ᓄᓇᕗᑦ ᐃᒪᓕᕆᔨᑦ ᑲᑎᒪᔨᖏᑦ
NUNAVUT WATER BOARD
NUNAVUT IMALIRIYIN KATIMAYINGI
OFFICE DES EAUX DU NUNAVUT

NIRB File No.: 12MN036
NWB File No.: 2AM-BRP----

December 18, 2014

Ryan Barry, Executive Director
Nunavut Impact Review Board
P.O. Box 1360 Cambridge Bay
Nunavut, X0B 0C0

RE: ***NIRB File No. 12MN036 – Nunavut Water Board's Technical Review Submission to the Nunavut Impact Review Board regarding Sabina Gold & Silver Corp.'s Back River Project Draft Environmental Impact Statement***

Dear Mr. Barry:

Please find attached, the Nunavut Water Board's (NWB or Board) technical review comments and recommendations relevant to Sabina Gold & Silver Corp.'s (Sabina) Back River Project's Draft Environmental Impact Statement (DEIS). The submission is in response to the Nunavut Impact Review Board's (NIRB) correspondences dated July 31 and August 14, 2014, in which interveners were invited to review and provide submissions regarding the DEIS by September 29, 2014. The NIRB subsequently extended the deadline for submissions to October 10, 2014, in response to a request from Natural Resources Canada (NRCan).

In its review, the NWB placed particular emphasis on aspects of the DEIS aimed at fulfilling the Type-A water licensing requirements including the draft water licence applications, environmental management plans and sections pertaining to water use and waste disposal activities. Comments and/or recommendations have been provided for sections of the DEIS that have relevance to the NWB's mandate.

The NWB is appreciative of this opportunity to comment on the contents of the DEIS at this stage in the coordinated review process. The Board trusts that recommendations provided will assist in preparing the information required for the Type-A water licence application(s) that will accompany the Final Environmental Impact Statement (FEIS).

If you have any comments and or questions regarding the NWB's submission, please contact the undersigned at (867) 360-6338 or at karen.kharatyan@nwb-oen.ca or David Hohnstein, Director Technical Services at (780) 443-4406 or at dts@nwb-oen.ca.

Regards,

Karén Kharatyan
Technical Advisor

Attachment: NWB Technical Review Submission

Nunavut Water Board

Nunavut Water Board's Technical Review Submission

to the

Nunavut Impact Review Board

Pertaining to

Sabina Gold & Silver Corp.'s
Draft Environmental Impact Statement for the proposed
Back River Project

December 18, 2014

Summary English

On January 20, 2014, Sabina Gold & Silver Corporation (Sabina or Proponent) submitted to the Nunavut Impact Review Board (NIRB) a Draft Environmental Impact Statement (DEIS) containing a detailed project description and supporting information for various components and activities associated with the proposed Back River Project, located at approximately 300 km southwest of Cambridge Bay within the Kitikmeot Region of Nunavut. The DEIS is aimed at satisfying the information required under the Project's Guidelines[1] issued by the NIRB. Section 1.4.1 of the Guidelines, identifies the condition under which the NIRB and the Nunavut Water Board (NWB) can coordinate the NIRB review process and the NWB water licensing process in accordance with the *NIRB and NWB Detailed Coordinated Process Framework* (DCPF)[2].

The DCPF allows for the Proponent to include in the DEIS specific information required for either the NIRB process and/or the NWB process. It also provides an opportunity for the proponent to satisfy, where possible, information requirements of both the NIRB and NWB's processes, simultaneously, by submitting the information to the NIRB at the initial stage(s) of the process. In addition, it provides directions to the NIRB and NWB concerning the approach that can be taken when conducting a joint review of a DEIS.

The NIRB distributed the DEIS to interested parties including the NWB for completeness check then for a full technical review and comments on July 31, 2014. The NWB has reviewed the sections of the DEIS and relevant addendums and has provided comments specifically on items in volumes 10, 11 and 12. Particular emphasis was placed on the concordance table associated with the draft Type-"A" Water Licence Applications, environmental management plans, and studies, reports, and research related to water use and waste deposit activities. Comments and recommendations are organized sequentially by volume number, except where they apply to more than one volumes/sections of the DEIS. In such cases, the comments and/or recommendations are listed under the general comments section. The following is a summary of general items identified during the review:

- Lack of and/or insufficient information included in some sections of the water licence applications and/or over- reliance on information contained in other sections of the DEIS to satisfy information requirements that could be easily included on the application.
- Inconsistency in the scope of activities covered under some of the Environmental Management Plans and concerns surrounding functionality of some Plans.
- Duplication of information contained in some EMPs.

[1] Guidelines for the Preparation of an Environmental Impact Statement for Sabina Gold & Silver Corp's Back River Project (NIRB File No. 12MN036), April 2013.
[2] Nunavut Impact Review Board (NIRB) and Nunavut Water Board (NWB) Detailed Coordinated Process Framework for NIRB Part 5 Review and NWB Licensing, September 2009.

- EMPs are mostly preliminary and conceptual in form and need to be updated to satisfy the NWB licence application requirements.
- Monitoring plans and sampling procedures are very conceptual and limited.
- Design drawings are preliminary and not generally stamped by an Engineer and would not necessarily satisfy NWB licence application requirements.

For the sections of the DEIS identified as lacking or containing insufficient information, recommendations have been provided concerning the information that should be included in the revision of the appropriate sections of the FEIS. Recommendations have also been made with respect to the extent to which the scope of some plans should be expanded, as well as ways to consolidate and streamline management plans so as to increase functionality and reduce redundancies. It is believed that the comments and recommendations provided will assist in many ways in preparing the Type "A" Water Licence Application(s) that will accompany the Final Environmental Impact Statement (FEIS).

Summary Inuktitut

ᔮᓄᐊᕆ 20, 2014-ᒥ, ᓴᐱᓇ ᒨᓕᑦ ᓯᓪᕗᕐᓗ ᑯᐊᐳᓈᓴᓐ (ᓴᐱᓇᑯᑦ ᐅᑭᓗᓃᑦ ᐆᒃᑐᕈᑎᖃᕐᑐᖅ) ᑐᓂᓯᔪᖅ ᑖᑉᑯᓄᙵ ᓄᓇᕗᑦ ᐊᕙᑎᓕᕆᔨᑦ ᑲᑎᒪᔨᓄᑦ (ᐊᕙᑎᔨᕆᔨᒃᑯᑦ) ᐆᒃᑐᕈᑎᑦ ᐊᕙᑎᓕᕐᑯᑎᓄᑦ ᐊᒃᑐᐊᓂᖏ ᐅᖃᐅᓰᑦ (ᐊᕙᑎᓕᕐᑯᑎᒃᓴᐃᑦ) ᐱᑕᖃᖅᑎᑦᑐᒋᑦ ᐅᓂᑲᑦᑎᐊᖅᓯᒪᔪᑦ ᐱᓕᕆᐊᖑᔪᒧᑦ ᐅᓂᑲᐅᓯᖏ ᐊᒻᒪᓗ ᐃᓚᒋᐊᕈᑎᖏ ᑐᓴᒃᓴᐃᑦ ᐊᓪᓚᕿᓄᑦ ᐃᓚᒋᔭᖏᑦ ᐊᒻᒪᓗ ᐱᓕᕆᐊᖑᔪᑦ ᑖᑉᓱᒧᙵ ᐆᒃᑐᕈᑕᐅᔪᒧᑦ ᓴᓐᓂᙵᔪᖅ ᑰᒐᖅ ᐱᓕᕆᐊᖓ, ᐃᓂᖃᕐᑐᖅ ᒥᒃᓵᓂ 300 ᑭᓛᒥᑕᑦ ᑲᓇᖕᓇᖕᒐᑕ ᓂᒋᖕᒐᓂ ᐃᖃᓗᒃᑑᑦᑎᐊᖅ ᑕᒫᓂ ᕿᑎᖅᒥᐅᓂ ᓄᓇᕗᒥ. ᑖᑉᑯᐊ ᐊᕙᑎᓕᕐᑯᑎᒃᓴᐃᑦ ᑐᕋᖓᔪᑦ ᓈᒪᒃᓯᓯᒪᓂᖏᓄᑦ ᑐᓴᒃᑕᑦ ᐱᓕᕆᐊᖃᕐᓂᖏ ᒪᓕᒃᓗᒋᑦ ᑖᑉᑯᐊ ᐱᓕᕆᐊᖑᔪᒧᑦ ᓯᕗᓕᕈᑎᖏ[3] ᑐᓂᔭᐅᔪᑦ ᑖᑉᑯᓇᙵ ᐊᕙᑎᓕᕆᔨᒃᑯᑦᓂ. ᐃᓚᖓᓂ 1.4.1 ᑖᑉᑯᓇᓂ ᓯᕗᓕᕈᑎᓂ ᓇᓗᓇᐃᖅᑕᖏ ᑕᒪᑯᐊ ᐊᑐᕆᐊᖃᕐᓂᖏᑦ ᑖᑉᑯᐊ ᐊᕙᑎᓕᕆᔨᒃᑯᑦ ᐊᒻᒪᓗ ᑖᑉᑯᐊ ᓄᓇᕗᑦ ᐃᒪᓕᕆᔨᑦ ᑲᑎᒪᔨᑦ (ᐃᒪᓕᕆᔨᒃᑯᑦ) ᐃᑲᔪᖅᑎᒋᒃᓗᑎᒃ ᐱᓕᕆᔪᓐᓇᖅᑕᖏ ᐊᕙᑎᓕᕆᔨᒃᑯᑦ ᕿᒥᕈᖅᓂᖏᓄᑦ ᐱᓕᕆᑦᔪᑎᑦ ᐊᒻᒪᓗ ᑖᑉᑯᐊ ᐃᒪᓕᕆᔨᑦ ᐃᒪᖅᒧᑦ ᓚᐃᓴᓕᕆᓂᖅᒧᑦ ᐱᑦᔪᓯᖏ ᒪᓕᒃᓗᒋᑦ ᑖᑉᑯᐊ *ᐊᕙᑎᓕᕆᔨᒃᑯᑦ ᐊᒻᒪᓗ ᐃᒪᓕᕆᔨᑦ ᐅᓂᑲᑦᑎᐊᖅᓯᒪᔪᑦ ᐃᑲᔪᖅᑎᒋᒃᓂᖏᓄᑦ ᐱᓕᕆᑦᔪᓰᑦ ᐱᓕᕆᑦᔪᑎᑦ* (ᐱᓕᕆᖃᑎᒌᒍᑎᑦ)[4].

