



Richard Dwyer,
Manager of Licensing
Nunavut Water Board
PO Box 119
Gjoa Haven, NU X0B 1J0

August 08, 2019

Re: Sabina Gold & Silver Corp. Type A Water Licence 2AM-BRP1831 request for change to Schedule I

Dear Mr. Dwyer,

Sabina Gold & Silver Corp. (Sabina or Company) is submitting this request for change to Schedule I of our Type A Water Licence (2AM-BRP1831). As directed in the Nunavut Water Board Decision (September 2018), Sabina is providing this request to the NWB in writing with justification of the requested change. In addition, Sabina has included with the request, an Addendum (June 2019) to the current approved Water Management Plan (October 2017) which captures the proposed change including additional mitigation strategies proposed for greywater handling at the Marine Laydown Area.

Sabina considers the proposed change to monitoring as “manifestly insignificant” and therefore does not require submission to NPC and NIRB. The proposed change does not require modification and/or amendment of the Approved Type A Water Licence. The requested change will be undertaken in accordance with general monitoring requirements and approved Water Management Plan for the approved mine site. Further, Sabina notes no changes are required to the NIRB Project Certificate No. 007 and/or NIRB Monitoring or reporting requirements.

I trust the above and attached information meets the NWB requirements for a request for changes to Schedule I of our Type A Water Licence. If you have any questions regarding this application, please call me at (604) 998-4175.

Regards,

Merle Keefe

Manager, Environmental Permitting
Sabina Gold & Silver Corp.
Office: (604) 998-4190
Mobile: (604) 240-6619

Attachments: 1 - Golder Technical Memorandum
2 – Addendum Update to WMP (June 2019)

TECHNICAL MEMORANDUM**DATE** 18 July 2019**Project No.** 18114181**TO** Merle Keefe, Manager, Environment & Sustainability
Sabina Gold & Silver Corp.**CC** Matthew Pickard, Dan Walker, Jen Range**FROM** Dionne Filiatrault, Project Manager**EMAIL** dionne_filiatrault@golder.com**WATER LICENCE 2AM-BRP1831 - Change Request for Schedule I****1.0 SCOPE AND PURPOSE**

Sabina is requesting changes to Schedule I of the Type A Water Licence 2AM-BRP-1831 (Licence). Upon review of Sabina's Type A Water Licence, Sabina noticed the Effluent quality limits defined in Section 1.1 (originally proposed by Sabina during the regulatory review process) appear to have been taken prescriptively from the approved Mary River Type A Water Licence. The associated general monitoring requirements (i.e. description and frequency) of Monitoring Station BRP-42 needs to be changed to accurately reflect receiving environment guidelines. Sabina proposes to change the description and frequency requirements provided in Schedule I. Sabina herein provides background related to current Licence requirements and proposed change, authority to request a change, as well as justification for the request. In addition, Sabina's includes a self-assessment in relation to the Nunavut Planning Commission (NPC) and Nunavut Impact Review Board (NIRB) guidance related to self-assessment of the significance of the proposed modifications.

1.1 Background

The current Type A Water Licence 2AM-BRP1831 (Licence) issued by the Nunavut Water Board (NWB) on November 6, 2019 requires "Greywater", defined as *the component of effluent produced from domestic use (i.e. washing, bathing, food preparation and laundering), but excluding sewage*, be directed to an oil and grease separator prior to discharge to the environment. The greywater discharge at the MLA in accordance with Part F, Item 6 of the Licence is to be discharged "...onto land, at Monitoring Program Station BRP-42 (or any replacement Monitoring Program Station as described in an update to Schedule I), [and] shall not exceed the following Effluent quality limits:"

Parameter	Maximum Allowable Concentration (mg/L)
BOD ₅	100
Total Suspended Solids (TSS)	120.0
Fecal Coliform (CFU/100 mL)	10,000
Total Oil and Grease	No Visible Sheen
pH	Between 6.0 and 9.5

Schedule I, Table 2 of Sabina's Type A water licence further defines the monitoring program associated with General Monitoring Station BRP-42 as:

Monitoring Program Station	Monitory Type	Description	Mine Phase	Group Code ¹	Frequency
BRP-42	Regulated Monitoring ²	MLA Greywater (discharge point for treated greywater onto land)	Construction to Closure	A, F	Prior to discharge or transfer of water

1. Schedule I – Table 1 defines monitoring groups A to J and provides a descriptor and associated parameters to be monitored. Specifically, Group Code A represents field chemistry with monitoring for pH, specific conductivity and temperature, and Group Code F represents Sewage with monitoring for Biochemical Oxygen Demand (5-day), TSS, Fecal Coliform, ammonia, phosphorus, Oil and Grease, pH.

