July 19, 2017

Sean Joseph
Senior Technical Advisor, NWB
P.O. Box 119
Gjoa Haven, NU X0B 1J0

RE: Modification Request - Milne Port Accommodations Camp Upgrade
Water Licence 2AM-MRY1325 – Amend. No. 1

In accordance with Part G of Baffinland Iron Mines Corporation's (Baffinland) Type "A" Water Licence 2AM-MRY1325 Amendment No.1 (Water Licence), the purpose of this letter is to request approval from the Nunavut Water Board (NWB) for a planned modification at the Mary River Site involving the addition of a new structure that includes a proposed new camp facility at Milne Port, water treatment systems, camp pad and the associated drainage diversion system. The details of the modification are provided below and in the attached drawings and construction methodologies.

This Modification Request supersedes the Modification request that Baffinland submitted to the NWB on June 23, 2017 related to the Milne Port Accommodations Camp Pad and Proposed Surface Water Diversion System. At the request of the NWB, Baffinland has combined the June 23rd Modification Request with the Modification request for the new camp facility and associated water treatment systems. In the event that there is a significant delay in the approval of the combined Modification Request, Baffinland requests direction from the NWB to allow the construction of the proposed Water Diversion System in order to minimize potential future impacts and to allow Baffinland to comply with the Inspector's Direction from Indigenous and Northern Affairs Canada (INAC) received on June 9, 2017.

Background

On June 9, 2017, Baffinland Iron Mines Corporation (Baffinland) received an Inspector's Direction from Indigenous and Northern Affairs Canada (INAC) following an inspection conducted by INAC of the Mary River Project from May 29 to June 1, 2017. The Inspector's Direction documented a stop work order issued to Baffinland for an accommodations camp pad that was in the process of being constructed during the time of the inspection at Milne Port in a location that impeded the flow of an intermittent drainage path(s). On June 14, 2017, Baffinland responded to the Inspector's Direction notifying INAC and other agencies of Baffinland's planned corrective actions to remedy the situation and intention to

submit proper documentation, as required by Part D, Item 2 and Part G of Baffinland's Water Licence, to the Nunavut Water Board (NWB) by June 16, 2017.

On June 23, 2017, in accordance with Part D, Item 2 and Part G of the Water Licence, Baffinland submitted a Request for Modification for the proposed drainage diversion system required to direct surface water from the impeded drainage channel around the pad. The Request for Modification noted that Baffinland was not seeking approval for the camp infrastructure intended for the pad in the request and that a subsequent Request for Modification would be submitted for the camp infrastructure at a later date. However, upon receiving the Request for Modification sent on June 23, the NWB requested that Baffinland combine both requests into one Request for Modification submission.

Modification Request

In operating the Mary River Project since 2013, Baffinland has determined that more equipment is required to reach full production (4.2 Mt per annum). The additional equipment will require additional operators and in turn more maintenance and support personnel than originally expected during the project approvals. Moreover, Baffinland has observed that the work at Milne Port, and therefore the required number of beds, is very seasonal, peaking during the spring and open water season (June to October). Key port activities during the spring and open water season include refurbishment and maintenance on the ship loader, loading of the ore carriers, off-loading of freight and fuel vessels and all of the associated work for port operations, facility operations and maintenance, procurement and warehousing, H&S, and environmental monitoring.

In addition, Baffinland is experiencing high turnover rates with the site workforce. Several returning contractors are refusing to send their employees to site due to the current accommodation conditions. During 2016, approximately 50% of personnel who resigned cited poor accommodations as a primary reason for their resignation.

To address the accommodations issues described above, a new combination hardwall and softwall accommodations camp facility is proposed to upgrade the existing Milne Port Weatherhaven softwall camp (Matrix). The new camp features 380 softwall single rooms connected to a hardwall core configuration consisting of the camp dining area, kitchen and food preparation areas. The camp layout and associated facilities, including a dedicated potable water treatment plant and sewage treatment

plant, are shown in Attachment 5. Upon completion of the new camp, the Matrix camp will be scheduled for decommissioning and reclamation.

Table 1 outlines the proposed increase in available beds at Milne Port and the Milne Port camps that will remain occupied following the construction of the new camp and associated facilities.

Table 1:Proposed Bed Space at Milne Port

Time Period	Milne Port Camps	Available Beds	Active Beds
Current (Summer 2017)	Port Site Complex	120	120
	Weatherhaven (Matrix)	153	153
	Shanco (Steensby) Camp	54	273
Total		**327**	**327**
Post Upgrade	Port Site Complex	120	120
	Weatherhaven (Matrix)	153	0
	Shanco (Steensby) Camp	54	54
	New Camp	380	380
Total		**707**	**554**

As outlined in Table 3 of the Water Licence, the domestic water use limit at Milne Port is 300 cubic metres per day (300 m^3/day). Baffinland anticipates that domestic water use at Milne Port will continue to remain significantly below the permitted 300 m^3/day limit following the construction and operation of the new camp and that no increase to the Water Licence Terms and Conditions is required.

During the last two years of operation, daily domestic water consumption at both Milne Port and the Mary River Mine Site have been on average 200 L per person per day. With an expected active bed capacity of 554 beds at peak summer capacity, the daily water use at Milne Port is expected to be 111 m^3/day which is well below the Water License permitted volume of 300 m^3/day for domestic use.

Details of the new camp, including the camp pad and proposed drainage diversion system, are provided in the subsections below and in the attached documentation, including maps, engineering documentation, construction methodologies and environmental mitigation measures to be implemented during construction.

