



Freshet Monitoring Program (May 2, 2021)

The Freshet Monitoring Program is conducted annually to characterize the water quality of several site tributaries and drainages during the high flow period of freshet. The monitoring program begins each year upon the start of flows at the monitoring locations, which typically begins around mid-May depending on weather conditions each year. The Project team forecasts the timing of freshet and initiates the monitoring program based on site knowledge from previous freshet periods, a review of meteorological and snow data, and site inspections that are conducted on an increased frequency in advance of earliest freshet start dates from previous years.

Prior to being authorized to conduct inspections, freshet monitoring and water sampling, employees tasked with implementing the freshet monitoring program complete a thorough training program during their employee orientation training. Training includes reading and understanding all relevant practices and procedures. Training also involves participating in presentations and performing in-field training with subject matter experts.

1. Mine Site Freshet Monitoring Program

The Mine Site monitoring program is conducted at four (4) monitoring locations (CLSP-OUT, CLT-OUT, SDLT-OUT, LDFG-OUT) that are monitored during freshet (typically May 15 to June 30) for the following parameters in accordance with Baffinland's Type "A" Water Licence – 2AM-MRY1325:

- pH
- Total suspended solids (TSS)
- Total dissolved solids (TDS)
- Turbidity

Water licence compliance limits for the freshet water quality parameters are presented in Table 1.

Table 1: Effluent Quality Discharge Limits for Contact Water during the Operations Phase and the Early Revenue Phase of the Project (Type "A" Water Licence – 2AM-MRY1325 – Table 11)

Parameter	Maximum Average Concentration	Maximum Concentration of any Grab Sample
TSS	15 mg/L	30 mg/L
Oil and Grease	No Visible Sheen	No Visible Sheen
pH	Between 6.0 and 9.5	Between 6.0 and 9.5

Mine Site Freshet Sampling Locations

There are four (4) outfalls that are monitored and sampled throughout freshet including CLSP-OUT and CLT-OUT that drain to Camp Lake and SDLT-OUT and LDFG-OUT that drain to Sheardown Lake. Details for the four locations are presented in Table 2.

Table 2: Freshet Monitoring Locations for the Camp Lake and Sheardown Lake Outfalls

Sample Location	Description	Location (UTM; NAD83 Zone 17W)	
		Easting	Northing
CLSP-OUT	Camp Lake Sedimentation Ponds outlet	557805	7914795
CLT-OUT	Camp Lake Tributary 1 (100 m upstream of Camp Lake outfall)	557686	7914947
SDLT-OUT	Sheardown Lake Tributary 1 (100 m upstream of Sheardown Lake outfall)	560332	7913519
LDFG-OUT	Sheardown Lake Landfill gate tributary (40 m Upstream of Sheardown Lake outfall)	561018	7912968

2. Milne Port Freshet Monitoring Program

The Milne Port monitoring locations, as detailed in Table 4, are monitored for the following parameters during freshet (typically May 20 to June 30):

- pH
- Total suspended solids (TSS)
- Total dissolved solids (TDS)
- Turbidity

Water quality at the Milne Port monitoring locations must adhere to the concentrations presented in Table 3.

Table 3: Effluent Quality Discharge Limits for Contact Water during the Operations Phase and the Early Revenue Phase of the Project (Type “A” Water Licence – 2AM-MRY1325 – Table 11)

Parameter	Maximum Average Concentration	Maximum Concentration of any Grab Sample
TSS	15 mg/L	30 mg/L
Oil and Grease	No Visible Sheen	No Visible Sheen
pH	Between 6.0 and 9.5	Between 6.0 and 9.5

Monitoring of Surveillance Network Program (SNP) sites is required daily during freshet and pond and berm monitoring is required weekly. Details for the monitoring locations are presented in Table 4.