2. Regulated Monitoring is defined in Section 10 of Sabina's approved Water Management Plan (October 2017) as monitoring that is to be set by legislation or authorization requiring specific discharge/effluent criteria to be met for compliance.

1.2 Requesting a Change to Schedule I

The NWB noted in its Decision (September 2018) that Schedules provide *instructive detail to the terms and conditions appearing in more general terms in the main body of the Licence []. If the Board subsequently determines that an item in any of the schedules requires revision in order to better reflect the intent and objectives of the Licence, the Board may at its discretion and upon consulting and providing written notice to the Licensee and intervening parties, revise the Schedule. Unless the Board directs otherwise, such revision may not necessarily be considered as an "amendment" to the licence.* (Refer to Part B, Item 19 of the Licence)

Based on this decision, the NWB provided flexibility to implement changes to the Schedules of a Water Licence in Part I, Item 19 of the Licence which states:

As noted in Part B, Item 19, changes to the Schedules, including Schedule I, which provides details of the Monitoring Program, may, at the Board's discretion, be considered without requiring an Amendment to the Licence. However, the Board must approve any changes to the Monitoring Program, as outlined in Part I and Schedule I; any request for changes to the Monitoring Program should be submitted to the NWB in writing, and should include justification for the change.

2.0 JUSTIFICATION FOR REQUESTED CHANGE

Sabina is requesting changes to Schedule I of the Type A Water Licence 2AM-BRP-1831. In accordance with Part I, Item 19, Sabina is providing the following justification of the requested change, in writing.

Upon review of Sabina's Type A Water Licence, Sabina noticed the Effluent quality limits defined in Section 1.1 (originally proposed by Sabina during the regulatory review process) appear to have been taken prescriptively from the approved Mary River Type A Water Licence. However, in the case of Mary River, the associated terms and conditions of Water Licence 2AM-MRY (Part F, Item 19) was for effluent from Sewage Treatment Facilities, and includes consideration of Polishing Waste Stabilization Ponds (PWSP) and specifies the effluent quality limit be met where it enters a polishing pond, directly into the ocean or to ditches flowing into the ocean.

Sabina reconfirms that under the current approved Water Management Plan (October 2017), Section 7.4.3.2, Marine Laydown Area Sewage Management:

There will be no direct discharge of treated sewage effluent or camp greywater to the marine environment. The MLA camp will employ Pacto or incinerating toilets for all Project phases to avoid the need for a STP [sewage treatment plant].

Greywater from domestic use will be pumped through an oil and grease separator prior to discharge to the tundra. It will be discharged through a designated pipeline to a relatively flat, non-channelized area on the tundra north of the Laydown Area (Figure A-09), and will ultimately flow into Bathurst Inlet. Water management at the MLA will consist of the following:

- *Greywater will be discharged in an area of low slope to minimize velocities, encourage sheet flow, and minimize channelization.*
- *The discharge will be directed towards gravel beds or rock to reduce water velocities as appropriate.*
- *To maximize attenuation, the expected flow path to the nearest receiving environment (Bathurst Inlet) will be greater than 1.5 km. This is due to the gently sloping topography extending to the west and north of the discharge location.*

Greywater will meet the ocean disposal criteria identified as per Table 7.5-. [sic]

Sabina additionally clarifies that greywater discharge will occur discontinuously, with discharge occurring on an as-needed basis (e.g. transfer pumping occurring for a few minutes every few hours or days) during camp operation.

Sabina, and subsequently the NWB in the Licence, has unintendedly misapplied and imposed more stringent requirements for regulating the effluent discharge than what is required to protect the marine receiving environment at the Project, and this potentially has significant cost implications to the Project.