The requested modification will occur within the Project's Development Area (PDA) and is consistent with approved activities outlined in the Project Certificate (Project Certificate 005 – Amend. 1) issued for the Mary River Project by the Nunavut Impact Review Board (NIRB).

The requested modification is described below.

a. Description of Facilitiies and/or Works to be Constructed

Baffinland has developed a new camp pad at Milne Port for the proposed new camp and associated facilities. The new accommodations camp pad is approximately 280 m x 120 m in size. The partially constructed camp pad is located south of the existing Milne Port Ore Stockpile Pad and west of the Tote Road (near Km 1). The proposed surface water diversion system will follow along the pad's southern perimeter and direct flow from the impeded drainage path back to the natural drainages west of the camp pad, as shown in Attachment 1 and 2.

Attachment 1 shows the constructed camp pad in relation to the Milne Port general layout. Attachment 2 presents the design details for the camp pad and the associated drainage diversion system design, including issued for construction (IFC) drawings. As shown in Attachment 2, the sub-grade of the accommodations camp pad was and will continue to be constructed using Type 12 (Run of Quarry <200mm) coarse material and capped with Type 5 (<32mm crushed) crushed granular surface material. Attachment 3 details the construction methodology for the proposed drainage diversion system. The exact dimensions of the proposed drainage diversion system will be field fit during construction based on field observations of the impeded drainages. The completed pad and drainage diversion system will be documented in as-built drawings following construction.

For the new camp, Attachment 4 presents the updated water management process flow diagram for Milne Port, incorporating the flows from the new camp and associated facilities. Attachment 5 shows the proposed site plan and vendor drawings for the new camp and associated facilities. Attachment 6 details the construction methodology for the new camp and

associated facilities and Attachment 7 presents the Vendor Process Guarantees for the new camp's sewage treatment plants.

b. Proposed Location of the Structure

As shown in Attachment 1, the new camp, pad and associated infrastructure will be located within the Milne Port PDA, south of the existing Milne Port Ore Stockpile Pad and west of the Tote Road (near Km 1).

c. Identification of any Potential Impacts to the Receiving Environment

The impeded drainages are not classified as fish habitat and therefore the proposed diversion system will not cause harmful alteration, disruption or destruction of fish habitat. The main concern Baffinland foresees is sedimentation from the construction of the proposed diversion system. To prevent the release of sediment into the receiving environment during construction, Baffinland will employ a combination of sediment and erosion control measures (check dams, rip-rap, silt fences, etc.) to address sedimentation concerns, as outlined in Baffinland's Environmental Protection Plan (BAF-PH1-830-P16-0008 – Rev. 1) and Surface Water and Aquatic Ecosystems Management Plan (BAF-PH1-830-P16-0026 - Rev. 4).

The operation of the new camp will increase the number of people that can be housed at Milne Port and will increase the amount of associated waste water and waste generation from operations. The volume of waste water generated is less than the expected volume of water already approved under the current Water Licence and the vendor has provided a performance guarantee to ensure that the waste water meets the discharge criteria specified in the Water Licence. Regular sampling of waste water discharge will continue as required under the Water Licence and other permits. Waste generated by the upgraded facility will be managed under the existing Waste Management Plan for the site and will use the existing waste management facilities including the waste management building at Milne Port and the landfill located at the Mary River Mine site.

d. Monitoring

Environmental monitoring of construction activities will consist of water quality monitoring and periodic environmental inspections. Water quality monitoring will focus on runoff originating from the construction area and monitoring the potential impacts of the runoff on downstream water bodies. In the event that turbid runoff is observed originating from the construction area,

sedimentation mitigation measures will be installed and water quality monitoring locations will be established downstream of construction activities to assess the potential impacts on nearby water bodies. Water quality at monitoring locations will be compared to the water quality discharge criteria established under Baffinland's Water Licence.

In addition, periodic environmental inspections of the construction activities will be conducted by Baffinland's Environmental personnel in concert with the Contractor's Health, Safety and Environment Lead. Inspections will ensure Contractors are properly managing waste and hazardous materials and operating in accordance with Project's onsite procedures and management plans. Inspections will be documented by taking photos of any deficiencies and using Baffinland's existing environmental inspection forms. Deficiencies identified will be compiled and forwarded to the responsible Contractor to be corrected and addressed. Photos will also be taken to document the construction of the new camp and associated infrastructure.

e. Schedule for Construction

The construction of the proposed infrastructure and facilities is planned to start as soon as the Request for Modification approval has been received from the NWB with the intent of completing the construction by the water diversion system by the end of September 2017 prior to the ground freezing and the camp facility by the end November 2017.

f. Drawings of Engineered Structures

Hatch Ltd. (Hatch) was retained to design and provide issued-for-construction drawings for the camp pad and proposed surface water diversion system. The issued-for-construction (IFC) drawings are provided in Attachment 2 of this letter.

Horizon North Logistics (Horizon North) is the selected contractor for the construction and commissioning of the new camp and associated facilities. A site plan and vendor drawings for the new camp are provided by Horizon North in Attachment 5.

g. Proposed Sediment and Erosion Control Measures

Baffinland will employ a combination of sediment and erosion control measures (check dams, rip-rap, silt fences, etc.), as outlined in Baffinland's Environmental Protection Plan (BAF-PH1-830-P16-0008 – Rev. 1)and Surface Water and Aquatic Ecosystems Management Plan (BAF-PH1-830-P16-0026 - Rev. 4), to address and manage sedimentation concerns during construction. No

sediment or erosion control measures are expected to be required once construction of the diversion system has been completed.

