Terra Firma Consultants

[redacted]
8 Negus Place
Yellowknife, NT X1A 2W1
Phone (867) 873-9348
Email: TerraFirma@theedge.ca

June 25, 2003

Phillippe di Pizzo, Chief Executive Officer
Nunavut Water Board
P.O. Box 119
Gjoa Haven, NU XOB 1JO

Stephanie Briscoe, Executive Director
Nunavut Impact Review Board
P.O. Box 2379
Cambridge Bay, NU
XOB OCO

RE: June 17-19 Tahera Sponsored Regulator's Meeting in Edmonton

Dear Ms. Briscoe and Mr. di Pizzo,

This letter summarizes the notable environmental impact assessment deficiencies and issues discussed at the Tahera sponsored meeting. The meeting was constructive and productive. I recommend that NIRB consider a similar technical forum for the Doris North environmental review following Miramar's submission of the final EIS and before public hearings.

June 17, 2003
Tahera Jericho Diamond Mine Regulator Meeting. Room BII of the Nisku Inn, Edmonton, Alberta

Attendees

Bruce Ott-AMEC
Rick Patten-Aquatics Consultant
Ben Hubert-Wildlife Consultant
Greg Missal-Tahera
Robyn Abernethy-Gillis Indian and Northern Affairs Canada (INAC)
Michelle McChristie, INAC Water Resources
Dave Osmond-INAC/Gartner Lee Limited (GLL)
Eric Denholm-INAC/GLL
Louie Azzolini-Nunavut Impact Review Board (NIRB)
Mike Fournier-Environment Canada (EC)
Jack Kaniak-Kitikmeot Inuit Association (KIA)
Jeff Clark-KIA
Dionne Filiatrault –Nunavut Water Board (NWB)
Stefan Lopatka-NTI

Steve Hanna–Department of Sustainable Development (DSD) Government of Nunavut (GN)
Earl Baddaloo-GN Environmental Protection

Fisheries and Aquatic Biota

Mr. Patten asked the participants if the identified issues/deficiencies affected Tahera's conclusions, and how the issues could impact Tahera's habitat compensation options.

INAC noted it needed more information on how the causeway would impact the Carat Lake water circulation. The resulting circulation impacts on fish were a DFO responsibility.

INAC also asked for information about the three site access options connecting the mine to the existing Lupin winter access road. Tahera noted it only proposed one site access option in the EIS not three. INAC reiterated the need for Tahera to provide additional information regarding considered site access options and to include that information in the EIS with rationale supporting the preferred option. Mr. Osmond asked if the options selection process considered the relative number of stream crossings or if all options were based on winter road operations only. Tahera noted that one-half the all season fixed road extension to Contwoyto Lake was used to access explosives the other for winter hall purposes. Mr. Osmond said the discussion should include rationale for preferred routing such as stream crossings. Tahera indicated it would provide reports prepared by SRK 1997 so the reader gets a good handle on the issues considered in route selection.

Mr. Osmond asked fisheries habitat compensation will be needed for the permanent road extension. Tahera noted it was awaiting DFO information on the matter.

The KIA asked about baseline data, fish impacts and the aquatic monitoring program. Tahera suggested monitoring is a regulatory matter. KIA noted that in its technical submission to NIRB, issues flagged of low significance were mostly EIS presentation and communications issues; those of moderate to high importance and needing additional attention including monitoring and follow-up information to ensure that Article 20 of the Nunavut Land Claim (NLCA) is addressed. Specifically, the KIA wanted to address possible impacts on the Jericho River and needed a higher level of confidence about project impacts and monitoring.

Tahera believes that the conceptual monitoring plan provided in the EIS provides sufficient information and that future monitoring requirements are part of the regulatory phase. INAC agrees the conceptual monitoring plan is adequate. The NWB agrees with INAC and is pleased that Tahera recognizes that water licencing is a separate and distinctive phase of the project approvals process. The NWB needs to know when regulators need specific information; before the EIS is finished, before water licencing, or possibly after licencing.

KIA needs better baseline data with more time depth so that there is a better grasp of what needs monitoring and to improve impact predictions. EC has similar baseline, impact prediction and monitoring issues regarding birds. It also asked the Tahera synthesize any supplementary reports put onto the record. EC identified monitoring issues because there are gaps in the baseline. EC can identify baseline parameters that require attention so that there is confidence in the baseline and monitoring. EC is satisfied with water quality work in the EIS

and concludes it is adequate for impact assessment purposes. EC suggests there is time in the summer of 2003 to get additional aquatic quality data such as sediment chemistry to ensure appropriate baseline and impact prediction.

Tahera will make available copies of the *Jericho Diamond Mine Project Pilot Aquatic Effects Monitoring Program (1999) by RL&L Engineering Services Ltd.* They will also note what projects and other reports are available and place that information on the public registry.