ᑖᑉᑯᐊ ᐱᓕᕆᖃᑎᒌᒍᑎᑦ ᐱᔪᖕᓇᐅᑎᑦ ᑖᑉᑯᐊ ᐆᒃᑐᕈᑎᓖᑦ ᐃᓚᓕᐅᑎᓂᖏᓄᑦ ᑖᑉᑯᓇᓂ ᐊᕙᑎᓕᕐᑯᑎᒃᓴᓄᑦ ᑕᐃᓯᒪᔪᑦ ᑐᓴᒃᓴᑦ ᐱᔭᕆᐊᖃᖅᑎᑦᓂᖏ ᓇᓕᐊᒃᓄᑦ ᐊᕙᑎᓕᕆᔨᒃᑯᑦ ᐱᓕᕆᑦᔪᓯᖏ ᐊᒻᒪᓗ/ᐅᑭᓗᓃᑦ ᐃᒪᓕᕆᔨᑦ ᐱᓕᕆᑦᔪᓯᖏ. ᐱᖃᖅᑎᑦᑎᒋᑉᓗᓂ ᐱᓕᕆᕕᒃᓴᖏᓂᒃ ᑖᑉᑯᐊ ᐆᒃᑐᕈᑎᓖᑦ ᓈᒪᒃᓴᖅᑎᑦᓂᖏᓄᑦ, ᓇᒥ ᐱᔭᕆᐊᖃᖅᑐᓄᑦ, ᑐᓴᒃᓴᑦ ᐱᔭᕆᐊᖃᕐᓂᖏ ᑕᒪᑦᑭᒃᓄᑦ ᐊᕙᑎᓕᕆᔨᒃᑯᑦ ᐊᒻᒪᓗ ᐃᒪᓕᕆᔨᑦ ᐱᓕᕆᑦᔪᓯᖏᓄᑦ, ᐊᑕᐅᑦᑎᒃᑯᖅᑎᑦᑐᒋᑦ, ᑐᓂᔭᐅᓂᖏ ᑐᓴᒃᓴᑦ ᑖᑉᑯᓄᙵ ᐊᕙᑎᓕᕆᔨᒃᑯᑦ ᓯᕗᓪᓕᖅᐹᒥᒃ ᐱᓕᕆᔭᐅᓂᖏᓄᑦ. ᐃᓚᐅᑎᑦᑐᒋᑦ, ᐱᖃᖅᑎᑦᓂᖏ ᑎᓕᐅᕈᑎᑦ ᑖᑉᑯᓄᙵ ᐊᕙᑎᓕᕆᔨᒃᑯᑦ ᐊᒻᒪᓗ ᐃᒪᓕᕆᔨᑦ ᐱᑉᓗᒋᑦ ᐱᑦᔪᓯᖏ ᐱᓕᕆᐊᖑᔪᖕᓇᖅᓂᖏ ᑲᑐᑦᔨᖃᑎᒌᒃᓗᑎᒃ ᕿᒥᕈᓇᓂᖏ ᑖᑉᑯᓂᖓ ᐊᕙᑎᓕᕐᑯᑎᒃᓴᓄᑦ.

ᑖᑉᑯᐊ ᐊᕙᑎᔨᕆᔨᒃᑯᑦ ᓇᒃᓯᐅᑎᔭᖏ ᑐᓴᐅᒪᖃᑕᐅᔪᒪᔪᓄᑦ ᐱᖃᑕᐅᔪᓄᑦ ᐃᓚᐅᑎᑦᑐᒋᑦ ᐃᒪᓕᕆᔨᑦ ᐱᐊᓂᒃᓯᒪᒃᒪᖕᖏᓄᑦ ᖃᐅᔨᒋᐊᖅᓂᖏ ᑕᒪᐃᑦᓄᑦ ᐱᖁᓯᒃᓴᖏᓄᑦ ᕿᒥᕈᖅᓂᖏ ᐊᒻᒪᓗ ᐅᖃᐅᓯᐅᔪᑦ ᑕᒡᕙᓂ ᔪᓚᐃ 31, 2014. ᑖᑉᑯᐊ ᐃᒪᓕᕆᔨᑦ ᕿᒥᕈᖅᑕᖏ ᐃᓚᖏᑦ ᑖᑉᑯᐊᖅ ᐊᕙᑎᔨᕐᑯᑎᒃᓴᐃᑦ ᐊᒻᒪᓗ ᐊᑐᖅᓂᓖᑦ ᐃᓚᒋᐊᕈᑎᑦ ᐱᖃᖅᑎᑦᑎᑉᓗᑎᒃᓗ ᐅᖃᐅᓯᖅᓂᒃ ᐱᓗᐊᖅᑐᓄᑦ ᐱᑦᔪᑎᑦ ᐅᖃᓕᒫᒐᖅᓄᑦ 10, 11 ᐊᒻᒪᓗ 12. ᐱᓗᐊᖅᑐᒥᒃ ᐊᒃᓱᕈᖅᔪᒥᓂᖏ ᐱᔭᐅᔪᑦ ᒪᓕᒃᓴᖅᓂᖏᓄᑦ ᑎᑎᖃᑦ ᐱᖃᑕᐃ ᑖᑉᑯᐊ ᐆᒃᑐᕈᑎᑦ ᖃᓄᐃᑦᑑᓂᖓ -“A” ᐃᒪᖅᒧᑦ ᓚᐃᓴᖓ ᑐᒃᓯᕋᐅᑎᑦ, ᐊᕙᑎᓕᕐᑯᑎᓄᑦ ᐊᐅᓚᑕᐅᓂᖏᓄᑦ ᐸᖅᓇᖑᑎᑦ, ᐊᒻᒪᓗ ᖃᐅᔨᓴᐃᑦᔪᑎᑦ, ᑐᓴᒃᓴᓕᐊᑦ, ᐊᒻᒪᓗ ᓇᓗᓇᐃᖅᑑᑎᑦ ᑐᕋᖓᔪᑦ ᐃᒪᖅ ᐊᑐᖅᓂᖓᓄᑦ ᐊᒻᒪᓗ ᐊᒃᑕᑯᑦ ᐊᒃᑕᖅᓂᖏᓄᑦ ᐱᓕᕆᐊᖑᔪᑦ. ᐅᖃᐅᓰᑦ ᐊᒻᒪᓗ ᐊᑐᕋᓱᐊᕐᑯᔭᐅᔪᑦ ᐋᕿᒃᓱᒐᐅᔪᑦ ᑐᒃᓕᓇᒃᑎᑦᑐᒋᑦ ᐅᖃᓕᒫᒐᒃᓴᑦ ᓈᓴᐅᑎᖏᑎᒍᑦ, ᑭᓯᒥᐅᔪᖅ ᑖᑉᑯᓇᓂ ᐊᑐᖅᓂᓕᒃᓄᑦ ᐊᒥᕋᖅᑭᔭᓄᑦ ᐅᖃᓕᒫᒐᒃᓴᓂ/ᐃᓚᖏᓂ ᑖᑉᑯᓇᓂ ᐊᕙᑎᓕᕐᑯᑎᒃᓴᐃᑦ. ᑕᒪᑯᓇᓂ, ᑖᑉᑯᐊ ᐅᖃᐅᓰᑦ ᐊᒻᒪᓗ/ᐅᑭᓗᓃᑦ ᐊᑐᕋᓱᐊᕐᑯᓂᖏ ᑎᑎᖃᑦ ᐊᑐᖅᓂᖏ ᑖᑉᑯᐊ ᑕᒪᐃᑦᓄᑦ ᐅᖃᐅᓰᑦ ᐃᓚᖏᓂ. ᑕᒪᑯᐊ ᓯᕕᑭᓇᖅᓯᒪᔪᑦ ᑕᒪᐃᑦᓄᑦ ᐱᑦᔪᑎᑦ ᓇᓗᓇᐃᑦᑕᐅᔪᑦ ᕿᒥᕈᖅᑕᐅᑎᑦᑐᒋᑦ:

- ᐱᓯᒪᖕᒋᑦᓂᖏ ᑖᑉᑯᐊ ᐊᒻᒪᓗ/ᐅᑭᓗᓃᑦ ᑕᒪᑭᐅᒪᖕᒋᑦᓂᖏ ᑐᓴᒃᓴᑦ ᐃᓚᓕᐅᑎᓂᖏ ᐃᓚᐃᑦᓂ ᐃᓚᖓᓂ ᑖᑉᑯᐊ ᐃᒪᖅᒧᑦ ᓚᐃᓴᖓᓄᑦ ᑐᒃᓯᕋᐅᑎᑦ ᐊᒻᒪᓗ/ᐅᑭᓗᓃᑦ ᐱᓯᒪᓗᐊᖅᓂᖏᓄᑦ ᑐᓴᒃᓴᓄᑦ ᐱᑕᖃᖅᓂᖏᑦ ᐊᓯᖏᓂ ᐃᓚᖓᓂ ᑖᑉᑯᐊ ᐊᕙᑎᓕᐅᑎᒃᓴᐃᑦ ᓈᒪᒃᓯᒋᐊᖅᓂᖏᓄᑦ ᑐᓴᒃᓴᑦ ᐱᔭᕆᐊᖃᖅᑎᑦᓂᖏ ᐃᓚᓕᐅᑎᑐᐃᓇᕆᐊᓖᑦ ᑖᑉᑯᓄᙵ ᑐᒃᓯᕋᐅᑎᓄᑦ.