We trust that this information meets the requirements for a Request for Modification under Part G of Baffinland's Water Licence and look forward to the NWB's response. Please do not hesitate to contact the undersigned or Andrew Vermeer should you have any questions or comments.

Regards,

Wayne McPhee,
Director Sustainable Development

Attachments:

Attachment 1: Milne Port Site Layout - 380 Man Camp
Attachment 2: Milne Port - Camp Pad Natural Stream Diversion – Hydrology & Hydraulic Calculations (H353004-2100-240-030-001, Rev. 0)
Attachment 3: Construction Methodology - Camp Pad Water Diversion System (H353004-40000-400-050-0001, Rev. 1)
Attachment 4: Water and Sewage Process Flow Diagram (H353004-40000-221-282-0001, Rev. 2)
Attachment 5: Camp Layout Drawing
Attachment 6: Construction Methodology – Milne Port Accommodation Facility (H353004-40000-400-050-0003, Rev. 0)
Attachment 7: Memo: Wastewater Treatment Technology - Vendor Process Guarantee

Cc: Stephen Williamson Bathory (Qikiqtani Inuit Association)
David Hohnstein (NWB)
Justin Hack, Jonathan Mesher, Sarah Forté, Karen Costello (INAC)
Todd Burlingame, Adam Grzegorczyk, Andrew Vermeer (Baffinland)

Attachment 1

Milne Port – Milne Port Site Layout - 380 Man Camp

SAVED: I:\1\02\00181\41\A\Acad\FIGS\B09_r0, 7/17/2017 3:17:23 PM , MDEMERS PRINTED: 7/17/2017 3:18:49 PM, Layout1, MDEMERS
XREF FILE(S): Contours-2.5m_Interval-Milne_to_Mine_Site-02-Oct_16_2008; MILNE SITE LAYOUT; X-B-SI~~MONI-LOCA-2015; X-N-TOPO-BASE-LAND-USE~~CLAS; C- TOPO - FEAT - MILNE - PORT - CAMP - PAD~ - SURV IMAGE FILE(S): GIS Baffinland Logo NEW AC CAMP MARKUPS - FROM CLIENT milne_inlet_wo3745_wv2_wv3_aug2016_tile01

7 976 000 N
7 975 800 N
7 975 600 N
7 975 400 N
7 975 200 N
7 975 000 N
7 974 800 N

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503 400 E
503 600 E
503 800 E
504 000 E

N

MP-01a
MP-01
CAMP INFRASTRUCTURE
ORIGINAL UTILITY BERM
ORE STOCKPILE PAD
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MILNE PORT WEATHERHAVEN CAMP
UTILITY BERM EXTENSION
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LAND FARM MP-04
MP-04
MP-04a
MP-C-B01
MP-C-B
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MAINTENANCE BUILDING
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ᐅᓴᖅᑕᕐᖃᓕᒥᑦ Q1 ᐱᓇᓴᓕᐊᑎᑕᐅᓴᖅ
APPROXIMATE EXTENT OF QUARRY Q1 DEVELOPMENT
MP-Q1-02
MP-Q1-01
ᐃᓱᒪᓕᕐᓂᖅ ᑕᒪᓐᓇᐅᑎᐃᓕᑦ ᐅᓴᐊᒥᑦᓯᐊᓂᖅ
ᓱᓕᓕᕐᓂᖅ ᑕᒪᓐᓇᐅᑎᐃᓕᑦ ᐃᓱᒪᓕᕐᓂᖅ
MOBILE REFUELING MODULE TEMPORARY CONTAINMENT BERM
NEW CAMP PAD SURVEY EXTENTS
NEW ACCOMODATION CAMP AND FACILITIES
ᐅᔨᓴᑦᑐᐃᓐ
BORROW PITS
ᐅᔨᒪᔨᐊᓕᖅ ᐊᑐᕐᓂᖅ (ᓄᑦᓴ ᑐᑭᓯᐊᖅᑎᑕᐅᓂᕐᓚᓗ)
TOTE ROAD(NEW ALIGNMENT)
ᐃᓱᒪᑭᑐᑐᓂᖅ ᐊᑐᕐᓂᖅ
TOTE ROAD (OLD ALIGNMENT)
ᐃᓕᓴᕐᓂᖅ 1
BORROW SOURCE NO.1
ᐊᕐᕕᑎᑎᑕᐅᕐᓴ ᑕᒪᓂᖅᓂᕐᓴ ᐃᑭᑎᐃᓴ ᐃᓕᓴᐅᕐᓂᖅ ᐃᓱᒪᓕᕐᓂᖅ
PERMITTED OPEN BURN PIT AREA

NOTES:

1. COORDINATE GRID IS UTM NAD83 ZONE 17N.
2. TOPOGRAPHY PROVIDED BY EAGLE MAPPING (2005).
3. PLAN/SECTION BASED ON INFORMATION PROVIDED BY HATCH, DATED (JAN 31,2014).
4. CONTOUR INTERVAL IS 2.5 METRES.
5. ALL SAMPLE ID'S SHOWN IN BRACKETS REPRESENT THE TYPE B WATER LICENCE(S) MONITORING POINTS. ALL OTHERS ARE MONITORING POINTS AS PER THE TYPE A WATER LICENCE (2AM-MRY1325).

