



NAHANNI BUTTE DENE BAND

1A, 1 Nahanni Mountainview St
Nahanni Butte NT, X0E 0N0, Canada
Tel: (867) 602-2900 Fax: (867) 602-2910
Email: manager@nahadehe.ca

19 April 2022

Mavis Cli-Michaud, Chair
Mackenzie Valley Land and Water Board
7th Floor - 4922 48th Street
PO Box 2130, Yellowknife NT X1A 2P6

**RE: Prairie Creek - Mining and Milling - New Type A Land Use Permit and Water Licence
Renewal Applications (MV2021D0005 MV2021L2-0004) - Closing Argument**

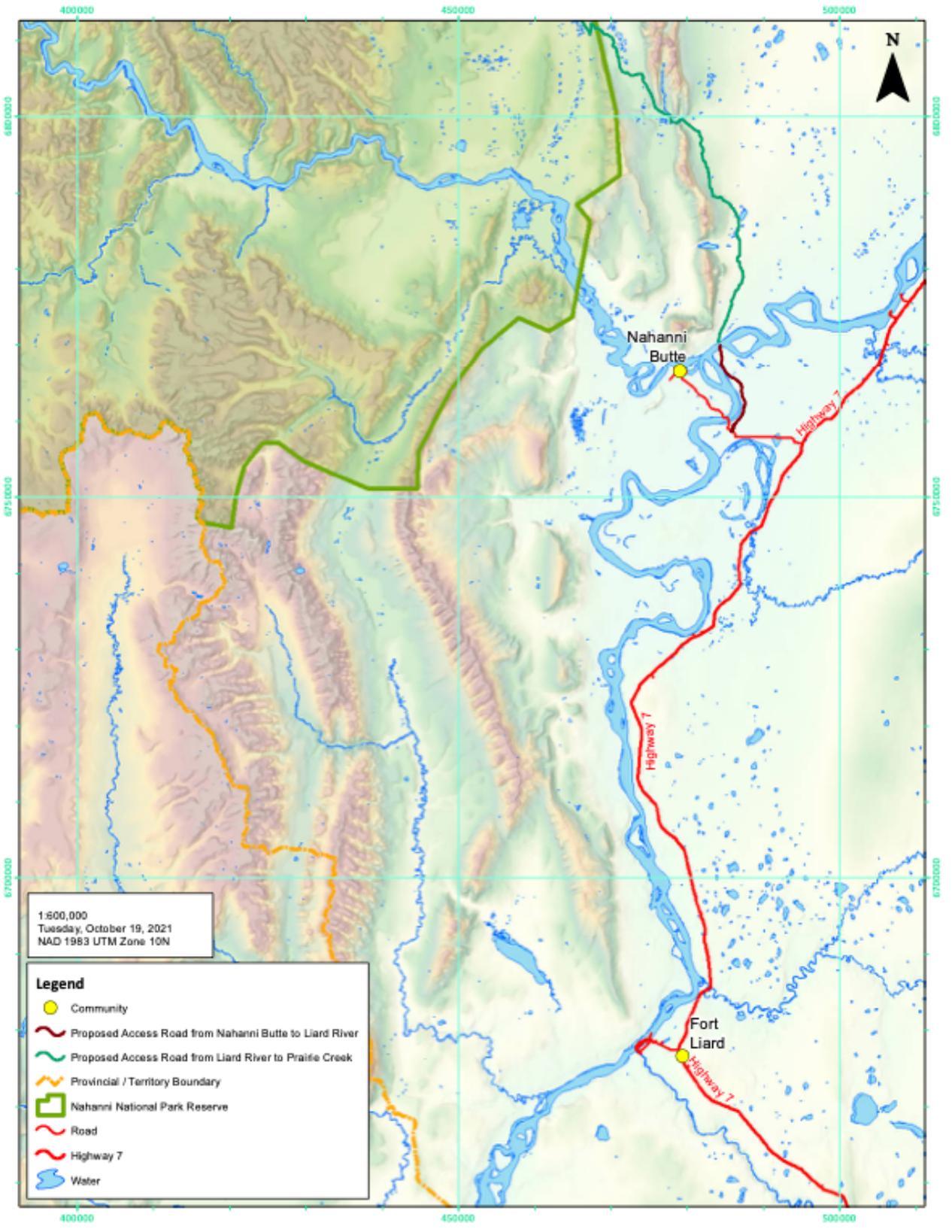
Ms. Cli-Michaud:

This letter contains the Closing Argument of the Naha Dehe Dene Band (“NDDB”) with respect to the recent Land Use Permit and Water Licence Applications (the “Application”) for the Prairie Creek Mine (the “Mine”), proposed by NorZinc (“NZC”) through its subsidiary Canadian Zinc Corporation (“CZN”).