[3] ᓯᕗᓕᕈᑎᑦ ᐸᖅᓇᒃᓯᓂᖅᒧᑦ ᐊᕙᑎᓕᕐᑯᑎᑦ ᐊᒃᑐᐊᓃᑦ ᐅᖃᐅᓰᑦ ᑖᑉᑯᓄᙵ ᓴᐱᓇ ᒨᓕᑦ ᓯᓪᕗᓗ ᑯᐊᐳᓈᓴᖕᑯᑦ ᓴᓐᓂᙵᔪᖅ ᑰᒐᖅ ᐱᓕᕆᐊᖓ (NIRB File No. 12MN036), April 2013.
[4] ᓄᓇᕗᑦ ᐊᕙᑎᓕᕆᔨᑦ ᑲᑎᒪᔨᑦ (ᐊᕙᑎᔨᕆᔨᒃᑯᑦ) ᐊᒻᒪᓗ ᓄᓇᕗᑦ ᐃᒪᓕᕆᔨᑦ ᑲᑎᒪᔨᑦ (ᐃᒪᔨᕆᔨᑦ) ᐅᓂᑲᑦᑎᐊᖅᓯᒪᔪᑦ ᐃᑲᔪᖅᑎᒋᑦᓗᑎᒃ ᐱᓕᕆᑦᔪᓰᑦ ᑖᑉᑯᓄᙵ ᐊᕙᑎᓕᕆᔨᑦ ᐃᓚᖓ 5 ᕿᒥᕈᖅᓂᖏ ᐊᒻᒪᓗ ᐃᒪᔨᕆᔨᑦ ᓚᐃᓴᓕᕐᑯᑎᓄᑦ, ᓯᑎᐱᕆ 2009.

- ᒪᓕᒃᓴᖃᑎᒋᖏᑦᓂᖏ ᐃᓱᒪᒋᔭᐅᓂᖏᓄᑦ ᐱᓕᕆᐊᒃᓴᑦ ᐱᓯᒪᓂᖏ ᐃᓚᖏᓂ ᑖᒃᑯᐊᑦ ᐊᕿᑎᓕᖅᑯᑎᓄᑦ ᐊᐅᓚᑕᐅᓂᖏᑦ ᐸᖅᓇᖑᑎᑦ ᐊᒻᒪᓗ ᐃᓱᓛᓗᑎᑦ ᐱᑉᓗᒋᑦ ᐊᑦᑎᐊᖅᓂᖏ ᐃᓚᖏ ᐸᖅᓇᖑᑎᑦ.
- ᐊᔾᔨᒋᒃᑎᑕᖅᓂᖏ ᑐᓴᒐᒃᓴᑦ ᐱᑕᖃᖅᓂᖏ ᐃᓚᐃᑦᓂ ᐊᕿᑎᓕᖅᑯᑎᓄᑦ ᐊᐅᓚᑕᐅᓂᖏ ᐸᖅᓇᖑᑎᑦ.
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Introduction

On February 11, 2014 the Nunavut Impact Review Board (NIRB or Board) initiated the public technical review period for the Draft Environmental Impact Statement (DEIS) submitted by Sabina Gold & Silver Corporation (Sabina or the Proponent) for the Back River Project proposal received on January 20, 2014. Following the receipt of Sabina's response to initial Information Requests (IR) received from parties, on July 31, 2014 the NIRB invited interested parties to provide the Board with their technical review comments regarding the DEIS for the Back River Project by September 29, 2014. This deadline was later extended to October 10, 2014 at the request of Natural Resources Canada (NRCan).

The Back River Project (the Project) is a proposed gold mine project to be undertaken within the West Kitikmeot Region of Nunavut. The Project, which is owned by Sabina Gold & Silver Corp. (Sabina), is composed of three main areas with interconnecting winter roads: the Goose Property, the George Property, and the Marine Laydown Area (MLA) situated along the eastern shore of southern Bathurst Inlet.

The Project involves the construction, operation, closure and reclamation, and post-closure monitoring of open pits and underground gold mine, with a total ore production of 15-20 million tonnes to be processed at the single mill at the Goose property. The Project shall include several mineral targets to be mined through Umwelt, Llama and Main open pits and Umwelt underground mine at Goose Property and Lone Cow Pond North (LCP North), Locale 1, and Locale 2 open pits at George Property. Annual resupply will be completed using the MLA, located in Bathurst Inlet, and winter ice roads will be utilized to interconnect these sites.
The entire lifespan of the proposed project, from construction to reclamation and post-closure monitoring of the mine, is estimated at twenty-nine (29) years.

In its request for submissions, the NIRB indicated that Sabina had requested a joint review for the project proposal in accordance with the *NIRB and NWB Detailed Coordinated Process Framework* (DCPF), and the NIRB and NWB have agreed to coordinate their review processes to the extent possible. The DCPF allows the Proponent to include in the DEIS specific information required for either the NIRB process or the NWB process. It also provides an opportunity for the proponent to satisfy, where possible, information requirements of both the NIRB and NWB review processes, simultaneously, by submitting the information to the NIRB at the initial stage(s) of the process. In addition, it provides directions to the NIRB and NWB concerning the approach that can be taken when conducting a joint review of any DEIS.

The information provided in the DEIS associated with the water licensing process can be found within several volumes of the DEIS; however, the draft Type "A" Water Licence Applications

within Supplemental Information Guidelines (SIG) requirement tables and associated information are contained within Volumes 11 and 12 of the DEIS. The Environmental Management Plans (EMPs) are included within the Volume 10 of the DEIS.

Although the NWB has reviewed all 12 Volumes of the DEIS to varying extent, the NWB recognizes that additional information submitted by Sabina since the submission of the DEIS and the commitments made during the NIRB technical meeting capture generally the NWB questions and comments related to the Project areas' general environmental and socio/economic description and methodologies used for project study and description contained in the Volumes 1-9 of the DEIS.

Given the fact that the NWB's general mandate is the management of fresh-water through the regulation of water use and waste deposit activities, the NWB has reviewed thoroughly the relevant sections of the DEIS and more specifically the Volumes 10-12, and compiled below a list of comments and/or recommendations arranged sequentially by volume and sectors, in order to assist Sabina in the preparation of a complete final Type "A" Water Licence Application package(s) within the Final Environmental Impact Statement.

Comments and/or recommendations that apply to more than one Volume are listed under the general comments section.

1.0 General Comments

a. Minimum set-back distance above the ordinary high water mark of freshwater bodies for situating proposed project infrastructure is being listed as thirty (30) metres instead of thirty-one (31) metres in some of the plans and sections of the DEIS. It is recommended that the set-back distance in all plans and relevant sections of the DEIS be revised to thirty-one (31) metres, except in cases where authorized to allow for consistency with that of Indian and Northern Affairs Canada's (INAC or AANDC) Land Use guidelines and the NWB general licensing conditions.

b. Where applicable, some of the Environmental Management Plans (EMPs or Plans) should be streamlined so as to reduce redundancies and increase the fluidity and ability for reviewers to easily locate appropriate information when required.

c. Some Plans rely solely or excessively on information contained in related Plans that should have been included in the particular Plans. To ensure that the reviewers and users of those plans are able to access the information as readily as possible, it is recommended that attempts be made to decrease referencing or excessive reliance on related Plans for information that should and could be easily included in a particular plan. ‘

d. General Monitoring requirements are discussed in a limited way in the DEIS. It is recommended that a comprehensive, stand-alone monitoring plan be submitted with the FEIS to address monitoring requirements specific to water use and waste disposal activities. Further, it is recommended that the Quality Assurance and Quality Control Plans (QA/QC) also be provided for addressing both field sampling and laboratory analyses procedures.

e. EMPs contain management and monitoring strategies provided for different phases of the project (construction, operation, closure and post-closure). However, it is often difficult to clearly differentiate which phase(s) of the project that the information in the management plans are addressing. Management and monitoring strategies during the mine care and maintenance are minimally discussed in EMPs. It is recommended that the strategies and management plan clearly identify the phase(s) that they are addressing.

f. It is indicated that 5 years for Post-Closure Monitoring will be needed. Based on outcomes related to northern mines currently undergoing reclamation and post-closure monitoring (Nanisivik, Polaris) phases, the lifespan for Post-Closure Monitoring could be longer than 5 years; as such, it is recommended that contingencies be included to allow for an extended period of post-closure monitoring, if necessary, to achieve complete stability of project sites.

g. No studies have been provided detailing the water quality of lakes that will be used to support the construction and maintenance of the winter road corridor (i.e. Lakes A –

Lakes O; Bathurst Inlet to Goose and George Properties. It is recommended that this information be included in the FEIS.

h. It is stated that *a third 220-km-long winter road, connecting the Project to the Tibbitt to Contwoyto Winter Road is under consideration.* Based on the information provided by Sabina during DEIS Technical Meeting (TM), this winter road is no longer under consideration and should therefore not be included in the FEIS.

2.0 Draft Type "A" Water Licence Applications – Mine Sites and Access

The Cover Letter accompanying the draft Water Licence Applications stated that the *NIRB review process is considering all components and activities of the Back River Project under file NIRB No. 12MN036; however, for permitting, Sabina is applying for two Type "A" water licences:*

- ***Back River Project - Mine Sites Type "A" Water Licence Application**, which includes mine site development and operation at the Goose and George Properties; and*
- ***Back River Project - Access Type "A" Water Licence Application**, which includes the Marine Laydown Area and the winter road corridors.*

Volumes 11 and 12 and respective Appendices V11-1A to V11-9 and V12-1A to V12-2J, and associated documents of the DEIS were reviewed for completeness and consistency with the NWB Guide 4[5]. The review determined that the following items should be addressed:

Water Licence Application Form - Mine Site

a. **Block #4 (Location of Undertaking)**

Based on information provided in this section of the application, Project components such as the George Camp and the George Connecting Road Junction are outside the provided 'Project Extents'.

The coordinates provided in the water licence application places the George Camp in the Back Watershed, Upper Back Sub-watershed (WMA 31), which is trans-boundary with the North West Territories. The maps in the DEIS place the George Camp in the Queen Maud Gulf Watershed, Bathurst Inlet–Burnside Sub-watershed (WMA-30).