ᖃᐅᔨᒪᔭᕐᓂᐊᓕᑦ:

1. ᓄᓇᕗᑦ ᑎᑎᕐᓯᒪᓂᖓ ᒪᓕᒐᓐᖏᑦ UTM NAD83 ZONE 17N.
2. ᓄᓇᕗᑦᓯᓕᕆᔨᑦ EAGLE MAPPING (2005).
3. ᐸᖏᔪᑎᖅᐅᐃᑎᒋᔭᐅᓕᖅ ᑐᓴᒪᔪᒃᓯᒪᓂᖅ ᑐᓴᐅᒪᔭᕐᑎᓂᖅ ᑐᓄᖅᐅᓯᒪᔪᖅ ᐄᕐᓯᒪᓕᖅ, ᐅᑦᓗᖏᓐᓂᑦ 9ᖃᓄᖅ 31, 2014).
4. ᑎᑎᕐᓯᒪᔪᖅ ᒥᑕ ᐊᕐᓂᓄᕐᓂᖅ ᐅᖓᓯᕐᑎᑎᕐᓄᑦ 2.5 ᒥᑕ
5. ᐃᓱᓴᓂᑦ ᖃᐅᔨᓴᕐᑎᓚᐃᑦ ᑕᓂᕐᓴᑎᑕᐅᔪᓂ ᐅᑦᔪᑕᖏᓐᓄᑦ ᐃᒪᖃᓴᐅᑦᑐᓂᖅ ᐃᒪᓕᓴᐅᑦᑐᓂᖅ B ᐃᒥᓚᓂᕐᒧᑦ ᐱᓚᓴᓕᐅᑎᑦ) ᖃᐅᔨᓴᕐᓂᕐᒧᑦ ᐱᓚᓴᓕ. ᐊᕐᓕᒫᓴᑦ ᖃᐅᔨᒪᓕᐊᕐᓂᐅᐅᕐᓂᑦ ᐱᓚᓴᓂᑦ ᐃᒪᓕᐅᑦᓗᓂᖅ ᖃᓄᐃᑦᑐᓂᖓ J ᐃᒥᓚᓂᕐᒧᑦ ᐱᓚᓴᓕᐅᑎ (2AM-MRY1325).

LEGEND:

- ᐃᒥᖅ WATER
- ᐊᑐᖅᑕᐅᓵᑲᐃᓕᓂᕐᓂᐊᖅᑐᓄᑦ ᐃᓂᓴᐅᔪᖅ (2013 ᐅᓄᑎᒍᓚ Q10C3001) BORROW AREAS (2013 UNDER Q10C3001)
- ᐅᔪᖅᑕᖃᓴᒥᑦ ᐃᓂᓴᒃ (ᐱᑕᖏᓂᐊᑐ ᐅᐊᓂ Q13C301) QUARRY AREA (EXISTING UNDER Q13C301)
- NEW CAMP PAD
- APPROXIMATE NEW CAMP FOOTPRINT
- ᓄᑖᖅ/ᑯᒪᓪᓗᖅ/ᑯᕙᐃᐅᔪᖅ RIVER/STREAM/DRAINAGE
- ᐊᖏᔪᑎ ROAD
- ᖃᖅᖃᓕᓂ ᐃᓄᐃᑦ ᑲᔪᓯᖏᓐᓄᑕ ᖏᓐᓴᓂᑦ ᓄᓇᐅᑦ ᑭᓇᐅᔭᓕᓂᐅᔭᓕᔪᓕᐊᑎᐅᓂᑦ ᐊᑐᖅᑐᐊᖅᑕᐅᓰᑦ ᑭᒃᓚᖓ QIA SURFACE COMMERCIAL LEASE IMPACT BOUNDARY
- DRAINAGE DIVERSION SYSTEM
- ᐃᓕᓴᕐᓂᑦ ᐱᓕᕆᔨᓄᐅᑎᑦ ᐃᓕᐅᑦ ᐱᐅᓂᓴᓂ ᐅᓱᖅᓴᓂ ᐅᓱᐊᓴᐃᓂᑦ ᐃᓂᓴᒃ WATER LICENCE WATER QUALITY MONITORING LOCATION
- ORIGINAL UTILITY BERM
- UTILITY BERM EXTENSION
- CULVERT

ᐊᖏᓂᖅ SCALE A 40 20 0 40 80 120 160 200 m

Baffinland

MARY RIVER PROJECT

MILNE PORT SITE LAYOUT
380 MAN CAMP

Knight Piésold CONSULTING

P/A NO. NB102-181/41
REF NO. NB17-00492

ATTACHMENT 1

REV 0

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	REVIEWED
0	17JUL'17	ISSUED WITH TRANSMITTAL	AV	MMD	RAC

Attachment 2

Milne Port - Camp Pad Natural Stream Diversion – Hydrology & Hydraulic Calculations

H353004-2100-240-030-001, Rev. 0

PROVIDED AS SEPARATE FILE

Attachment 3

Construction Methodology - Camp Pad Water Diversion System

H353004-40000-400-050-0001, Rev. 1

Plan

Construction Methodology - Camp Pad Water Diversion System

2017-06-16	1	Approved for Use	T Bruce	L Langlois	S Heiner	M Weaver
DATE	REV.	STATUS	PREPARED BY	CHECKED BY	APPROVED BY	APPROVED BY
						Employer

1. Overview

A diversion channel is required to divert a seasonal stream that runs through the Milne Port accommodations camp pad of which construction was ongoing during May 2017. The seasonal stream flows briefly in the spring freshet and during significant rain events. Due to the timing and criticality of this diversion, a sequential plan must be in place and followed to ensure impacts to the downstream receiving environment are minimized.