Context

As they consider this Intervention, NDDB again reminds the Mackenzie Valley Land and Water Board (“Water Board”), and other reviewers, that the Mine and the proposed access road are located entirely within NDDB’s Traditional Territory, directly adjacent to the community of Nahanni Butte. We have the greatest potential for both impacts and benefits from its development. We recommend that CZN works directly with us to ensure that the benefits to NDDB exceed the impacts on our community. We recommend that all other parties to this process respect our community’s primary rights and interests within our Traditional Territory.

Several times in this Water Licence proceeding, other parties have made assertions regarding their interests in the area, particularly with respect to the start of the access road. NDDB highlights the basic geography of this project in the following map:



The Water Board and reviewers will note that the start of the Mine access road (shown in dark red in the map above), between Highway 7 and the Liard River crossing, is comprised of two segments:

- The current Nahanni Butte Access Road
- A section of road, along the east bank of the Liard River, which has long been used and developed by the NDDB members as a traditional trail to access cabins and harvesting areas in the area

Both of these segments are directly adjacent to the community of Nahanni Butte and are critical to NDDB members' ability to carry out traditional land use activities within their Traditional Territory.

Draft water licence comments

In October 2021, NDDB provided several recommendations for the Water Board's consideration in our technical interventions (NDDB 2021). Our community leadership, including myself, Councilors, and elders attended the Public Hearings for the proceeding in December 2021 and listened carefully to the presentations and recommendations of other parties. On May 6, 2022, we submitted comments on the draft water licence conditions for MV2021L2-0004 (the Draft WL). After reviewing CZN's responses to our comments on the draft water licence (MVLWB 2022b), we continue to stand by our recommendations for the reasons expressed in our comments on the licence, in our interventions, and throughout the proceeding.

Although we will not go through our past recommendations again in these closing arguments, we reiterate their importance to protect our Traditional Territory. We believe that early closure planning, early studies, an operational response framework related to post-closure water quality, and regular updates to water quality predictions are needed to ensure there will be no significant adverse impacts to water quality in Prairie Creek and beyond after the site is closed.

Further technical recommendations

With this context in mind, NDDB has retained Dr. Kathleen Racher Ph.D. (KRacher Consulting) and Ms. Patty Ewaschuck P.Eng. to carry out a technical review of materials submitted during this proceeding, in cooperation with NDDB's other advisors. NDDB endorses their technical recommendations, which are appended to this letter, and encourages the Water Board and other reviewers to give them due consideration.

Sincerely,

Chief Steve Vital
Nahanni Butte Dene Band

Effluent Quality Criteria (EQC)

In its application to the Board for this water licence, CZN proposed one set of EQC to meet water quality objectives (WQOs) in Prairie Creek assuming discharge through an exfiltration trench. The exfiltration trench design assumed an 8 m pipe length in summer and a 6 m length in winter; this was what was approved of as part of the MV2008L2-0002 water licence. In their response to Information Request 2 (CZN, 2021a) of the Technical Sessions, CZN provided a lengthy analysis of shorter pipe lengths which evaluated the feasibility of meeting WQOs and the cost/benefit of doing so. This analysis was done in response to questions¹ (from the GNWT and the Board staff on how well CZN's proposed effluent mixing zone met the criteria set out in the MVLWB/GNWT's Guidelines for Effluent Mixing Zones (MVLWB/GNWT 2017)).

CZN's response to Information Request 2 provided predictions for three potential pipe lengths (summer/winter lengths): 8m/6m, 4.8m/4.8m, and 2m/1.5m. CZN noted that either the EQC or the maximum volume of effluent discharge could be adjusted to meet WQOs in Prairie Creek for the three scenarios. CZN chose to keep the maximum effluent discharge amount the same and, as a result, the proposed EQC for the three scenarios necessarily became more stringent as the pipe length decreases.