The project coordinates provided on the water application (Mine Sites) do not match the spatial distribution provided on maps in the DEIS, specifically:

It is recommended that confirmation of the above-mentioned project extents as well as that of the George Property and Camp coordinates be provided in the FEIS.

b. **Block #5 (Maps)**

To address the requirement in this section, NTS Map Sheets No: 76G (Beechey Lake) and 76J (Tinney Hills), referenced respectively, were provided to a scale other than that

[5] Guide 4, Completing and Submitting a Water Licence Application for a New Licence, April 2010

specified by NWB in Guide 4, 1:50,000. The NWB has noticed that some of the maps are of appropriate scales in the Project. It is recommended that appropriately scaled maps be provided within Water Licence Application(s) / referenced to satisfy the requirement of Guide 4.

c. **Block #13 (Quantity and Quality of Water Involved)**
Information contained in this section of the form states that 70 m^3 of water per day will be used for Industrial (miscellaneous) purposes at both of Goose and George Properties. The water use required should be re-assessed and confirmed, taking into consideration of all potential miscellaneous uses including dust suppression and machinery washing at sites as water use for Industrial (miscellaneous) purposes of Meadowbank Gold Mine is much higher.

d. **Block #13 (Quantity and Quality of Water Involved)**
The information provided in this section of the form indicates that Goose and Propeller Lakes will serve as sources for Industrial (miscellaneous) and Industrial (mill) use, respectively, at Goose Property; and George and Fold Lakes as sources for Domestic and Industrial (miscellaneous) use at George Property. However, the anticipated quantities of water to be used from each source are not provided. It is recommended that the table should include details on quantities of water required from each source.

Water Licence Application Form - Access

e. **Block #13 (Quantity and Quality of Water Involved)**
Details contained in the application indicates that 20 m^3 of water per day will be used for Industrial purposes at MLA. The water use amount should be re-assessed and confirmed taking into consideration all potential miscellaneous uses including dust suppression and machinery washing at MLA.

f. **Block #13 (Quantity and Quality of Water Involved)**
Information contained in the application indicates that 21 Potential Fresh Water Sources will be used to supply up to 121,500 m^3 of water annually for the construction and maintenance of winter roads. However, anticipated quantities of water to be used from each water source are not provided. It is recommended that water quantity information for each water source be provided.

Water Licence Application Form – Mine Site and Access

g. **Block #21 (Security Information)**
This block requires that an estimate of the total financial cost for final reclamation be provided. The conceptual Closure and Reclamation Plan DEIS Volume 10 Chapter 29 is referenced as containing the required information. However, the conceptual Closure and Reclamation Plan does not provide the reclamation cost estimate. It is recommended that this information be included in the FEIS. Further, the most recent version of the RECLAIM model should be used to assess the reclamation cost.

h. **Block #23 (Studies Undertaken to Date)**

In response to this item, it is stated that comprehensive baseline studies have been initiated at the Project and that results from this ongoing work will be presented in baseline reports and used in ongoing feasibility studies. It is recommended that a list of studies relevant to the application be included on the application form in addition to appropriate referencing to the FEIS.

i. **Miscellaneous Items**

As required by the *Nunavut Waters and Nunavut Surface Rights Tribunal Act* and the *Nunavut Waters Regulations* (Regulations), a complete application shall include subsection 12(7) (b) of the Regulations.

To calculate fees for the project, Aboriginal Affairs and Northern Development Canada (AANDC), Land and Water Management, NCR, Water Use Fee Calculator, (Ver. 1.4) shall be used.

3.0 Back River Project Description

The information in this section appears to be mostly complete. In certain sections of the DEIS, there were few or no details with respect to the locations of receiving water bodies and drainage pathways (i.e. for landfills, details in the DEIS are limited to the following "*Drainage pathways from the landfills will be sampled and monitored in conformance with Water Licence requirements*). Mitigation measures are noted throughout the document that concern drainage pathways (e.g. "*prevent oil from reaching natural drainage paths leading to the ocean*"), but their locations are not specified.

a. Section 4.2.a, Pg. 4-10, Raw Water Intake, should provide water intake design information. V.10-7, Site Water Monitoring and Management Plan (SWMMP), should be updated to include water intake, and generally all water infrastructures design details.
b. Section 4.2.b, Pg.4-11, Water Storage and Treatment, should indicate the Propeller and Lower Long Lake supplemental water sources to be used.
c. Section 4.2.d, Pg. 4-11, Location of Proposed Receiving Waterways, states *it has been assumed that Goose Property would operate as "zero-discharge."* Mitigation measures should be provided should discharge be required during mine operation. V.10-7 SWMMP should include these contingency measures.
   Further: *It has been assumed that George Property also would operate as "zero-discharge." However, a*ccording to Volume 10-7 SWMMP" *treated sewage effluent will be land discharged at a location south of the Locale 2 Waste Rock Storage Area (WRSA) as shown on Figure 3.2-2. The effluent will ultimately report to the stream downstream of Sleigh Lake and upstream of Esker Pond"*. This should be clarified.
d. Section 4.2.h, Pg. 4-13, Sewage Treatment Facilities and Discharge, states that "*for the Operation phase, the sewage treatment plant will be decommissioned and raw sewage will be pumped to the Tailings Impoundment Area (TIA) (zero discharge facility)*". As per AANDC request, Sabina clarified that sewage will be treated before being pumped to TIA. This should be made clear in future submission.

e. Section 4.2.i.2, Pg. 4-14, Oily Water Treatment Methods, states that *"during construction the excess water will be released to the receiving environment. During operation, these discharges will be routed to the Tailing Impoundment Area"*.
It should be indicated the mean and frequency of excess water being routed to TIA from George Site.
The NWB acknowledges that Sabina committed to providing more details in the FEIS on the waste water management strategy including sewage effluent discharges. This will include discharge locations and the characteristics of those locations as well as impacts on the receiving environment, attenuation capacity, end of pipe locations, seasonal considerations, alternatives, and design or engineering contingencies.

f. Section 4.2.1, Pg. 4-15, Landfills and Landfarms, states that *"non-combustible non-hazardous materials will be at the Goose Property landfill"*. According to Figure 4.1-2, Project Development Area and Infrastructure Areas – George Property *"a landfill will be operating at George Site as well"*. According to Volume 10-7, Site Water Monitoring and Management Plan, Section 3.4.5, *"Landfills will be constructed and operated at each of the Project properties"*.
Inconsistencies with respect to future landfills and their potential locations should be addressed in the FEIS.

4.0 Baseline Information

Environmental Setting

The information in this section appears to be mostly complete, although it was not entirely provided in the locations referenced in the SIG. Two potential incomplete areas include the following:

a. The history of the property development, including current status maps of the project properties would be helpful; and
b. The data source for local watersheds is not provided in the DEIS (e.g. Big Watershed, Swan Watershed, Moby Watershed). Details should be provided on whether these boundaries were delineated by Consultants or are the official boundaries determined by an appropriate agency (e.g. Water Survey of Canada).

5.0 Appendices V11-1A and V12-1A: SIG Concordance

The review of the information contained in the SIG Concordance Table accompanying the water licence applications has determined that the referencing to the DEIS provided are mostly valid. There appears to be sufficient information in most areas; however, the references provided were for entire volumes (i.e. Volume 1 to Volume 12 and Volume 10-1.0 to 10-29). It is recommended that more specific references and examples be provided in the FEIS.

There are some instances, however, where no referencing is provided because the information was apparently not available for inclusion during the draft of the DEIS. In order to ensure that the information related to the water licence application is consistent and readily accessible for

consideration during the next stage of the review process, it is recommended that the Concordance Table be updated accordingly in the FEIS.

The SIG Concordance Table indicates that the following information will be provided in the FEIS:

5.1 Water Licence Application Form Information Requirement

a. Section 3.16: Timetable for filing the appropriate plans and procedures required by other authorities. Description of how those authorizations may affect the NWB's water licensing process.
b. Section 3.19: Inuit water Rights: Compensation agreements or status.
c. Section 3.20: Results of Consultations: A Consultation List is provided in Appendix V3-2A that details various meetings with government agencies that may be of concern to the NWB (e.g. DFO consultations); however, the outcomes/results of those consultation sessions is not provided (e.g. no action items, track-record of issues raised, etc.).
d. Section 3.21, Security: Financial security assessment that is prepared in a manner consistent with principles respecting mine site reclamation and implementation found in the *Mine Site Reclamation Policy for Nunavut*, Indian and Northern Affairs Canada, 2002.
e. Section 3.26, Annual Reporting: Detailed information regarding the content of annual reports and a proposed outline or template of the annual report.

5.2 Baseline Information Requirements

a. Section 5.1, Environmental Setting: Description of streambed material, stream-bank material, and stream-bank vegetation for any streams affected by the application;
The slope of the banks of any water course and the description of the meander pattern for any channel affected by the application;

5.3 Water Use Information Requirements

a. Section 6.2a, Water Use: Quality and Quantity, Water Intake: Description of the water intake method(s) including the intake facility, the operating capacity of the pump used, the details of any screening to exclude fish, and the distance the pump will be placed from the ordinary high water mark.
   - Description of the general condition of any existing water intake facility; water withdrawal regime; amount of water returned to the source.
   - Description of any hydrostatic testing programs, including water sources of the watercourse.

b. Section 6.2b Water Storage: Plan showing representative cross-sections of the reservoir.
Most of Water Storage information regarding the Access Type "A" Licence Application.
c. Section 6.2d Water Crossings: Plan of any watercourse crossing showing cross section and elevations.

d. Section 6.2h Alterations in flow: If alteration involves a dam, a plan showing the length, height, cross section and elevations of the dam and the location and preliminary designs of spillways, canals, sluice pipes, and any other outlet work.
e. Section 6.2k Modifications: Whether any changes are planned for the water intake.
f. Section 6.2l Proposed Water Works.
g. Section 6.3, Predicted Environmental Effects and Proposed Mitigation Measures: If the cross-section of any watercourse is changed, a description of the change and its effect on the flow capacity of the channel.
If the course of any channel is changed a description of measures to maintain stream bed and bank stability.
h. Section 6.4 Studies: Construction plan and construction schedule for water works;
Implementation schedule for construction of works.
Construction quality assurance and quality control plans regarding the Access Type "A" Licence Application.