Table 4: Freshet Monitoring Locations for Milne Port

Sample Location	Description	Location (UTM; NAD83 Zone 17W)	
		Easting	Northing
MP-C-H	Sealift Ramp, Upstream of culvert	504113	7976509
MP-C-J	Southwest of LP3 pad	502940	7974760
MP-C-B	West of Ore Pad	503187	7975602
MP-C-K	West of LP3 laydown	502982	7975333

3. Mine Site and Milne Port Freshet Sampling Procedure

The following monitoring steps are to be taken at the Mine Site and Milne Port during freshet as presented in Figure 1:

1. When water begins flowing at the outfall locations, samples will be collected at these locations daily for pH, TSS, TDS and Turbidity.
2. Field readings will be recorded at every sampling event after the sample has been collected.
3. The daily frequency will continue until seven (7) days of consecutive compliant results are received from the laboratory.
4. Once a sample location has seven (7) days of consecutive compliant results, the frequency will be reduced to a weekly sample event, where the week begins on Sunday.
5. If the sample location has a non-compliant result at any point, sampling will return to the daily frequency.

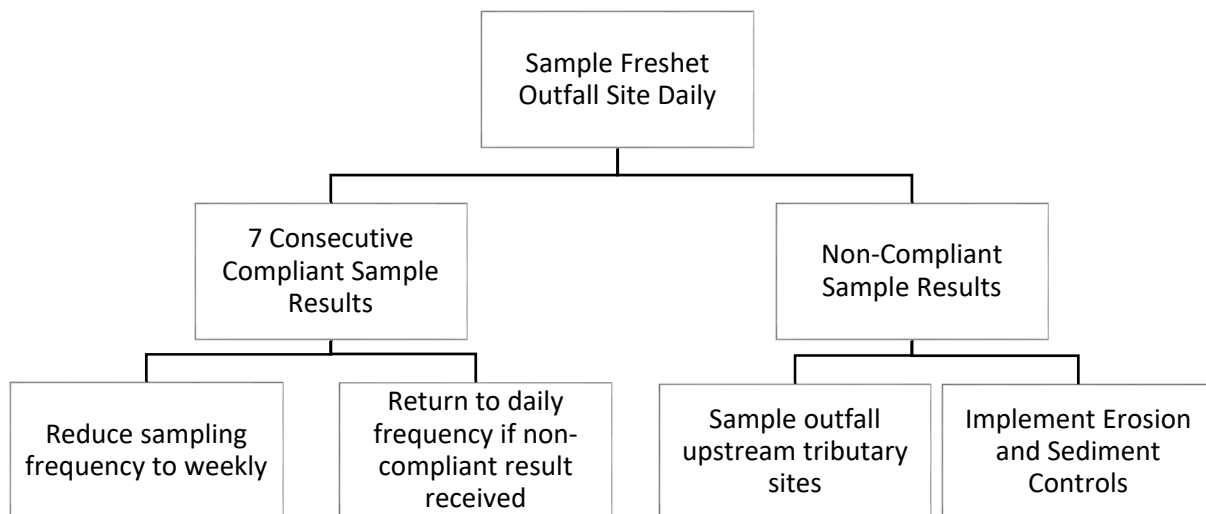


Figure 1: Sampling Flowchart

If a non-compliant result is received for an outfall site:

- ~~0.~~1. Continue to sample on a daily frequency.
- ~~1.~~2. Sample the outfall tributary locations upstream of the outfall site as presented in Table 5. Upstream locations will be assessed based on current flow conditions.
- ~~2.~~3. Implement erosion and sediment controls as mitigation measures to reduce sediment loading to the receiving environment. Lab results of the tributary locations and visual observations will assist in identifying the source, and the location and type of ESC required.
- ~~3.~~4. Sample locations on a tributary in a downstream to upstream direction, starting at the outfall location.



Table 5: Tributary Sample Locations - Camp Lake and Sheardown Lake

Outfall	Sample Location	Description	Location (UTM; NAD83 Zone 17W)	
			Easting	Northing
CLT-OUT	BG-01-DS	Downstream of BG-01 culvert in KM100 dip	557893	7914937
	BG-01-US	Upstream of BG-01 culvert in KM100 dip	558051	7914941
SDLT-OUT	CV-186-DS	Downstream of CV-186 culvert in KM103 S-Bend	560642	7913497
	CV-186-US	Upstream of CV-186 culvert in KM103 S-Bend	560757	7913503
	CV-187-US	Upstream of CV-187 culvert at KM103; MS-C-E	560980	7913386
LDFG-OUT	LDFG-MID	Downstream of the Landfill gate culvert	561097	7912884
	LDFG-US	Upstream of the Landfill gate culvert	561298	7912737