2. Design

The diversion which has been designed to pick up the flows, divert and discharge into the natural drainages west of the constructed accommodations camp pad, runs along the southern perimeter of the pad and has a cut throughout several hundred meters which reaches a depth of 1.0 meters at its deepest. This cut must be performed in order to maintain flow while eliminating any ponding water.

3. Construction Methodology

The accommodation camp pad has previously been constructed and remains in place. Although flows for the remainder of this year will only occur during any significant rain events, the diversion must be fully constructed as soon as possible in the event flows do occur.

The diversion shall be constructed starting at the downstream end and progressing to the upstream to eliminate the possibility of encountering flows during construction. The sequence of construction shall be as follows:

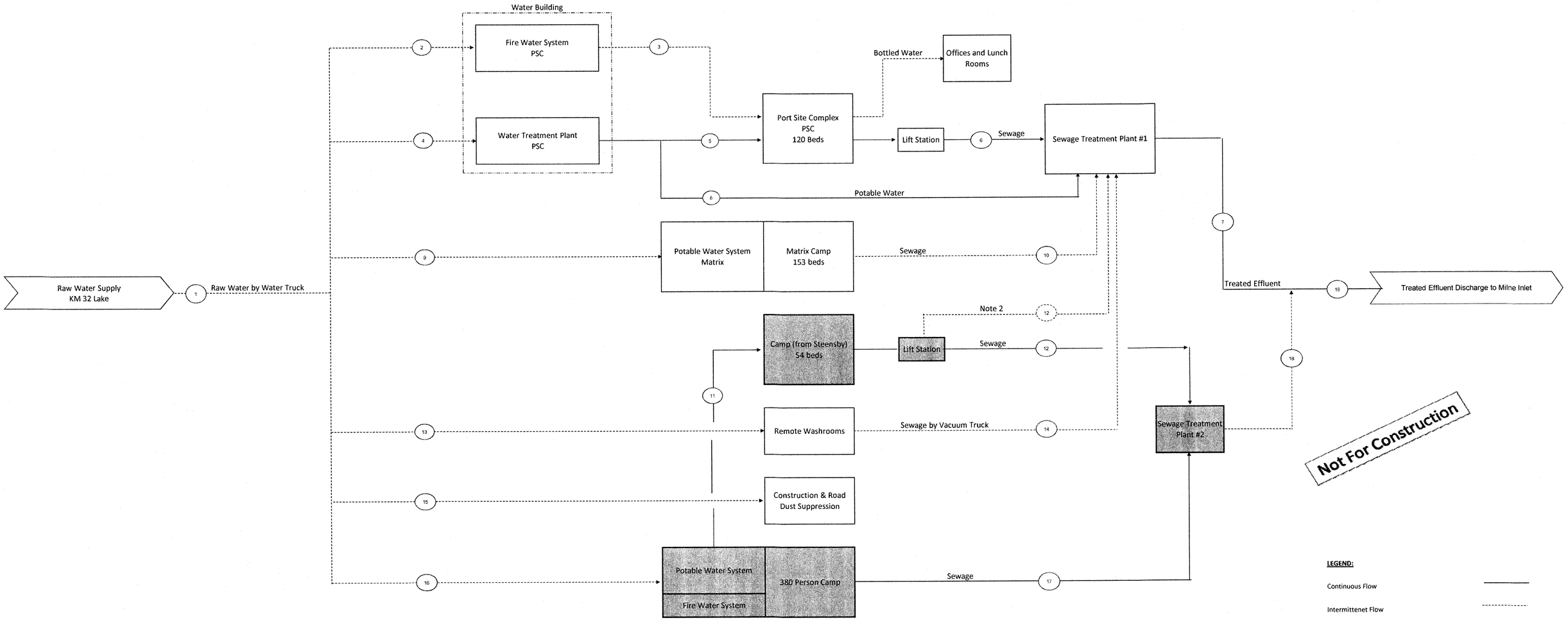
1. Create a sump upstream of the diversion consisting of an excavated hole armored with rip rap to prevent erosion.
2. Setup of a pump with an intake in the sump and discharge hose running to a determined discharge location that flows to the natural drainages west of the pad.
3. Install a dam which does not allow water to travel downstream of the sump to the proposed construction area and downstream drainages. It should be noted that above pumping setup will only be used if flows are encountered during construction.
4. Complete all excavation for the full alignment of the diversion. Note that frozen conditions will be encountered in areas of cut deeper than 300 mm. To achieve the cuts an iterative process will be taken involving cutting to maximum depth allowed by local frozen conditions, allowing the frozen ground to thaw over 5-7 days and then revisiting the area until design depths have been achieved.
5. Place geotextile and rip rap on all areas of new diversion system to mitigate erosion and scouring from flow.

6. Upon completion of all ditching and placement of geotextile and rip rap, the diversion system will be complete and the upstream sump, dam and pumping setup will be removed to allow for flow through the diversion system.