5.4 Waste Disposal Information Requirements

a. Section 7.2b Modifications: Whether any changes are planned for the wastewater, solid waste, or any other waste facilities
b. Section 7.2c, Proposed Waste Facilities.
c. Section 7.3, Predicted Environmental Effects and Proposed Mitigation Measures: Detailed treatment plans for discharges from any tailings containment area, attenuation pond, reclaim pond, sewage disposal area, sumps or dewatered area; description of the sub-surface soil compositions and provide information on groundwater elevations for the project area. The proximity between the proposed waste disposal system and the groundwater elevation;
Discussion of the consequences of long-term stratification in any pit lakes and associated contingency plans;
d. Section 7.3a, Operations and Maintenance: Stand-alone Operations and Maintenance Manual for sewage and/or solid waste disposal facilities in accordance with the "Guidelines for the Preparation of an Operations and Maintenance Manual for Sewage and Solid Waste Disposal Facilities in the Northwest Territories, 1996" as well as the "Guidelines for the Planning, Design, Operations and Maintenance of Modified Solid Waste Sites in the Northwest Territories, 2003".
e. Section 7.3c, Emergency Response and Spill Contingency: Designs for the fuel tank farm facilities including a description of the nearest water bodies. An evaluation of impacts and mitigation measures in case of a fuel spill.
Explanation of how the applicant will ensure project contractors meet the applicant's due diligence standards with respect to oil and hazardous material spill prevention, preparedness, response, and restoration.
f. Section 7.4 Studies: Inspection plan;
Geotechnical and structural monitoring;
Human health and ecological risk assessment for establishment of remediation objectives for closure;
Construction plan and construction schedule for waste management infrastructure;
Implementation schedule for construction works, submission of studies and mitigation plans for operations regarding the Access Type "A" Licence Application;

5.5 Monitoring Information Requirements

a. Section 8.1 Monitoring Plan.

b. Section 8.1a Inspection Plan: Inspection Plan including a description of the methods, procedures, standards, and schedules proposed. Inspections may be required for engineered facilities related to the management of water and waste as well as spills. The Inspection Plan must consider the life of the project, temporary closure and permanent closure.

c. Section 8.1b QA/QC Plan: Quality Assurance/ Quality Control (QA/QC) Plan that addresses both field sampling and laboratory analyses.

6.0 Appendix V11-4A: Geochemical Characterization and ML/ARD Potential Report

a. Sections 3.2.1.2 and 3.2.1.3, Pg. 3-7, it is stated that no overburden samples have been collected from the George Property and MLA, respectively, for the geochemical characterization. Samplings are to occur.

b. Sections 3.2.2.2 and 3.2.2.3, Pg. 3-8, it is stated that no proposed quarries have been sampled at the George Property and MLA, respectively, for the geochemical characterization. Samplings will occur as the characterization program progresses and quarries are identified.

c. Mine Workings and Waste Rock Section 4.3.2.1, Pg. 4-36, Mineralogy states that R-XRD (X-ray diffraction) analyses were completed on George Property in the fall 2013. No results available yet.

d. Mine Workings and Waste Rock Section 4.3.2.2, Pg. 4-44, Leachate states that leachate tests were completed on George Property in the fall of 2013. No results available.

e. Ore and Low Grade Ore Section 4.4.2.2, Pg. 4-49, states that to date no SFEs (Shake flask extraction leachate test) have been performed on George Property samples.

7.0 Appendix V11-4C: Waste and Water Management Report for Draft Environmental Impact Statement

a. Tailings Impoundment Area, Table 3-1 Design Basis Summary indicates 49% solids of tailings from mill process as TIA design criteria. Contingency measures should be provided in the case if tailing slurry density is to be changed as in the beginning of another northern project, Meadowbank Gold Mine operation with close design criteria (51% solids) pipe sanding issue occurred in winter. With less percentage of solids content additional water use may be required.

b. Knight Piésold (KP) Appendix D VA13-01716 – Groundwater Mine Inflows Memorandum, Pg. 6, it is stated that *groundwater inflows up to about 10 L/s are expected to be encountered as a result of structures such as faults.* It is also suggested that *based on professional experience and information in the literature (Freeze and Cherry 1979), higher inflows as a result of the mine working intersecting a permeable fault would likely decrease relatively quickly with time.* The "decrease relatively

quickly" should be quantitatively assessed to plan for the management of "short-term" higher inflows.

8.0 Appendix V11-4D: Goose Property Water Quality Prediction Report

a. Goose Property Water Quality Model Section 3.11, Pg. 3-20, Process Plant Discharge indicates that *the tailings production rate will be 5,000 tpd, piped out to the TIA as slurry comprising 65% solids*. However, throughout the DEIS documents the tailing slurry density is stated as 49% solids.
b. As stated also in Appendix 3A KP Consulting Water Balance Memo the base water balance model *does not include downstream compliance points, which may be necessary for the EIS*.
c. Appendix 3C KP Consulting 2013 Groundwater Mine Inflow Estimates indicates that analysis for Feasibility level design purposes would be improved *by incorporation of advancements to the structural model being developed by Sabina for the Goose and George Properties, specifically with respect to the mine development, to improve the identification and characteristics of potential structures which may contribute to higher inflows during mine development*. The NWB concurs with this conclusion.

9.0 Volume 10: Management Plans

9.1 Water Management

Volume 10-7 Site Water Monitoring and Management Plan (SWMMP or Plan) outlines Sabina's strategies for managing water at the Back River Project. The Plan will likely be revised for the FEIS. The Plan shall at a minimum include the followings additional information:

a. Section 3.2.2, Pg. 4, Estimated Water Consumption, Table 3.2-1 provide Water Supply Locations and Volumes by Project Phases. However, does not provide a breakdown for Goose Lake and Propeller and other lakes, and for George Lake and Lower Long Lake and other lakes. The updated Plan shall provide these estimations.

b. Section 3.2.3, Pg. 4, Winter Road should provide water supply locations for the winter roads preparation with respective anticipated consumption from each water source.

c. Section 3.3.2, Pg. 9, Goose Property Sewage Treatment and Disposal should provide the treated sewage discharge on land location details before the TIA's construction and after its decommissioning in the Goose Property.

d. Section 3.4.3, Pg. 13, states that there is the requirement for a thirty (30) metre set-back from water-bodies for treated oily water discharge on land. It is recommended that the set-back distance be changed to thirty-one (31) metres so as to be consistent with NWB general licensing conditions.

e. Section 3.4, Pg. 12-14, Water Management – General Site Runoff, Tables 3.4-1, 3.4-3, 3.4-4, 3.4-5 and 3.4-6 proposes Water Discharge and Quality Criteria.
The updated Plan should indicate what respective Guidelines are being used for the proposed Criteria. Discharged water quantities and qualities should be estimated at all Project sites (i.e. waste rock contact water, treated sewage, collection ponds, fuel containments, on-land discharges etc.), and anticipated discharge locations should be provided.

f. Section 3.4.2, Pg. 12, Soil Landfarms should provide details on landfarm designs and management or reference the document providing this information.
The NWB recommends including a Landfarm Management Plan within the FEIS.

g. Section 3.4.4, Pg. 13, Quarries and Borrow Areas states that *"runoff will be collected within the work area and will only be discharged to land if meeting the water quality criteria in Table 3.4-5"*.
Details on runoff containment should be provided.

h. Section 3.4.5, Pg. 14, Landfills states *"Landfills will be constructed and operated at each of the Project properties"* and provides landfill seepage criteria for MLA, Goose and George Sites landfills without providing details on landfills designs and management or reference the document providing this information.
The NWB acknowledges that the Landfill and Waste Management Plan is also conceptual and does not provide at this stage landfills design details. Besides that, according to the Volume 11, Section 4.2.1, Pg. 4-15, Landfills and Landfarms, "*non-combustible non-hazardous materials will be at the Goose Property landfill*". This should be clarified.

i. Section 3.5.2, Pg. 15, Water Intakes should provide location, depth and design details on all water intakes for every water sources (Goose Lake, George Lake) including the one on Bathurst Bay for the Marine Laydown Area (MLA) water supply.

j. Section 3.5.5, Pg. 16, Water Supplementation Pipeline from Propeller to Goose Lake states that "the Project includes the construction of a pump house and pipeline to potentially supplement the water demand of the milling operation from Propeller Lake, and to support active pit filling during closure"
Designs details on pump-house and pipeline should be included within the updated Plan.

k. Section 3.6.2, Pg. 17, Site Water Balances states that "the contact water will be stored in collection ponds prior to treatment at the water treatment plants to regulate inflows".
The future updated Plan should provide contact water treatment details, design and management of collection ponds at George Property.

l. Section 3.6.3, Pg. 23, Open Pits should also provide the extent of Llama Lake talik zone and assess project impacts on the Llama Lake talik zone through all phases of mining activities and closure.

m. Section 3.6.4, Pg. 24, Umwelt Underground Mine states that "the Umwelt underground development is planned to a depth of approximately 660 m below ground surface (mbgs). At this depth, the planned workings will be approximately 260 m below the permafrost". Although it is stated that "average groundwater inflows have been estimated at between 1 and 2 L/s (Knight Piésold, 2013b)."
Groundwater and potential saline water inflow estimation should be re-assessed as well as details on management and monitoring of saline inflows throughout the Project development should be detailed in the updated Plan.

n. Section 3.7.3, Pg. 26, Waste Rock Stockpiles states that "at the Goose Property, runoff from the WRSAs will be collected in the operation phase".
The management of runoff from the Waste Rock Storage Areas (WRSA's) at George Site during operations should also be clarified.

It is also stated that "at closure, Potentially Acid Generating (PAG) waste rock stockpiles will be covered with a 4m cap of not PAG (nPAG) waste rock to promote the aggregation of permafrost in the piles so that the PAG rock remains permanently frozen". Figure 3.7-1 indicates 2m nPAG Cover for TIA. The rational should be provided on why 4m nPAG covering cap is planned for WRSA and 2m nPAG cap for TIA.

o. It is not clear whether the underground mine inflow is included within the site water balance model (it seems no). A Water Balance shall also include annual estimates for each lake, water volume change, volume remaining and water level throughout the Project multi-phased development.

p. Monitoring details for each of Project sites should be included with an explanation on how this level of monitoring will be effective.

q. Water treatment options for each of Project sites should be included with treatment details for potential contaminants.

r. According to V. 2 Project Description, Section 6.4.12 "*as part of the Site Water Monitoring and Management Plan, a drainage plan has been developed for the Marine Laydown Area"*.
This drainage plan for MLA wasn't found within SWMMP. A drainage Plan for MLA should be included within the Plan.

s. The Plan provides just preliminary information regarding the Groundwater.
The NWB has acknowledged that Sabina committed to detail the management of groundwater for each phase of mine activities. The extent and potential formation/decline of taliks, including potential through-taliks, anticipated groundwater and saline water inflows and pathways estimations including through fault zones, effects on being re-flooded open pits water quality and quantity and other aspects of groundwater shall be detailed.
The NWB also acknowledged that Sabina committed to provide results of any groundwater modelling completed for Llama pit.

t. The Plan should detail water management (including groundwater) for different phases of the project including construction, operation, closure and post-closure. A water management strategy for care and maintenance phase should also be developed.

u. Lake Dewatering and Pit Re-flooding Plans shall be included within the SWMMP.

v. Design criteria and drawings for all water management infrastructures (pump-house, intake, retention dikes, diversion ditches, run-off management, water crossings and works, and seepage and groundwater inflow collection structures and ponds) should be provided within the final Application.