Sabina suggests that while effluent is discharged to land, the overland flow path to the nearest marine receiving environment will allow for continued treatment (i.e., increase retention time, settling of solids filtration and potential wetland treatment) of effluent prior to entering the marine receiving environment.

Based on Guidelines for the Discharge of Treated Municipal Wastewater in the Northwest Territories (NWTWB 1992) (Guideline) adopted by the NWB, the effluent criteria for BOD and TSS in the marine “receiving environment” under mixed conditions for a bay or fjord, assuming 150 to 600 litres per capita per day, are 120 mg/L and 180 mg/L, respectively. The Guideline indicates the application of the criteria be at the marine environment and not on land.

For the planned greywater discharge at the MLA Sabina believes that compliance with the NWTWB (1992) criteria should be more appropriately monitored at the point of entry into marine receiving environment rather than the upslope discharge point to land. Sabina also suggests that a monthly sampling frequency during camp operation is more appropriate and in alignment with other Type A water licenses, rather than on each transfer (which could occur daily or more frequently). Sabina therefore proposes the “Description” and “Frequency” for Monitoring Station BRP-42 be revised to the following:

Monitoring Program Station	Monitory Type	Description	Mine Phase	Group Code ¹	Frequency
BRP-42	Regulated Monitoring	MLA Greywater (discharge point for treated greywater onto land) (representative drainage at point of entry to the marine receiving environment)	Construction to Closure	A, F	Prior to discharge transfer of water Monthly when discharging

The above regulatory path forward would be consistent with Sabina's EMPP and is supported by the measures proposed to mitigate impacts through the application of best management practices and adaptive management strategies. Additionally, Sabina has prepared a Water Management Plan Addendum (July 2019) to the current approved Water Management Plan (October 2017) which addresses the proposed change including additional mitigation strategies proposed for MLA greywater handling, consistent with requirements of Part B, Item 16 of the Licence.

3.0 NPC AND NIRB CONSIDERATION

On April 6, 2018 the Nunavut Impact Review Board (NIRB) provided *NIRB Guidance: Approached to Assessment of Proposed Amendments to Approved Projects*.

Sabina considers the proposed change to monitoring described herein as “manifestly insignificant” and therefore does not require submission to NPC and NIRB. The proposed change does not require modification and/or amendment of the Approved Type A Water Licence. The requested change will be undertaken in accordance with general monitoring requirements and the approved Water Management Plan for the approved mine site. Further Sabina notes no changes are required to the NIRB Project Certificate No. 007 and/or NIRB Monitoring or reporting requirements.

Original signed

Dionne Filiatrault
Project Manager

DF/DW/jr

Original signed

Dan Walker
Project Director

[https://golderassociates.sharepoint.com/sites/101666/technical work/1200_regulatory_compliance/01_schedule i - greywater sampling change/190718 2ambrp-1831 attachment 1 _revision to schedule i_tech memo_kv_drw.docx](https://golderassociates.sharepoint.com/sites/101666/technical%20work/1200_regulatory_compliance/01_schedule%20i-greywater%20sampling%20change/190718%20ambrp-1831%20attachment%201_revision%20to%20schedule%20i_tech%20memo_kv_drw.docx)

WMP Addendum (August 2019) re: MLA Greywater Discharge

Sabina has requested changes to Schedule I of Water Licence 2AM-BRP1831 related to the sampling location and sampling frequency of the Marine Laydown Area (MLA) greywater effluent discharge. The details of and reasons for this request are outlined in Sabina's August 8th 2019 letter to the Nunavut Water Board titled *Sabina Gold & Silver Corp. Type A Water Licence 2AM-BRP1831 request for revision of Schedule I* to which this Addendum is attached.

This Water Management Plan (WMP) Addendum identifies the changes necessary to align to Sabina's WMP (Oct 2017) with the revisions to Schedule I of Water Licence 2AM-BRP1831, should they be adopted. The specific WMP corrigenda are listed in Table 1 below and include additional greywater quality management and mitigation measures. This Addendum will come into effect on revision of Schedule I. These changes will be directly incorporated into the WMP on next revision, which is anticipated to follow Sabina's update of the Water and Load Balance model.