Attachment 4

Water and Sewage Process Flow Diagram

H353004-40000-221-282-0001, Rev. 2



LEGEND:

Continuous Flow

Intermittenet Flow

Facility - New/Upgraded for Project

Facility - Existing

Stream No.	1	2	3	4	5	6	7	8	9	10
Stream Description	RAW WATER FROM KM32 LAKE	RAW WATER TO FIRE TANKS	FIRE WATER TO PSC	RAW WATER TO PSC	POTABLE WATER TO PSC	SEWAGE FROM PSC	TREATED EFFLUENT FROM STP #1	POTABLE WATER TO STP	RAW WATER TO MATRIX	SEWAGE FROM MATRIX
Fluid	RAW WATER	RAW WATER	RAW WATER	RAW WATER	POTABLE WATER	SEWAGE	TREATED EFFLUENT	POTABLE WATER	RAW WATER	SEWAGE
Units	m^3/day	m^3/day	m^3/hour	m^3/day	m^3/day	m^3/day	m^3/day	m^3/hour	m^3/day	m^3/day
Current Permit Limit	367.5	-	-	-	-	-	-	-	-	-
Calculated Flow	192	One off fill	113	30	24	24	58	6	31	31
Stream No.	11	12	13	14	15	16	17	18	19	20
Stream Description	POTABLE WATER TO NEW CAMP	SEWAGE FROM NEW CAMP	RAW WATER TO WASHRMS	SEWAGE FROM WASHRMS	CONST. & ROAD DUST	RAW WATER TO 380 PERSON CAMP	SEWAGE FROM 380 PERSON CAMP	TREATED EFF. FROM STP #2	TREATED EFFLUENT TO ENVIRONMENT	
Fluid	POTABLE WATER	SEWAGE	RAW WATER	SEWAGE	RAW WATER	RAW WATER	SEWAGE	TREATED EFFLUENT	TREATED EFFLUENT	
Units	m^3/day	m^3/day	m^3/day	m^3/day	m^3/day	m^3/day	m^3/day	m^3/day	m^3/day	
Current Permit Limit	-	-	-	-	Note 1	-	-	-	-	
Calculated Flow	11	11	3	3	20	109	95	136	194	

Notes:

1. Included in Stream # 1
2. Stream No. 12 flows will be directed to Sewage Treatment Plant #1 by Sewage Vacuum Truck until Sewage Treatment Plant #2 becomes online

REGISTERED PROFESSIONAL ENGINEER
M. J. BUYKX
LICENSEE
19 JULY 17
NT/NU

REV	ISSUE FOR	AUTH. BY		DATE
2	PERMITTING	JH	MB	19/7/2017
1	PERMITTING	TB	MB	13/7/2017
0	PERMITTING	TB	MB	26/6/2017
	ISSUE AUTHORIZATION			