9.2 Waste Management

9.2.1 Solid Waste

Inconsistencies noted with respect to the potential construction of landfill in George Property and MLA. According to Volume 11 Section 2 Minimum Application Requirements and Section 4 Back River Project Description landfilling is planned at Goose Property only. However, throughout the DEIS documents and figures landfills construction/operation is likely planned in George Site and MLA as well. These inconsistencies should be addressed.

Although the ***Volume 10-10 Landfill and Waste Management Plan*** (LWMP or Plan) is conceptual at this stage, the NWB has reviewed it and identified the following additional items, which should be addressed at a minimum within the updated Plan that shall likely accompany the FEIS.

a. Waste management strategies and plans shall be elaborated with respect to each phase of mining: construction, operation, closure and post-closure.
b. Waste management recycling/reusing initiatives, operating procedures at the mine shall be developed in detail with respect to each phase of mining: construction, operation, closure and post-closure.
c. Estimated volume and types of waste generated during each phase of mine activities should be provided.
d. Landfill design and management details should be provided. Expected changes to landfills operations and maintenance during each phase of mine should be described.
e. Details on water potential run-off structures or measures and run-off management should be provided.
f. Details on environmental monitoring during each phases of mine activities should be provided.

9.2.2 Hazardous Waste

Volume 10-12 Hazardous Materials Management Plan (HMMP or Plan) is conceptual and shall be updated for the FEIS. The following additional information shall be provided at a minimum within the next version of the Plan:

a. Hazardous materials anticipated quantities and inventory list with types, anticipated quantities, and sources of generation and description for each phases of mine activities.
b. Details on environmental protection measures to be implemented to ensure Hazardous substances efficient and environmentally compliant collection, storage, transportation and disposal.
c. Details on collection and temporary storage sites within the George and Goose Properties and main storage facility at the Marine Laydown Area. Details on types and estimated numbers of containers that will be on-site throughout the project development.
d. Details on Hazardous materials transportation from temporary storage sites to the main storage facility at the Marine Laydown Area.

e. Spill response considerations, procedures and reporting for all Hazardous substances applicable to each mine phase. Spill kits/emergency response equipment quantities and types, and available on-site locations.
f. Temporary storage and main storage facilities design and management details. Expected changes to facilities operations and maintenance during each phases of mine.
g. Map of appropriate scale with Hazardous materials storage facilities, and spill kits location, at a minimum.
h. Details on potential run-off water structures or measures and run-off management.
i. Details on employees training requirements and programs.
j. Details on associated Monitoring programs.
k. Details on internal/external inspections and audits.
l. Design details (drawings) are to be included.

9.2.3 Ore, Mine Waste Rock and Tailings

The ***Volume 10-8 Ore Storage Management Plan*** (OSMP or Plan) is designed to cover operational procedures, the implementation of environmental protection measures, and monitoring the effectiveness of any mitigation strategies when managing stockpiles ore. The next update of the Plan should include, at a minimum the followings:

a. Section 3.3, Pg. 6, Production Overview indicates that "*the size of the stockpile at the George Site will vary between 80 and 430 kt*", and the Section 3.5, Pg. 7, George Site Ore Stockpile Methods and Procedures state that for George Pits "*storage design requirement for the pit is approximately 500 kt*".
The NWB believes that those inconsistencies would be eliminated with design details.
b. Section 6.1, Pg. 8, Runoff Management states that "*the collection ponds constructed for the ore stockpiles will apply the same design criteria as has been developed for the WSRAs, in terms of managing extreme flows*".
The next version of Plan should provide run-off management infrastructures' (ditches and ponds) details including design criteria.
c. Section 7, Pg. 9, Monitoring Program should be detailed to include also inspection/monitoring frequency and phased monitoring requirements (i.e. Operations, Temporary Closure or Care and Maintenance, Post-closure).
d. Design details (stockpile design, foundation requirements and runoff management etc.).

9.2.4 Waste Rock and Tailings

The ***Volume 10–9 Mine Waste Rock and Tailing Management Plan*** (MWRTMP or Plan) applies to the construction and operation phases of the Project during which time both waste rock and tailings will be produced, as well as the closure/post-closure phases of the Project while waste rock and tailings will be permanently stored at the site. The Plan is more or less conceptual and, as such, it includes in some cases more than one proposed or alternative options for addressing components like Waste Rock Disposal and Management Alternatives, or runoff water management. Once details become available, more definite options should be presented.

The SIG requirement to "*provide an assessment of alternatives for any proposed tailings containment facility*" was acknowledged as not applicable by the proponent. A very brief discussion of a management alternative is provided in *Mine Waste Rock and Tailing Management Plan* (Section 3.2.9), but there is a potential need for a more elaborate discussion of how the proposed Tailings Impoundment Area (TIA) site was selected.

a. Inconsistencies on numbers of total Waste Rock volumes that will be produced over the life-of mine in Waste Rock and Tailings Management, Pg. iv, and throughout the Plan.
b. Section 3.1.3, Pg. 3, Waste Rock Stockpile Areas states that "*waste rock generated by the Project will be contained in Waste Rock Stockpile Areas (WRSAs) located near to the open pits"*.
   Other that stating that "*each of the WRSAs has separate PAG and nPAG piles that will share a common water management system"* there is insufficient information pertaining to the associated drainage areas or water management systems.
c. Section 3.1.7, Pg. 9, Waste Rock Thermal Modeling states that "*strategy of incorporating the PAG waste into the permafrost was developed based on computed depths of freeze and thaw"*.
d. Provided estimates should be refined with available data. It should be clarified whether or not this thermal modeling would be applicable to TIA as well.
e. Sections 3.1.8, Pg. 9, Waste Rock Management Alternatives shall detail all management alternatives with rationale on selected option.
f. Section 3.2.1, Pg. 9, Tailings Physical Characteristics suggests 49% for Slurry Percent Solids.
g. How those properties were determined? Whether or not other northern mining experiences (i.e. Meadowbank Mine) were taken into account for the determination of Tailings Slurry density?
h. Section 3.2.3, Pg. 10, TIA Design Basis will take into account 16,3Mt of Total Ore milled as a Design Criteria. It is also stated that "*should additional mineral resources be identified for mining and processing, additional raises to the TIA embankment will be necessary and should be possible"*.
i. The TIA Design Criteria should assess additional possible raises to the TIA embankment for potential additional Ore. The TIA Design Criteria should also take into account that more freshwater than projected may be used (i.e. as a result of slurry density change etc.) that will increase the amount of waste water to be discharged into TIA.
j. Section 3.2.9, Pg. 16, Tailings Management Alternatives states that *"a potential alternative for tailings disposal is to deposit the tailings into one (1) or more of the open pits when mining at a pit has ceased, and that this alternative for tailings disposal will be considered in the feasibility study"*.
k. The potential alternative shall be detailed and rational on selected option provided within the updated Plan.
l. Limited information pertaining to the monitoring is provided in the *Plan*.
m. The Monitoring Plan must consider the entire life span of the project and include also provisions for care and maintenance or temporary closure, and permanent closure. The Monitoring Plan should further include a description of the proposed methods,

procedures, standards, and schedules, while acknowledging that further conditions may be established in the Water Licence.

9.2.5 Metal Leaching & Acid Rock Drainage

The ***Volume 10-22 Metal Leaching and Acid Rock Drainage Management Plan*** (MLARDMP or Plan) is designed to ensure that the ML/ARD potential of geologic materials disturbed by Project activities is identified and the potential for generation of ARD and ML is minimized to ultimately protect aquatic environment, particularly minimizing effects to water quality.

a. Section 6.1.2, Pg. 5, Mine Workings and Waste Rock ML/ARD Prediction Program Table 6.1-1 provides ARD of Waste Rock and indicates that "*George Property proportions are not differentiated by deposit*".
No explanation is provided with respect to the reasons of not defining ARD of Waste Rock for George Property's deposits. And it is also unclear how (or based on which waste rocks?) the ARD was calculated for George Property?

9.2.6 Road, Borrow Pits and Quarries

The ***Volume 10-14 Road Management Plan*** (RMP or Plan) outlines construction, operation and management of access and transportation for the Back River Project including construction, operation and closure of an all-weather airstrip, connecting winter roads and associated rock quarries. In the reviewing of the Plan, the NWB has identified items that, at a minimum should be addressed within the next version of Plan:

a. Section 4.2, Pg. 11, All-Weather Road Infrastructures states that the *"Goose and George sites will require all-season roads in order to operate year-round. The roads will be constructed in a permafrost environment"*.
b. Measures to protect the permafrost regime, to minimize the potential erosion, ponding of water etc. are to be detailed.
c. Section 4.2.4 Pg. 13, Construction of All-weather Roads states that "*Efforts shall be made to minimize the duration of any in-stream works and minimize disturbance at stream crossings*".
d. The Plan should clearly indicate that all in-stream works for water-bodies frequented by fish shall be completed in accordance with DFO relevant Guidelines.
e. Section 7.3, Pg. 18, states that winter roads will be *inspected and maintained in accordance with the Field Guide for Ice Construction Safety (Depart. Of Transportation, NWT(1), refer to section 3 of the field guide, "Ice Capacity and Testing").*
f. It is recommended that inspection and maintenance details including the frequency and type of inspections be included within the Plan.
g. Design details (drawings) are to be included.