In the Draft WL, three sets of EQC were presented based on the three pipe lengths. In its comments on the Draft WL, GNWT's Department of Environment and Natural Resources (ENR) recommended² that the shortest of the potential pipe lengths (2m/1.5m) be adopted because it was the "only option that predominantly conforms to the GNWT/MVLWB (2017) guidance for mixing zone size which constrains the mixing zone to approximately 25% creek width under all flow conditions". CZN has continued to recommend using the EQC for the 8m/6m pipe lengths, consistent with what was approved in licence MV2008L2-0002. To our knowledge, no other party other than CZN has recommended specific EQC and/or exfiltration pipe lengths.

During this proceeding, we have noted the following point of evidence related to EQC:

- Throughout the proceeding, GNWT-ENR continued to characterize³ constraining the mixing zone size to 25% of the wetted width of Prairie Creek as "the current best practice for the Northwest Territories". We find this characterization overstated and possibly misleading for the following reasons:
 - The guidance document only says that the 25% maximum width of a mixing zone is only a "useful starting point for defining the dimensions of a regulated mixing zone".
 - Calling it a "current best practice" implies that it has been used many times before in water licence proceedings in the NWT when, in fact, we

¹ Pages 168-178 of MVLWB 2021a

² ENR Comment 20 in MVLWB 2022b.

³ Page 21 of GNWT 2021, page 34 of MVLWB 2021b.

- are not aware of any water licence in the NWT that has used this 25% limit for discharges into rivers or creeks.
- The guidelines only discuss point-source discharges; the exfiltration trench is designed to rapidly dilute the effluent in the waterbody while point source discharges do not.
 - The GNWT goes on to say⁴ that the shortest pipe length (2m/1.5m) “minimizes the potential for deleterious effects to the receiving environment, specifically potential deleterious effects to migrating fish and any impacts to fish habitat.” This statement implies that use of the shortest pipe length will result in the lowest impacts to the receiving environment; but this characterization is not supported by the evidence for the following reasons:
 - The Department of Fisheries and Oceans Canada (DFO) stated that, with respect to effects on fish passage, one of their concerns is the velocity of effluent leaving the trench pipes. On January 18, 2022, CZN provided a response (CZN, 2022a) to the Board’s Public Hearing Undertaking 12 with an assessment of flow velocities in Prairie Creek associated with different pipe lengths in the exfiltration trench. On February 23, 2022, DFO responded to an information request (DFO, 2022) from the Board asking if, based on the results of Undertaking 12, DFO could eliminate any pipe length scenario from further consideration due to negative impacts on fish passage. DFO responded that “Based on the results of this assessment, DFO cannot eliminate any pipe length scenario as CZN anticipates no negative impacts to fish passage. However, as stated in CZN’s assessment, a longer exfiltration trench (8 m/6 m) may be preferable as it minimizes increases in flow velocity and attenuation distance downstream of effluent release.”
 - In its response to the Draft WL, ENR states⁵ that “the EQC for several parameters under Option 1 (ENR’s preferred exfiltration trench size) may result in exceedance of water quality objectives at the edge of the mixing zone.” We note that the last page of Attachment 4.1 of CZN’s Response to IR1-4 (CZN, 2022b) does predict exceedances of WQOs in Prairie Creek for dissolved zinc in the months of January to April in the 2m/1.5m pipe scenario. Importantly these WQO exceedances are not predicted in the 4.8m/4.8m or 8m/6m scenarios.
 - We are concerned with balancing all the potential environmental effects when deciding on EQC. Lower EQC mean more treatment⁶ which has its own environmental costs in terms of greenhouse gas emissions and the handling of contaminated sludges. When we asked the GNWT at the

⁴ Page 21 of GNWT 2021.

⁵ GNWT-ENR comment 20 in MVLWB 2022b,

⁶ See Table 2-2, page 6, in CZN 2021a entitled “Trench Option Costs”. CZN Estimates that the average amount of water treatment will increase from 23 L/s in the 8m/6m pipe scenario to 56.5 L/s for the 2m/1.5m scenario. CZN also estimated that the increased costs for the treatment over the life of the mine increases by almost \$25M if the 2m/1.5m scenario is chosen over the 8m/6m scenario.