DSD is concerned about the adequacy of the baseline data. DSD used a document not on the public record at the time when it reviewed the Tahera EIS (*Jericho Diamond Mine Project Pilot Aquatic Effects Monitoring Program (1999) by RL&L Engineering Services Ltd.*) Tahera wanted asked for details regarding the types of information DSD wanted in order to improve its baseline data. DSD responded that EIS deficiencies are reported in its submission. Tahera believes the baseline data issues do not affect the reliability and validity of the EIS. DSD accepts the validity of Tahera's EIS conclusions irrespective of the baseline data deficiency.

DFO habitat compensation matters are unresolved and require considerable discussion with DFO and other regulators and resource managers. Tahera suggests compensation is possible through habitat replacement and/or habitat enhancement of critical fish habitat limiting factors. Tahera proposes to enhance spawning and rearing habitat for all species by removing two existing fish habitat barriers. This constitutes Tahera's proposed fish enhancement and its habitat compensation proposal. Mr. Osmond said it would be good to know what the fish data is now before enhancement and what it would be like after enhancement.

EC inquired about the nature of the existing fish barriers because it is concerned about stabilization of the substrate and erosion issues including impacts of thermal erosion. EC asked what would happen to the fish salvaged from the Process Kimberlite Containment (PKC) lake, and if there was enough baseline data to make a decision on the habitat compensation. Tahera believes there is sufficient information.

INAC asked if lake circulation changes will affect the path fish follow as they try to find Lake C-1. Tahera notes there is no char spawning in stream C-1 and the pattern of fish movement is unknown.

KIA suggested Tahera provide adequate aquatic baseline data with sufficient time-depth, and rationale for the baseline sampling approach. KIA also wants information on zooplankton in the zone where light does not penetrate the lake. KIA referenced Table 3-1 of its submission to NIRB. KIA noted there is a lag times for full fish habitat compensation to occur and that that lag time needed to be considered in any compensation arrangement with DFO and in impact and mitigation predictions.

Wildlife

Ben Hubert (Tahera) found the KIA submission helpful and framed within the guidelines issued by NIRB. He noted the NIRB guidelines are silent on VECs and he suggested that in the future NIRB should provide the proponent with VECs for inclusion in the EIS document. Presently, it is up to the proponent to define VECs.

KIA is concerned about Tahera's significant reliance on qualitative impact predictions, particularly regarding caribou and bio-diversity. Tahera asked know altering its impact prediction method would help manage environmental effects. The common KIA theme is that monitoring is necessary and must include adequate baseline data. Tahera suggests monitoring should affect environmental management decisions, especially for a project with a short life span. Monitoring that does not produce management results is an inefficient use of resources. Tahera suggested statistical data certainty was not helpful given the low density of wildlife and the projects short duration. Tahera added there was excellent circumstance-based data from Lupin to extrapolate to the proposed project. Mr. Hubert added it was almost impossible to get enough data points to get statistical validity for everything and that biodiversity as a VEC is almost impossible to quantify, define, and scope effectively.

There was discussion about the status of the guidelines for the assessment of the Jericho diamond mine and participants wanted to know if a final set of guidelines were issued by the Nunavut Impact Review Board.

KIA is concerned about what Tahera will monitor independent of any Nunavut General Monitoring Program. KIA also wants to know what monitoring is dependent on a general cooperative monitoring strategy, and what monitoring Tahera will commit to.

There is general concern abut the bioaccumulation of substances ingested by caribou from the PKC. The KIA suggests a sampling program on smaller mammals that spend much more time in or on the PKC tailings area. Mr. Hubert noted the short life span and habitats of the smaller mammals was not reasonably applicable and transferable to caribou.

DSD suggested Tahera provide an analysis of terrestrial habitat types affected by the proposed project. There was discussion regarding mitigation and monitoring of caribou and the impact of the open pit on caribou after project closure.

EC provided comments regarding migratory bird species and densities. Mr. Hubert will meet with the EC scientists to discuss their comments. EC wants to see commitments regarding migratory bird monitoring. Although Health Canada (HC) was not present there was a brief discussion about the human health risk assessment associated with PKC. Tahera is unsure how to address this concern at the time.

June 18, 2003
Tahera Jericho Diamond Mine Regulator Meeting. Room BII of the Nisku Inn Edmonton Alberta

Attendees

Bruce Ott-AMEC
Greg Missal-VP Tahera
Kam Scott of SRK-Geotechnical
Kelly Sexsmith of SRK-water
Andre Slovesky – water treatment
Robyn Abernethy-Gillis Indian and Northern Affairs Canada (INAC)

Michelle McChristie, INAC Water Resources
Carl MacLean-INAC
Petty Mailing-BGC Engineering
Ann Wilson-EC
Mike Fournier-EC
Stefan Lopatka-NTI
Eric Denholm-GLL
Jim Casey BSG Engineering
Dave Osmond-INAC/GLL
Eric Denholm-INAC/GLL
Louie Azzolini-NIRB
Jack Kaniak-KIA
Jeff Clark-KIA
Dionne Filiatrault –NWB
Steve Hanna–GN
Earl Baddaloo-GN Environmental Protection

Hydrology, Geochemical and mass balance, Impact Assessment, Geotechnical, Mitigation and Contingency

Participants spent considerable time focusing on water and rock related issues. There was particular emphasis on the following issues. Tahera's proposed response to the issues is provided.