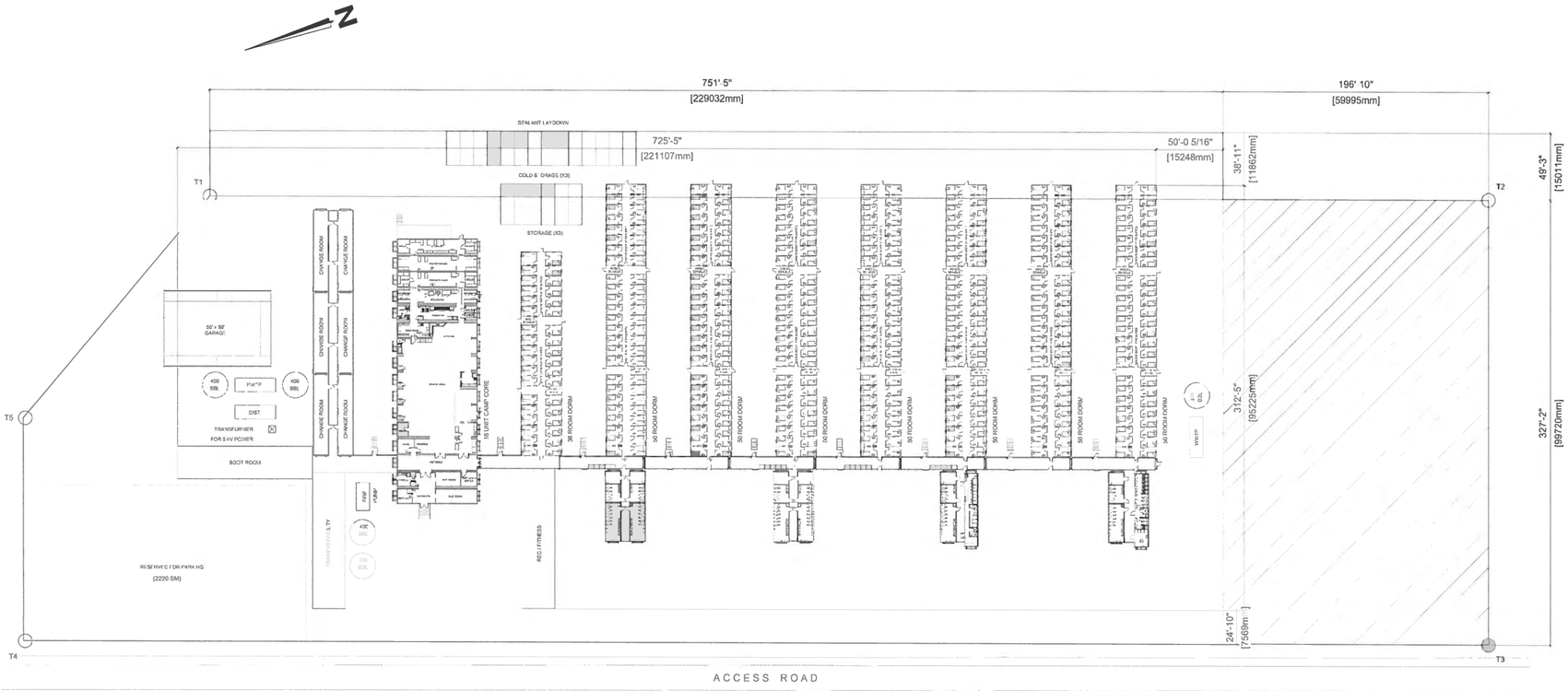
HATCH

Baffinland

DESIGNED BY T. BRUCE DATE:	DRAWN BY T. BRUCE DATE:	BAFFINLAND IRON MINES LP MARY RIVER PROJECT
CHECKED BY M. BUYKX DATE:	DISCIP ENGR. DATE:	MILNE PORT WATER AND SEWAGE PROCESS FLOW DIAGRAM
PROJ. DES. COORD. DATE:	PROJ. ENGR. N. MASON DATE:	
PROJ. MGR S. HEINER DATE:	SCALE NTS OR AS NOTED	DWG NO. H353004-40000-221-282-0001 REV. 2

Attachment 5

Camp Layout Drawing



SITE DEVELOPMENT PLAN
1/40" = 1'-0"

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NOTES:

THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION UNTIL SIGNED AND SEALED OR ADVISED IN WRITING BY THE ENGINEER.

DO NOT SCALE THIS DRAWING.

VERIFY ALL DIMENSIONS, DATUMS, AND LEVELS PRIOR TO COMMENCEMENT OF WORK. REPORT ANY DISCREPANCIES OR OMISSIONS TO THE DESIGNER IMMEDIATELY.

ALL WORK MUST COMPLY WITH THE MOST RECENT EDITION OF THE APPLICABLE BUILDING CODE, AND ANY OTHER GOVERNING AUTHORITY.

No.	Description	Date

CONTRACTOR

SEAL

CLIENT

Horizon North

DRAWN BY:	CVP
CHECKED BY:	CM VALIENTE
ENGINEER	JOHN LEHNERS, P. ENG.
PROJECT No.:	170109
SHEET ISSUE DATE:	JUNE 7, 2017
PROJECT STATUS:	FOR REVIEW

PROJECT

Baffinland Iron Mines

DESCRIPTION

Site Plan

DRAWING NO

A1.10

SHEET 1 / 1

Attachment 6

Construction Methodology – Milne Port Accommodation Facility

H353004-40000-400-050-0003, Rev. 0

Plan

Construction Methodology - Milne Port Accommodation Facility

			PP			M Weaver
2017-07-14	0	Approved for Use	L Langlois	T Bruce	S Heiner	M Weaver
DATE	**REV.**	**STATUS**	**PREPARED BY**	**CHECKED BY**	**APPROVED BY**	**APPROVED BY**
						Employer

1. Overview

A new accommodation camp with a 380 single bed configuration is intended to be constructed at Milne Port. The associated infrastructure, including a dedicated sewage treatment plant and potable water treatment plant, are included within this scope.

The new accommodations camp and associated infrastructure will be situated on a new accommodation camp pad located south of the Milne Port Ore Stockpile Pad and west of the Tote Road (Km 1).

2. Scope of Work

The scope of work starts with the sourcing of construction material which consists of drilling, blasting and crushing aggregate at the Milne Port Q1 Quarry. This produced rock fill material will be utilized to construct the pad for the new accommodations camp pad, a diversion ditch to direct surface water around the pad's southern perimeter and a utility berm to bench the required electrical cables for the new camp. This infrastructure is required to support the assembly and installation of the new 380 person camp and its associated facilities at Milne Port.

3. Methodology

3.1 Earthworks

3.1.1 Material Sourcing

Material, both bulk fill and crusher produced aggregates, required for the new accommodations camp pad and associated works will be sourced from the Milne Inlet Q1 Quarry.

Quarry operations at the Q1 Quarry will be in accordance with the current Baffinland Q1 Quarry Management Plan (BAF-PH1-830-P16-0017).

A coordination meeting will be held between Baffinland Operations and Projects departments and the relevant contractors to determine the total aggregate requirements and develop a schedule for the planned quarry development at the Q1 Quarry.

Reference documents:

Q1 Quarry Management Plan (BAF-PH1-830-P16-0017)

3.1.2 *Camp Pad Water Diversion System Construction*

A diversion system is required to direct the flow of a small seasonal stream around the southern perimeter of the new accommodations camp pad at Milne Port. Construction of the diversion system will adhere to the Construction Methodology – Camp Pad Water Diversion System (H353004-40000-400-050-0001 – Rev. 1) and engineered drawings designed and provided by Hatch.

Reference Documents:

Hatch – Construction Methodology – Camp Pad Water Diversion System (H353004-40000-400-050-0001, Rev. 1)

Hatch – Milne Port Camp Pad Natural Stream Diversion – Hydrology & Hydraulic Calculations (H353004-2100-240-030-001, Rev. 0)

3.1.3 *Camp Pad and Foundation Construction*

The sub-grade of the accommodations camp pad will be constructed using Type 12 (Run of Quarry <200mm) coarse material and capped with Type 5 (<32mm crushed) crushed granular surface material. Type 5 material will be utilized as a final pavement for walkways and parking areas.

