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Richard Dwyer

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Bathurst Inlet  
Kingsaok

October 13<sup>th</sup>, 2020

Bay Chimo  
Umingmaktok

**Re: Review of Back River Aquatic Baseline Synthesis Report.**

Dear Richard Dwyer, the KIA has reviewed Sabina's Back River Aquatic Baseline Synthesis Report.

Cambridge Bay  
Ikaluktutiak

The report was reviewed by our water quality consultant. Their overall assessment and recommendations are as follows:

Gjoa Haven  
Okhoktok

**1. Overall Assessment**

Sabina has highlighted that the updated Aquatic Baseline Synthesis Report was intended to answer three primary questions for each Valued Ecosystem Component:

Taloyoak

Kugaaruk

- "Sampling area compatibility: Based on the compiled baseline dataset for each component, can the sampling areas be compared to evaluate the statistical differences between exposure and reference areas, with minimal potential confounding factors (e.g., habitat variability)?"
- Suitability of baseline data to support the AEMP design: Is the compiled baseline dataset suitable for conducting the Before-After-Control-Impact (BACI) statistical analysis for water quality, sediment quality, and benthic invertebrate community components, and for conducting a Control-Impact (CI) statistical analysis for the fish health and fish tissue chemistry components?
- Sufficiency of baseline data to support normal range calculations: Are the compiled baseline data sufficient to support normal range calculations?"

Our review focused on aquatic environment. Overall, the updated report was generally well done and adequately answers all three questions for water quality, sediment quality and lower trophic levels. We do recommend however, that Sabina implement the full AEMP, including samples collected both under ice and in the open water season to further characterize the natural variability of the Goose, Propellor and Reference lakes at current detection limits. We acknowledge that this program will be implemented as the project proceeds through construction



into the operation phase but highlight that the AEMP should be implemented now to improve the characterization of the “before” (baseline) condition.

## 2. Technical Review

### KIA-ABSR-01

<b>Review Comment Number</b>	KIA-ABSR-01
<b>Subject/Topic</b>	Support for Normal Range Calculations
<b>References</b>	Table 2-1: Water Quality Data Availability for the Back River Project, 2010 to 2018. Table 2-8: Detection Limits Used in Baseline Studies, 2010 to 2018. Table 2-9: Summary of Number of Exposure and Reference Stations Sampled for Under-ice Water Quality between 2011 and 2018.
<b>Summary</b>	Additional data should be collected to support normal range calculations at all sites.
<b>Detailed Review Comment</b>	<p>As noted in Table 2-8, improvements have been made over the years to analyze water quality data using sufficiently sensitive detection limits. Detection limits were notably improved in 2017 and 2018 in comparison to those in 2010-2015. Use of improved detection limits will help provide a more accurate characterization of the normal range of several key parameters. Key parameters that have notably improved detection limits in 2017 and 2018 as compared to earlier years include dissolved phosphorus, aluminum, cadmium (improvements from 2015 onward), mercury (also improved from 2015 onward), nickel, selenium, and silver.</p> <p>The baseline characterization of Goose Lake and the Reference Lake in the open water season has benefited from these improved detection limits, but Propellor Lake was not sampled in either 2017 or 2018.</p> <p>We also note that only one year of data has been collected within the Goose Lake Southeast Basin under ice; this is insufficient to provide a characterization of normal range in this area.</p>
<b>Recommendation/Request</b>	Sabina should begin implementing the water quality components of the AEMP to bolster the baseline dataset



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	and improve the calculation of normal range at all sites. At the least, Sabina should implement the water quality components of the AEMP to collect at least one additional year of baseline data at all sites both under ice and in the open water season using the more sensitive detection limits from 2017 and 2018.
<b>Importance</b>	Medium

## KIA-ABSR-02

<b>Review Comment Number</b>	KIA-ABSR-02
<b>Subject/Topic</b>	Clarify treatment of non-detects
<b>References</b>	Section 2.3.3.5 Compilation and Review of Baseline Dataset
<b>Summary</b>	Additional clarity is required regarding the treatment of censored water quality data.
<b>Detailed Review Comment</b>	Sabina notes that “water quality results for parameters analyzed using multiple DLs were screened and those associated with higher DLs were highlighted and not included in the compiled baseline dataset, with the exception of stations where only high DLs data were available”. Exclusion of high DL censored data provides additional rationale as to why more baseline data using improved DLs is required (see KIA-TC1). However, it does not clarify how Sabina has treated censored water quality data used in the calculation of summary statistics.
<b>Recommendation/Request</b>	Please clarify how Sabina will treat censored data used in the calculation of summary statistics to support normal range calculations as well as for future BACI statistical analysis.
<b>Importance</b>	Medium

Thank you

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Senior Hope Bay Project Officer



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Kitikmeot Inuit Association, Department of Lands and Environment

Cc Geoff Clark, Director, KIA, Department of Lands and Environment