Public Hearing whether they considered these other environmental costs, they answered that they “do consider that.” However, we have not seen any evidence in the GNWT intervention or subsequent submissions that they have given any consideration to balancing all the environmental costs of the options.

- CZN has asserted⁷ that the EQC for ammonia and nitrite in the 2m/1.5m scenario is so low that they may not be able to consistently meet them because the treatment does not affect the concentration of those parameters.
- CZN’s revised water management plan, specifically the separation of contact and non-contact water as well as the recycling of Cell A water, for the expansion project has led to a significant reduction in the amount of contaminants that need to be either treated or discharged. Source reduction is a preferred way to minimize impacts to the environment and is consistent with the principles in the Board’s Water and Effluent Quality Management Policy.

In our intervention, we recommended that the Board set EQC that:

- are protective, with a high level of precaution regarding the receiving environment
- are achievable, considering the variability of the operation, the receiving environment and the uncertainty of instrumentation and measurement
- take into consideration all the cost of treatment - both financial and environmental

Based on our review of the evidence, we can support either the 8m/6m or the 4.8m/4.8m options for the exfiltration trench pipe lengths and the EQC that correspond to those pipe lengths. In our opinion, either of these options meet the objectives of our original EQC recommendation⁸ about EQC and will allow WQOs to be met in Prairie Creek.

Variable Load Discharge (VLD)

In the Draft WL, Board staff highlighted the licence conditions relating to the Variable Load Discharge (VLD) approach that were developed during the proceeding for MV2008L2-0002, stating that evidence related to these conditions would be presented to the Board for a decision.

We understand that the GNWT has recommended⁹ that all the VLD conditions should be removed from the new licence because “CZN is not longer pursuing it”. The GNWT goes on to say that “should CZN wish to pursue this in the future, an amendment with supporting rationale will be required.” However, this logic seems flawed to us. We recommend the Board leave the VLD conditions in the licence for the following reasons:

⁷ Pages 6-7 of CZN 2022b.

⁸ Recommendation 3 of NDDB 2021.

⁹ Recommendation 21 of GNWT 2021.

- The Board's previous determination on the VLD approach was extensively described in the reasons for decision for MV2008L2-0002 (MVLWB, 2013). A lot of time and attention by all parties went into that decision and no valid reason has been put forward to suggest the VLD approach is anything but protective of the environment. The worst complaints leveled at the approach were that it was complex to regulate, but this has not been substantiated.
- The idea of the VLD approach is to release more effluent when Prairie Creek levels are high. If WQOs can be continuously met in Prairie Creek, there could be great advantages to releasing more effluent at certain times of year. Minimizing the amount of wastewater stored on site seems sensible since it could minimize the impact of seismic activity or floods in the environment.
- There is no harm in leaving the VLD conditions in the licence because CZN would still have to jump through a series of regulatory hoops to be approved to take that approach. In other words, there are already a series of conditions in the water licence that, collectively, would ensure that CZN was well-prepared prior to being allowed to implement a VLD approach.
- If, in future, it appears that a VLD approach is superior to the fixed EQC approach, then removing the conditions from the licence now will mean a whole other licensing process which may challenge the financial and human resources of the communities. Why do this when we can identify no harm in leaving the conditions in the water licence?

Licence Term

CZN has requested a 25-year term for the water licence. Although this is allowed under the Waters Act, it is hard for us to envision a situation where the mine would operate for 25 years without the need for a licence amendment of some kind. On the other hand, too short of a licence term can affect both the company's ability to secure financing and cause us all to have to participate in a renewal process prematurely (i.e., before there is sufficient evidence to know what changes we might want to make to the licence).

As construction is expected to take about 3 years, and we believe that at least 5 years of operational data will identify issues that require a licence amendment, we recommend a licence term of about 8 years.

Consideration of Community Capacity

Almost every submission made by the proponent to the Board requires us to contract expert consultants to review the submission and requires community representatives to review the consultant's work to decide on the final comments to the Board. In this way, every submission to the Board becomes both a financial and human capacity issue for our community. While we always endeavour to participate in Board review processes, we have limitations.