Pad construction will begin by the placement of Type 12 (Run of Quarry <200mm) coarse material. Upon achieving the required lift thickness, the entire surface area will be proofed and compacted with the utilization of a 10-ton vibratory compactor. Upon achieving consolidation, placement of Type 5 (<32mm crushed) crushed surface material will follow and be completed to the design elevation, including proofing and compaction with a 10-ton vibratory compactor. In addition, the pad will be graded to be free draining in order to prevent water from ponding on the pad.

The foundations for the camp structures will be installed by the Camp Installation Contractor. The foundations will consist of wooden cribbing assembled on top of interlocking 6" thick wooden matting. Both the hard-wall common core structures as well as the soft-wall dormitories will be erected upon these wooden foundations.

The foundations for the potable water treatment plant and the sewage treatment plant will incorporate a high-density expanded polystyrene insulating layer to offset any potential thermal migration into the underlying pad.

The layout of the new accommodations camp is presented in the Horizon North document: Milne Port New Accommodations Camp - Site Plan (A1.10)

Reference Documents:

Milne Port New Accommodations Camp - Site Plan (A1.10)

3.1.4 *Utility Berm Construction*

The new camp will need to be temporarily energized following the assembly of the camp and associated infrastructure using an electrical feed (3-5 kV cable) tied into Milne Port's existing power generators. Prior to commissioning the new camp and associated infrastructure, the temporary electrical feed will be discontinued and switched over to a dedicated e-house connected to Milne Port's power generators. To tie-in the dedicated e-house for the new camp and associated infrastructure, the existing utility berm will need to be extended to route the electrical cables between the new camp and the dedicated e-house near the existing Milne Port's power generators. A route for the utility berm extension has been determined and is aligned in a northeast direction from the new camp pad.

In addition to extending the existing Milne Port utility berm, the existing Milne Port utility berm will be widened by 1.5 meters to accommodate the additional electrical cables required to service the new camp and associated infrastructure. The design and construction of the utility berm extension and widening will be consistent with existing utility berms at the Project.

3.2 Camp Construction

The layout of the new camp and associated infrastructure is provided in Horizon North document: Milne Port New Camp – Site Plan (A1.10). Construction of the new camp and associated infrastructure will commence on the north end of the new camp pad with the erection of a 2,400 sq. ft. garage. The garage will be used by the Camp Installation Contractor as a warming shed and fabrication area during the assembly of the new camp and associated infrastructure (sewage treatment plant, potable water treatment plant, etc.). Following the construction of the new camp and associated infrastructure, the garage will continue to be used to support the operation of the new camp.

Following the construction of the garage, construction of the new camp will commence with placement of the hard-wall common core facilities on the wooden foundations. While these common core units of the new camp are being integrated and assembled, the installation of the potable water treatment plant, located adjacent to the garage, will begin. The installation of the transformer and dedicated e-house will also occur during this same period in the schedule.

In parallel to the installation of the potable water treatment plant, the installation of the sewage treatment plant will occur on the far southern portion of the new camp pad. This location has been selected to take advantage of the prevailing winds from the north. The installation and commissioning of the sewage treatment plant and potable water treatment plant will require specialized skills and will be directed by the expertise of the vendor. Commissioning of the sewage treatment plant and potable water treatment plant will include connecting the plants to the new camp using insulated HDPE piping.

The new camp, sewage treatment plant and potable water treatment plant include a fire suppression system (sprinkler system) that will be connected to the fire pumps and tanks by insulated HDPE piping. Assembly and commissioning of the fire suppression systems and associated pumps and tanks will occur during the construction of the new camp.

Following the assembly and integration of the hardwall common core units of the new camp, the Camp Installation Contractor will start the installation and integration of the soft walled accommodation modules, starting from the north and progressing to the south. During this time, and following the sewage treatment plant and potable water treatment plant becoming operational, Baffinland Operations will coordinate the opportunity to populate the beds as they become available.

4. Reference Documents

Document Identification	Document Title	Author
Site Plan (A1.10)	Milne Port New Accommodations Camp – Site Plan	Horizon North
H353004-40000-400-050-0001, Rev. 1	Construction Methodology – Camp Pad Water Diversion System	Hatch
H353004-2100-240-030-001, Rev. 0	Hatch - Milne Port Camp Pad Natural Stream Diversion – Hydrology & Hydraulic Calculations	Hatch

Attachment 7

Wastewater Treatment Technology - Vendor Process Guarantee

newterra
clean water. modular solutions. *simple:*

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Baffinland Iron Mines Corporation

newterra Project #:1704653
Project Name: Baffinland - Mary River Project 430 Man WTP
C/O
Horizon North Camps and Catering
5637-67 Avenue NW
Edmonton Alberta

newterra guarantees that when the supplied water treatment system is operated during a performance test in accordance with the designed conditions, the facility will be capable of producing the designed water quality at the designed flowrate. The plant shall be operated within the design conditions listed in the tables below, and must be operated in accordance with newterra operations manual.

The system shall process 100% of the design flow listed when that flow consists of water with constituent concentrations equal to or lower than those listed in the Baffinland Hatch Raw water Properties of Camp Lake and km 32 Lake document H353004-00000-120-078-001 rev 0 received by newterra Ltd.

Table 1

Influent Flow Rate	Design Value	Metric Unit
Average Daily Flow (ADF)	99.25	m^3/d

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newterra BEST MANAGED COMPANIES