1. Analysis of extreme runoff – lack of flood regime information; Tahera will include and incorporate Ekati data as well as provide updated precipitation data in a technical memo to the Board.
2. Design flood criteria – Tahera will provide a rationale for design criteria for the ditch design, diversion ditch and PKC area.
3. Site hydrology data – Tahera's expand analysis will include site-specific data including 2000 and 2001 data and incorporate regional hydrological data.
4. Hydrology and site characterization - Tahera will provide an overall all site water balance in pictorial form also.

Tahera expects NIRB to tell it what and how it has to respond to outstanding issues identified by experts. I suggested that Tahera advice NIRB how and when it will respond to the identified deficiencies. NIRB would incorporate that information into a work plan to complete the review, including time for experts to review the Tahera's supplementary submission, time for reviewers to amend their presentations and technical reviews for hearings, and the date of the hearings.

There is uncertainty about the acid generating potential of waste rock piles and additional work is needed by Tahera to confirm the types of rock that would go into the waste rock piles. Tahera will do more seep samples.

A schematic water balance model is needed to address nutrient modelling issues (ammonia, phosphate, nitrogen, etc...) so that an overall understanding of water quality and quantity can

be developed from point sources, through to the PKC, and finally into Carat Lake. There are also issues regarding dissolved oxygen under winter conditions and chronic toxicity issues. There was also a discussion regarding dissolved metals.

Impact of the causeway on lake circulation and on water quality is an issue as is potential seepage from waste rock piles into Carat Lake as the waste rock piles do not have to intercept ditches. Mr. Osmond suggested intercept ditches, collection pond and transfer to the PKC. The causeway and seepage may impact arctic char and lake trout areas.

There were issues associated with the post closure (capping) and management of the Long Lake PKC.

Participants suggested that Tahera provide additional rationale and discussion regarding its selected alternatives (PKC, site layout, and dyke design) and its proposed dam design requirements. There are several ground ice and permafrost issues that require attention. There was considerable discussion about the spray treatment of water to treat ammonia. There was considerable discussion about reclamation issues and methods.

June 19, 2003
Tahera Jericho Diamond Mine Regulator Meeting. Room BII of the Nisku Inn Edmonton Alberta

Attendees

Bruce Ott-AMEC
Greg Missal-VP Tahera
Bob Humphries air quality
Cord smith-Nuna Logistics
Dr. Robert Hornell-Socio-economics
Robyn Abernethy-Gillis Indian and Northern Affairs Canada (INAC)
Michelle McChristie, INAC Water Resources
Stefan Lopatka-NTI
Eric Denholm-GLL
Paul Partridge
Ben Wheller-Nemo Consultants
Dave Osmond-INAC/GLL
Eric Denholm-INAC/GLL
Louie Azzolini-NIRB
Jack Kaniak-KIA
Jeff Clark-KIA
Steve Hanna–GN
Earl Baddaloo-GN Environmental Protection

Land, Air quality and Socio-economics

INAC asked Tahera to provide its rationale for the fixed all season road development beyond the explosives storage area and to confirm it needed all the granular materials included in its project description. All the participants suggested Tahera include additional closure and

reclamation information on the borrow areas. There will not be a joint security deposit, therefore, Tahera was asked to provide detailed disaggregated costs for the reclamation of individual site and mine components.

Parties also suggested Tahera berm the pits to deter animals and people from entering the pit and include caribou ramps on the proposed fixed access roads for additional long-term post-closure risk management.

Details about hazardous waste management were requested including waste oil and other materials such as batteries and filters. Tahera commits to having a facility to store hazardous materials. There were general landfill design issues such as leachate control. Tahera may put sludge into the landfill. There was a brief discussion on air quality but no significant issues

The KIA noted that the socio-economic impact assessment component of the EIS should inform the IIBA process and not conflict with it, otherwise there was no way of understanding what impacts were compensated and what benefits were accrued in the process. There was discussion about socio-economic agreements requested by the GN and their relationship to IIBAs, and the need for a complete socioeconomic impact assessment. Dr. Hornell accepted all the comments provided regarding socio-economics and said he would take them for consideration with his client.

Thank you for the opportunity of attending this important meeting.

Sincerely,

L. Azzolini

Luciano Azzolini
Terra Firma Consultants