We are always in favor of requirements that make sense and add to the minimization of environmental impacts by the mine; however, we ask that the Board consider the impact of new requirements in the water licence on community capacity. For example, the Draft WL has proposed several submissions that we are not sure are truly necessary to aid in environmental protection:

- Draft WL condition F.40 requires an EQC Evaluation Report within one year following the commencement of Groundwater Dewatering. However, there is no evidence to suggest that an EQC Evaluation Report submitted at that time will contain the information needed to actually make decisions on EQC. We don't know when the appropriate time will be, but we will be able to see it coming if we review the Annual Water Licence Report. We are committed to reviewing the Annual Report and, if we detect worrying trends, we can inform the Board and request an amendment process if necessary.
- As part of the incorporation of the exploration licence into the mining licence, it seems that Board staff have inadvertently added at least one new requirement for exploration activities. The Draft WL calls for the Water and Wastewater Management Plan would replace the Minewater Contingency Plan and the Wastewater Treatment Plan (as currently required in the exploration water licence). This means that for CZN to continue its exploration activities using the water management methods we have already reviewed several times, we will be required to review a new plan.
- As already noted, too short of a licence term or the deletion of the VLD conditions could also impact community capacity unnecessarily.

References

CZN, 2021a. [Responses to Technical Session Information Requests, Mining and Milling Water Licence MV2021L2-0004 and Land Use Permit MV2021D0005, Prairie Creek Mine](#), submitted to the MVLWB on September 20, 2021.

CZN, 2021b. [Prairie Creek Mine - Effluent Quality Criteria Report - March 2021](#), submitted to the MVLWB on March 11, 2021.

CZN, 2022a. [Responses to Public Hearing Undertakings, Mining and Milling Water Licence MV2021L2-0004 and Land Use Permit MV2021D0005](#), Prairie Creek Mine, submitted to the MVLWB on January 18, 2022.

CZN, 2022b. [Responses to Information Requests 1-4, Mining and Milling Water Licence MV2021L2-0004 and Land Use Permit MV2021D0005](#), Prairie Creek Mine, submitted to the MVLWB on March 11, 2022.

DFO, 2021. [Fisheries and Oceans Canada Intervention to Canadian Zinc Corporation Prairie Creek Mine - Type A Water Licence and Land Use Permit Application](#), submitted to the MVLWB on October 8, 2021.

DFO, 2022. [Information Request on Exfiltration Trench Pipe Lengths Canadian Zinc Corporation - Water Licence Renewal Application MV2021L2-0004 and New Type A Land Use Permit Application MV2021D0005 Prairie Creek Mine - Mining and Mineral Exploration](#), submitted to the MVLWB on February 23, 2022.

Łíídljį Kue First Nation (LKFN), 2021. [Technical Intervention for Canadian Zinc Corporation's Prairie Creek Mine Application - MV2021L2-0004 and MV2021D0005](#), submitted to the MVLWB on October 22, 2021.

GNWT, 2021. [Government of the Northwest Territories Technical Intervention for Canadian Zinc Mining Ltd Prairie Creek Mine Water Licence Renewal MV2021L2-0004](#), submitted to the MVLWB on October 22, 2021.

MVLWB, 2013. [Board Reasons for Decisions for Type A Water Licence MV20018L2-0002 - Canadian Zinc Corporation - Prairie Creek Mine](#), July 30, 2013.

MVLWB/GNWT, 2017. Guidelines for Effluent Mixing Zones, September 2017.

MVLWB, 2021a. Canadian Zinc Corporation - Prairie Creek Mine MV2021L2-0004 MV2021D0005 - [Day 1 Technical Session Transcript - August 31, 2021](#).

MVLWB, 2021b. Canadian Zinc Corporation - Prairie Creek Mine MV2021L2-0004 MV2021D0005 - [Day 3 Public Hearing Transcript - December 15, 2021](#).

MVLWB, 2022a. [IR1-4 Review - Comment and Response Table](#), May 5, 2022.

MVLWB, 2022b. CZN Prairie Creek Mine - Draft Licence and draft Permit - [Comment and Response Table](#), May 15, 2022.

Naha Dehe Dene Band (NDDB), 2021. [Technical Intervention for Canadian Zinc Corporation's Prairie Creek Mine Application - MV2021L2-0004 and MV2021D0005](#), submitted to the MVLWB on October 22, 2021.