Table 1. List of WMP Corrigenda effective on revision of Water Licence 2AM-BRP1831 Schedule I

Reference	Original Text	Revised Text		
7.4.3.2, last sentence	Greywater will meet the ocean disposal criteria identified in Error! Reference source not found..	Greywater will be sampled prior to entry into the ocean at a representative drainage and will meet the discharge criteria identified in Schedule I of Water Licence 2AM-BRP1831.		
9.9	(new section to be added)	9.9 Marine Laydown Area Greywater Mitigation The sources of greywater at the MLA are kitchen, washrooms, urinals, and washing machines. Pacto waterless toilets are used on-site, and hence no blackwater is generated from the toilets. Urinals are usually considered to be part of the blackwater but are included as part of the greywater at the Site. The following best practices will be implemented at the MLA to reduce the concentration of wastewater generated from the kitchen and to reduce nutrient load to a wastewater treatment system or to the environment: <ul style="list-style-type: none">● Thoroughly scrape all cooking utensils to remove food waste, butter, oil and sauces prior to washing with water● Avoid discharging solid and liquid food including syrup, soups, and oil down the drain● Install and maintain solid collection tray and grease trap in the kitchen sink● Reduce the usage of cleaning agents, such as dish detergent and degreasers● Take measures to reduce the chances of food entering to wastewater system● Avoid washing dishes with very hot water as it reduces the efficiency of the grease trap● Consider having the dishwasher bypass the grease trap if it operates at higher temperature		
Table 12-1	(new row to be added to table)	<table><tr><td>MLA greywater non-compliance</td><td>Investigate and implement additional treatment measures that may include thermal evaporator treatment system, membrane bioreactor or other treatment measures.</td></tr></table>	MLA greywater non-compliance	Investigate and implement additional treatment measures that may include thermal evaporator treatment system, membrane bioreactor or other treatment measures.
MLA greywater non-compliance	Investigate and implement additional treatment measures that may include thermal evaporator treatment system, membrane bioreactor or other treatment measures.			
Appendix B: Figure B-02	(Figure B-02 to be replaced)	(See attached revised Figure B-02)		
Appendix B: Table B-02, Row titled “BRP-42”	(Table B-02 Row “BRP-42” to be replaced)	(See attached revised Table B-02)		