The ***Volume 10-16 Borrow Pits and Quarry Management Plan*** (BPQMP or Plan) outlines development, operation and closure of approved borrow and rock quarry areas within the Back River Project including the Goose and George Properties, and the MLA. The Plan is designed to

minimize adverse effects to downstream water quality and quantity due to quarry operations and the MLA. The next update to the Plan should at a minimum include the followings:

a. Section 3.5.1, Pg. 7, Development Plans – Rock Quarries states that "A detailed procedure will be prepared before the start of development for each rock quarry. Site development plans will augment this management plan with specific details".
   It is suggested that these site development plans be subsequently incorporated into the Plan.
b. Section 7.1, Pg. 13, Monitoring Water Quality indicates that "*During high runoff periods, water may drain from borrow and rock quarry areas. Should noticeable flows occur, the water will be tested to ensure it meets permitted criteria.*"
   If needed, run-off containment measures/structures (ponds) should be included within water management infrastructures. Structures' capacity should be enough to contain the high run-off during freshet.

Although the ***Volume 10-13 Explosives Management Plan*** (EMP or Plan) is generally conceptual at this stage, the NWB has reviewed it and identified the following items, which should be addressed:

a. It is stated that "*at the George site, there will be a laydown and storage area for up to 100 tonnes of inert AN"*. However, Volume 2, Project Description Section 6.7.7.1 and V.11, Type "A" Licence Application, Section 4.2.u.1 indicate that "*up to 500 tonnes of ammonium nitrate will be stored at the George Property"*. Inconsistencies are noted on Explosive storage capacities in Marine Laydown Area and Goose Property in Project Infrastructure, Pg. iii-iv, and throughout the Plan. Explosive storage capacities should be confirmed to eliminate discrepancies between different documents.
b. Details on management of potential run-off water associated with ammonium nitrate storage shall be provided. Information should be provided on where/how the run-off water will be disposed of / treated and what steps will be taken to ensure that it meets discharge criteria before being released.
c. According to Figure 6-3 Goose Property General Arrangement the Explosive Storage is located on the water body?
d. Although Figures 6-1 to 6-3 provide Explosive Management facilities anticipated locations in Marine Laydown Area, George and Goose Properties, however no design details (drawings) are included within the Plan at this stage.
e. A Site-specific Ammonia Monitoring and Management Strategies shall be developed to identify potential sources of ammonia; estimate ammonia loading and identify the need for additional controls if warranted; and include procedures to assist in mitigating ammonia contributions from blasting agent spillage or other losses.

9.2.7 Emergency Response and Spill Contingency

The SIG requirement to address phases of the project including construction, operation, closure and post-closure as well as procedures during care and maintenance is not generally reflected in the series of Environmental Protection Plans (EPPs) that have been prepared for the Project DEIS (i.e. phased approach not present). At this stage, certain aspects of Plans remain

conceptual, and the next updates will likely accompany the FEIS. This includes the following documents:

The ***Volume 10-3 Risk Management and Emergency Response Plan*** (RMERP or Plan) is to ensure that an adequate level of emergency preparedness is available for the construction and operation of the Project. The scope of this plan includes the Marine Laydown Area in southern Bathurst Inlet, and both the Goose and George Properties. The Plan will be further updated based on detailed engineering designs prior to the start of construction. The following aspects of Plan also need to be more detailed:

a. Section 4.2, Pg. 14 Natural Hazards states that *"an assessment of risk and identification of mitigation measures associated with effects of the environment on the Project can be found in Volume 9, Chapter 3 of the DEIS"*.
   Instead of referring to another Volume of DEIS the final RMERP should provide all risks related to potential natural hazards and identify mitigation measures during each phase of mine activities: construction, operation, closure and post-closure.
b. Section 4.3. Pg. 14 Accident and Malfunctions states that "*specific risk assessments, root cause, consequences, and mitigation processes are itemized in Volume 9 of the DEIS"*.
   The updated RMERP should assess all accident and malfunctions related risks and consequences and identify mitigation measures during each phase of mine activities.
c. Section 5.5, Pg. 16 discusses Emergency Response Procedures that may generally be related to the accident and malfunctions.
   The updated RMERP should also provide Emergency Response Procedures that could be related to the natural hazards (storms, extreme rainfall or snowfall, extreme low temperatures) and geo-hazards (seismicity, ground and slope instabilities).
d. Section 5.5.2 Fire/Explosion does not detail the procedures for such fires when fighting them with extinguishers is not or not anymore practically possible.
   No emergency procedures associated with explosives are provided.
e. Emergency Response Procedures should also detail as to how multiple emergency events will be handled.
f. Site map(s) that is (are) specifically designed to emphasize emergency response element should be provided.
   The map(s) should depict emergency response equipment, fuel caches, nearby water bodies, camp infrastructures, and other relevant information.

Volume 10-5 Spill Contingency Plan (SCP or Plan) is to respond to hydrocarbon or other contaminant spill incidents that may occur at the Project including MLA in southern Bathurst Inlet, and both the Goose and George Property, during construction and operation of the proposed mine.

The Plan is generally conceptual and qualitative as no quantitative information is provided with respect to the material and number/type of containments to be stored on sites during different

phases of mine. NWB review of the plan has identified the following items that should also be addressed:

a. Section 2, Pg. 6, Table 2-1. Contains External Reporting Volumes for the list Contaminants. It is noticed that unanticipated seepages from TIA, WRSA, landfills, containment ponds etc. have not been considered spills under the Plan.
   These seepages should be considered "spills" as they have unintentionally or accidently been allowed to breach their intended containment and may have an adverse impact on the environment.
b. Section 7, Pg. 15, Spill Response Equipment states "*that a vehicle outfitted with a self-contained collection of spill response materials for rapid deployment to spill sites will be utilized. Table 7-2 lists the typical content of mobile environmental emergency trailer that will be located on site at each of the Back River Project properties"*. However, besides the mobile environmental emergency trailer, spill kits shall permanently be located at various sites of each property as multiple spills events may occur simultaneously at different locations.
   It is recommended that an explanation be provided as to how multiple events will be handled simultaneously.
c. Section 8.3.2, Pg. 20, Domestic Sewage, Solid Waste and Contact Water states that "*any problems with the sewage treatment system, incinerator or other waste disposal systems will be promptly reported to the Site Superintendent"* without providing details regarding spill responses related to these types of materiel spilled.
   It is suggested that each camp be listed along with sewage storage facilities and/or treatment facilities and the amount of sewage generated. In addition, this section should include spill response procedures for addressing broken/dislodged sewer lines.
d. Section 8.4, Pg. 21, Response to Fire refers to relevant site firefighting procedures without providing at a minimum the water use related information.
e. Procedures for responding to spills involving fuel transport trucks should be included in the Plan.
f. Appendix A lists the Hazardous Materials Transported, Stored and Used On-site with their descriptions and potential management and pollution prevention strategies.
g. This table should also contain an estimated inventory and containment types of Hazardous Materials stored on-site at any given time. Responses to Ammonium Nitrate potential spill to water shall also be included within the list.
h. Site map(s) that is (are) specifically designed to emphasize spill response elements should be provided. The map(s) should depict spill response equipment, fuel caches, nearby water bodies, camp infrastructures, and other relevant information.
i. Actual copies of the MSDS for all hazardous substances stored on site should be included within the Plan.

Although the ***Volume 10-6 Marine Laydown Area, Oil Handling Facility*** (MLA-OHF), ***Oil Pollution Emergency Plan*** (OPEP) was developed to specifically assist in implementing measures to protect the marine environment and minimize impacts from potential spill events. Nevertheless, there are aspects of the Plan that are geared to addressing spills on land. The MLA-OHF OPEP has been designed specifically to compliment the Back River Project, SCP document. It is stated that the plan is not to be construed as to supersede existing emergency

response plans, rather it is conceived to address the specifics of the fuel storage facility, the bulk incoming transfer of fuel and spill scenarios directly relating to this operation.

The NWB reviewed the sections related to potential spills on land and identified the following items, which should be addressed:

a. Section 2.2.3, Pg. 3, Dedicated Facility Spill Response Equipment, states that "*a list of the equipment can be found in Appendix 4*". However, no Appendix 4 appears to be included within the Plan and generally no Appendixes are included within the Volume 10 EMP's.
b. Section 3.2, Pg. 4, Oil Handling Facility and Infrastructure states that "A preliminary site plan of the projected MLA-OHF configuration is provided in Appendix 2". No Appendix 2 is included in the Plan. No detailed information is provided related to all proposed fuel storage facilities (permanent and temporary facilities) associated with the site.
c. Section, 3.3.5, Pg. 6, Ice Conditions should describe emergency procedures if ice conditions happen suddenly and earlier than expected with a ship being on the Bay for fuel deliveries.
d. Section 4.1, Pg. 9, Bulk Oil Transfer, Ship to Shore states that "*the bulk fuel transfer procedures are fully detailed in the standard operating procedure in Appendix 5*". However, no Appendix 5 is included within the Plan.
e. Section 5.4, Pg. 11, Equipment and Personal Protection states that "*Spill kits are strategically placed primarily in areas of fuel handling to facilitate immediate first response in the event of a hydrocarbon release to land. A complete list of spill response equipment is found in Appendix 4 of this plan*". However, no Appendix 4 appears to be included within the Plan and generally no Appendixes are included within the Volume 10 EMP's.

   It is recommended that the MLA-OHF site layout map be included within the Plan to provide, at a minimum all oil handling and storage infrastructures and spill response equipment kits locations.
f. Section 7, Pg. 17, states that "*full details of the properties and hazards associated with potential spills of all products are found on the Material Safety Data Sheets (MSDS) in Appendix 8 of this plan*". However, no Appendix 8 appears to be included within the Plan.
g. Section 8.1, Pg. 26, Response Strategies – Larger Spills states that spills less than $3.5m^3$ will be handled by handled by MLA-OHF response operations. For spills larger than $3.5m^3$, it is stated that the Emergency Response Coordinator shall determine if it is necessary to increase the response capability by requesting third party without actually specifying procedures. It is recommended that any revision of the Plan should include actual procedures for dealing with large spills.
h. No procedures and/or information are provided related to the hydrostatic testing for the proposed fuel storage facilities.

General Comment with respect to the series of Environmental Protection Plans:

Some ambiguities seem to exist concerning where the Risk Management and Emergency Response, Spill Contingency and Oil Pollution Emergency Plans start and end. This ambiguity

and confusion could potentially decrease the functionality of these Plans. Establishing more precise separation related to the usage of plans may help to address overlapping issues. Or If the Guidelines for EIS allow, it is suggested, that for on-land activities Goose, George Sites and Marine Laydown Area the Risk Management and Emergency Response, Spill Contingency and Oil Pollution Emergencies Plans be consolidated in one Plan as one consolidated Plan may increase effectiveness and functionality of the Plan.

