few outstanding items at the NWB Technical Meetings in Yellowknife for our collective purpose of seeing the Nanisivik site returned to a safe and productive state.

Sincerely,

A handwritten signature in black ink, appearing to read 'S. Traynor', with a long horizontal flourish extending to the right.

Stephen Traynor
Director, Operations
INAC - Nunavut Regional Office