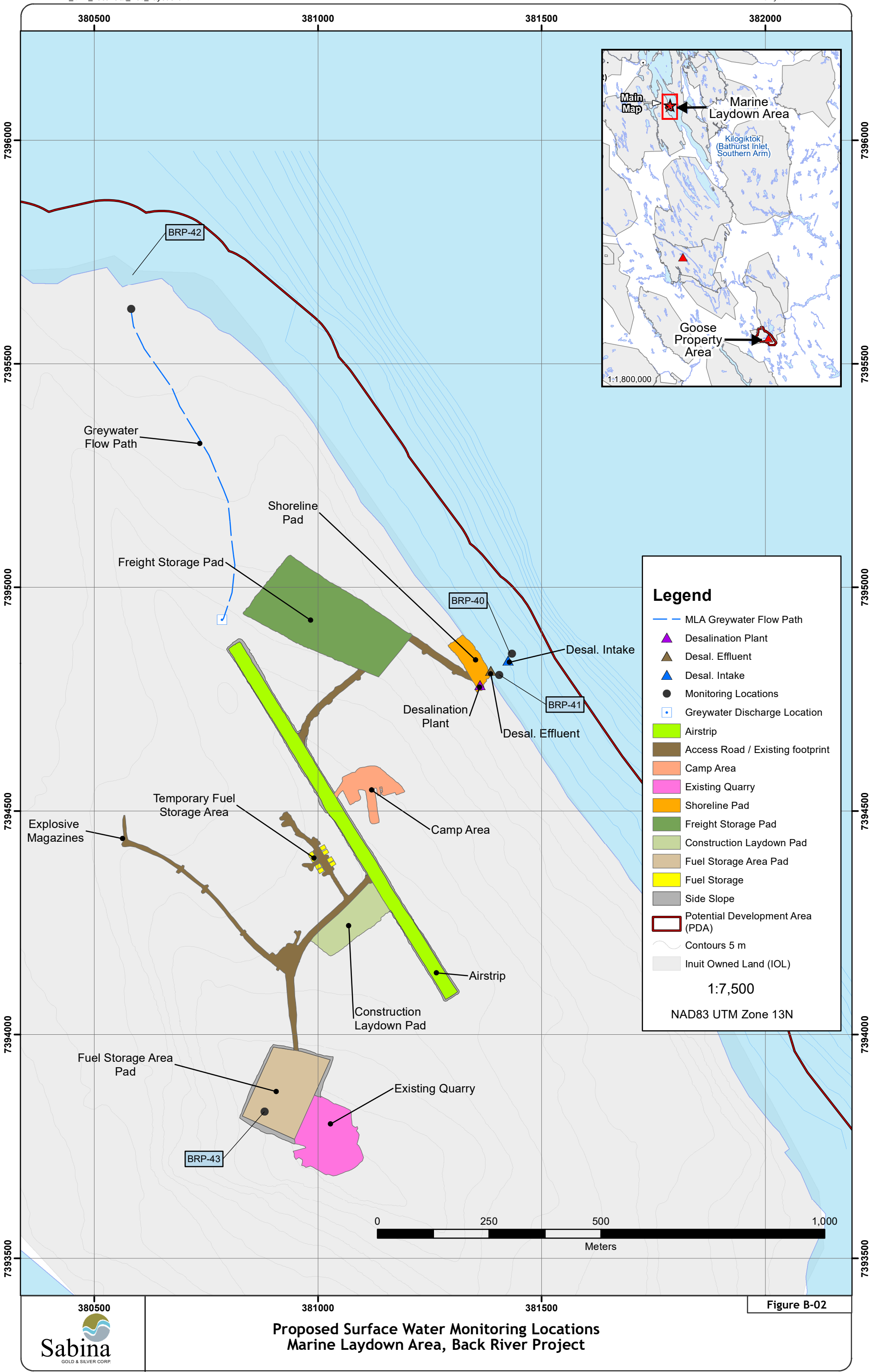


Table B-02. Proposed Water Quality Monitoring for the Project during Construction, Operations, and Closure in Marine Laydown Area

Monitoring Location Number	Monitoring Type	Description	Purpose	Mine Phase	Parameter Group Code ⁴	Frequency
BRP-G-01 to BRP-G-TBD	Regulated Monitoring ¹	General Site Runoff including Quarries - both Goose and MLA	Applies anywhere on the site; monitoring for erosion and sedimentation	Construction	C	Weekly if flow enters a waterbody
BRP-40	General Monitoring	Bathurst Inlet Intake (pre-treatment)	Source intake water quality for potable and industrial use	Construction to Closure	A, D	See note ⁵
					B	See note ⁵
BRP-41	General Monitoring ¹	Bathurst Inlet Discharge (post treatment)	Test quality at final point of control	Construction to Closure	A, J	See note ⁵
BRP-42	Regulated Monitoring ²	MLA Greywater (representative location at the marine receiving environment)	Confirm quality of greywater at the marine receiving environment	Construction to Closure	A, F	Monthly
BRP-43	Regulated Monitoring ³	MLA Fuel Tank Farm	Test quality of runoff water in the Fuel Tank Farm containment area	Construction to closure	A, E	Prior to discharge or transfer of water
BRP-44	Regulated Monitoring ³	MLA Landfarm	Test quality of runoff water in the Landfarm containment area	Construction to closure	A, E	Prior to discharge or transfer of water
BRP-45	Regulated Monitoring ³	MLA Hazardous Waste Mgmt Area	Test quality of runoff water in the Hazardous Waste Management containment area	Construction to closure	A, E	Prior to discharge or transfer of water

Notes BRP = Back River Project; MLA = Marine Laydown Area

1) Marine Discharge Criteria not required for the Water Licence

2) See Table 7.5-4 (Treated Sewage Effluent Criteria) in the Water Management Plan

3) See Table 7.5-3 (Discharge to Land Criteria) in the Water Management Plan

4) See Table B-03 for parameters in each monitoring group

5) Monitoring parameters and frequency at the discretion of Sabina as results from the verification stations are used for operational and management purpose