10.0 Monitoring

At this time, most of the overall monitoring plan details are scheduled to be provided in the FEIS. Only general details for the monitoring programs are provided.

The ***Volume 10-19 Conceptual Aquatic Effects Management Plan*** (AEMP or Plan) has been conceptually designed to minimize or eliminate potential adverse effects on the freshwater and marine environments that could result from their interaction with project components over the life of the Project. The Plan was reviewed, and the following items at a minimum are to be addressed within the updated Plan:

a. Section 6.1.1, Pg. 4, Site Water Management states "*that in the Goose Property Area, site contact water (including runoff from waste rock storage areas (WRSA) and mine water) and treated sewage effluent will be directed to the Tailings Impoundment Area (TIA) and discharged if necessary during the Reclamation and Closure Phase to an approved site and will meet applicable water licence criteria*. *The water management plan (Figure 6.1-2) for the George Property Area is very similar, with site contact water and treated sewage effluent being directed to the Water Management Facility (WMF)*". No details are provided with respect to potential discharge locations and volumes for the TIA, WMF, treated sewage, collection ponds, on-land discharges, and any other potential discharges. No information is provided regarding the prevention of water ponding or erosion at discharge locations.

b. Table 7.2-1, Pg. 16, provides AEMP Sampling Locations, Descriptions and Purposes. Table 7.2-2, Pg. 26, provides AEMP Monitoring Schedule. Table 7.2-3, Pg. 27, provides Physical, Chemical, and Biological Parameters in AEMP Sampling Program. It would be useful to create an additional Table with combining information from tables stated above. The exact locations of sampling points shall also be provided within given water-bodies.

c. Table 7.2-2, Pg. 26, AEMP Monitoring Schedule, Back River Project provides schedules for Temporary Closure and Care and Maintenance Phases. The NWB notices that Temporary Closure and/or Care and Maintenance Phases are not clearly stated and defined in any of EMP's including in the Mine Closure and Reclamation Plan.

d. Section 7.2.6, Pg. 30 AEMP Sampling Details Table 7.2-5 indicates that that CCME Guidelines for the Protection of Freshwater or Marine Aquatic Life and MMER Criteria (if/when triggered) used for water/sediment quality parameters.
EC noted that "*CCME guidelines are not available for a number of freshwater, marine, and sediment parameters, and recommended that site-specific guidelines be developed for parameters of concern for which there are no CCME guidelines, or for parameters*

(not identified) that are naturally greater than CCME". NWB concurs with this recommendation.

11.0 Closure and Reclamation

The ***Volume 10-29 Mine Closure and Reclamation Plan*** is still preliminary and conceptual. The FEIS shall include a detailed Interim Mine Closure and Reclamation Plan. The followings items should be clarified at a minimum:

a. Section 2 Care and Maintenance Plan for Temporary Mine Closure define the "Temporary Closure as the cessation of mining and processing operations for a finite period of time with the intention of resuming operations upon resolution of the cause of the cessation (AADNC, 2007). It is also stated that Temporary closure could last for several weeks or as long as several years depending on the nature of the contributing factor(s)".

As the Water Licence generally defines the Care and Maintenance Phase the updated MCRP should provide definitions of temporary closure and care and maintenance including outlining what activities and monitoring may continue at the project, subject to the phase within which care and maintenance is implemented. This recommendation is valid for all EMPs that should include management strategies and monitoring during Care and Maintenance Phase.

b. Section 4.4, Pg. 20, Umwelt Underground Mine Workings should be detailed and should take into account designs of all declines and raises, detailed hydrogeological conditions assessment and thermal modeling.
c. Section 4.6, Pg. 24, Tailings Impoundment Area states the TIA "will be closed out by draining off and treating tailings supernatant, constructing a closure spillway and capping the TIA with a 2 m cover of nPAG waste rock".

   It is noticed that WRSAs will be covered by 4m nPAG (S. 4.3 Open Pits).

Section 3.1.7 of Mine Waste Rock and Tailings Management Plan states that "average freeze/thaw depths were calculated using a number of simplified closed-form mathematical solutions including the Neumann and the Modified Berggren equations (Knight Piésold, 2013b). Based on these computations, the freezing depth over an average winter is estimated to be approximately 6 m and the thawing depth over an average summer is estimated to be approximately 3 m".

A rational should be provided on differences of cover thickness for WRSA and TIA. A thermal modelling should validate whether or not 2m cover depth is reasonable to facilitate aggradation and encapsulation in permafrost at TIA.

d. Section 5 Monitoring states that "Post-closure monitoring is expected to be required for five (5) years after completion of active closure activities in Closure Year 10. This is in line with mine reclamation at other northern sites and is believed to be a reasonable

monitoring period given the amount of post-closure verification monitoring that can be carried out during the closure phase".

Given the fact that the post-closure monitoring of other northern reclaimed mines (Nanisivik, Polaris Mines) is being generally longer (up to 25 years), the 5 years duration would not probably be enough to evaluate the mine structures stability. The Post-closure monitoring duration should be re-evaluated

Monitoring Program Stations locations shall also be included within the Project Development and Infrastructure Area maps during Care and Maintenance for Temporary Closure and Permanent Closure and Reclamation.

Section 6, Estimated Closure and Reclamation Costs does not provide the Closure Cost Estimate.

e. A Closure Cost Estimation shall be provided within the updated Plan to reflect the total financial Security for Mine final Closure and Reclamation.

12.0 Project Designs and Drawings

Few drawings or designs have been provided as part of the DEIS. General Arrangement Drawings and Site Layout Drawings have been provided for the Goose Property, George Property, and the Marine Laydown Area. Also, design drawings have been provided for the Tailings Impoundment Area (TIA) (i.e. not for construction).

The proponent noted that these designs will be progressed under the FEIS and that design criteria will be based on the approach successfully used at the Ekati Diamond Mine, NWT (i.e. permafrost was used to minimize water leaching into the subsoil; the Back River Project site is located in a region of continuous permafrost).

13.0 Additional Environmental Management Plans to Consider

In addition to the mostly conceptual management plans presented in DEIS Volume 10 that should be updated, the following management plans should also be developed and submitted within the FEIS:

a. Lake Dewatering Plan (could be included within SWMMP);
b. Pits Re-flooding Plan (could be included within SWMMP)
c. Wastewater Treatment Facilities Management Plan;
d. Landfarm Management Plan;
e. Ammonia Management Plan;
f. Site Surveillance Network Monitoring Program

14.0 Type "B" Application for the Back River Project Pre-development Activities

The NWB acknowledges that as the Project development is approached in a phased manner with site preparation activities occurring first, Sabina has reiterated the following pre-development activities from the Type "A" Water Licence Application – Access and submitted to the NWB on October 20, 2014, as a Type "B" Water Licence Application:

a. Construction and use of an all-weather road, and associated water crossings, from Goose Camp to the existing airstrip and quarry
b. Expansion of the existing all-weather airstrip and associated realignment of Rascal Stream
c. Expansion of the existing Goose quarry and development of the proposed Umwelt quarry
d. Development of an ice-road for access to the quarries during the winter season before the all-weather road is completed
e. Staging of a temporary laydown area at the Marine Laydown Area to store equipment, materials and fuel for 2016 construction activities (note: 2016 activities are not included in the scope of application).

The remaining major activities proposed under ***Back River Project - Access Type "A" Water Licence Application*** are the followings:

a. Construction and operation of the Marine Laydown Area
b. Construction and maintenance of winter roads
c. Construction of infrastructure such as all-weather site roads, laydowns areas, increasing existing camp capacity, and fuel storage at the George Property

Based on recent discussions with Sabina the NWB is of an opinion that the 2 proposed Type "A" Water Licence Applications':
Back River Project - Mine Sites Type "A" Water Licence Application Scope and
Back River Project - Access Type "A" Water Licence Application's remaining Scope, may potentially be merged and only one consolidated Type "A" Water Licence Application could be included within FEIS.

15.0 List of Acronyms

AANDC or INAC	Aboriginal Affairs and Northern Development Canada
AEMP	Conceptual Aquatic Effects Management Plan
BPQMP	Borrow Pits and Quarry Management Plan
CCME	Canadian Council of Ministers of the Environment
DCPF	NIRB and NWB Detailed Coordinated Process Framework
DEIS	Draft Environmental Impact Statement
DFO	Fisheries and Oceans Canada
EC	Environment Canada
EIS	Environmental Impact Statement
EMPs	Explosives Management Plan
EMPs	Environmental Management Plans
EPP	Environmental Protection Plan
FEIS	Final Environmental Impact Statement
GN	Government of Nunavut
HMMP	Hazardous Materials Management Plan
IRs	Information Requests
KP	Knight Piésold
LWMP	Landfill and Waste Management Plan
MCRP	Mine Closure and Reclamation Plan
MLA	Marine Laydown Area
MLA/OHF	Marine Laydown Area, Oil Handling Facility
ML/ARD	Metal Leaching / Acid Rock Drainage
MLARDMP	Metal Leaching and Acid Rock Drainage Management Plan
MMER	Metal Mining Effluent Regulations
MWRTMP	Mine Waste Rock and Tailing Management Plan
NIRB	Nunavut Impact Review Board
NLCA	Nunavut Land Claims Agreement
NWB	Nunavut Water Board
nPAG	Not Potentially Acid Generating
NRCan	Natural Recourses Canada
OPEP	Oil Pollution Emergency Plan
OSMP	Ore Storage Management Plan
PAG	Potentially Acid Generating
PHC	Pre Hearing Conference
QA/QC	Quality Assurance / Quality Control
RMERP	Risk Management and Emergency Response Plan
RMP	Road Management Plan
SCP	Spill Contingency Plan
SFE	Shake flask extraction leachate test

SIG	Supplemental Information Guidelines
SWMMP	Site Water Monitoring and Management Plan
TDS	Total Dissolved Solids
TIA	Tailings Impoundment Area
TM	Technical Meeting
WMA	Water Management Area
WRSA	Waste Rock Storage Area
WMF	Water Management Facility
XRD	X-ray diffraction