INNAVIK HYDRO

Innavik Hydroelectric Project

Annual Report – 2022

Water Quality Monitoring

Submitted to the Ministry of the Environment, the Fight against Climate Change, Wildlife and Parks

File nº 3215-10-05

May 19, 2023

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PROJECT TEAM

Innavik Hydro

Pituvik Landholding Corporation

Director	Eric Atagotaaluk

Innergex Renewable Energy

Senior Manager – Community Relations and Environment	Jeanne Gaudreault

PESCA Environnement

Project Director	Matthieu Féret

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1 Context

Innavik Hydro, a limited partnership (Translator's note: *société en commandite* or S.E.C. in French), received a certificate of authorization (CA) on August 23, 2019 for the construction and operation of the Innavik Hydroelectric Project. The project shall be completed and operated in conformity with the CA and in compliance with 13 conditions, including Condition 9, which states:

> *For information purposes, the Developer shall submit an annual report detailing the results of the drinking water quality monitoring performed during the construction period. Incidents, mitigation measures taken and observations made in the context of exchanges with the Follow-up and Cooperation Committee shall be included in this report.*

Water quality during both the construction and operating phases represents an issue for the population of Inukjuak, as the water intake for the Northern Village's drinking water supply is located at the mouth of the Inukjuak River, approximately 7 km downstream of the project.

This document presents the water quality monitoring report for the year 2022. This was the third year of construction for the Innavik Hydroelectric Plant. CRT Construction is the general contractor responsible for project construction. Water sampling work began in June 2022, i.e. as soon as the river was ice free and the pump for the temporary water intake upstream of construction work could be installed.

2 Water Quality Monitoring

2.1 Responsibilities

Innavik Hydro has undertaken to carry out continuous water quality monitoring in the Inukjuak River during the plant's construction period. At the start of construction, the responsibilities of CRT Construction and Innavik Hydro were discussed and clearly defined in an environmental protection plan:

- CRT Construction is responsible for sampling the water generated by excavation work at the construction site;
- Innavik Hydro is responsible for taking water samples from the Inukjuak River upstream and downstream of the construction site.

CRT Construction is also responsible for initiating the emergency response procedure in the event of a risk of contamination of the village's drinking water during construction.

ACTIVITIES AND MONITORING	RESPONSIBILITIES	
	CRT Construction	**Innavik Hydro**
Water generated by excavation work: daily monitoring of sedimentation/decanting systems (pH, turbidity, ammonia-nitrogen [NH_4])	X	
Monitoring upstream/downstream of construction site (pH, turbidity, ammonia-nitrogen [NH_4])		X
If emergency response procedure is initiated – Contamination of village's drinking water source	X	

2.2 Procedure and Results

2.2.1 Water Generated by Excavation Work

The quality of the water generated during excavation work was monitored between June 24 and September 16, 2022. Water from this work (infiltration and rain) was channelled toward the sedimentation pond created in 2021 on the right bank of the Inukjuak River. After decanting, the water was channelled toward the vegetation before trickling onward toward the river (Figure 1).

Figure 1 Sedimentation pond – right bank

The left bank pond was dismantled in October 2021 upon completion of excavation work that could potentially have had an impact on water quality.

The temperature, turbidity, pH and ammonia-nitrogen [NH_4] content of the water were regularly measured during monitoring upstream of the construction site ("upstream") and at the outlet of the sedimentation pond ("downstream"). All measurements were taken instantaneously using an Ohaus ST300 portable pH meter, a LaMotte 2020t portable turbidity meter and a Hanna Instruments® HI97715 device to measure the ammonia-nitrogen content. The results are presented in Figure 2.

In summary:

- pH levels below the sedimentation pond remained between 6.31 and 8.01 while upstream figures varied between 6.07 and 8.35. The pH was similar at the upstream reference site (mean = 7.13) and below the sedimentation pond (mean = 7.16);
- Water turbidity below the sedimentation pond varied between 0 and 13.9 NTU, whereas upstream values remained below 2.4 NTU. The highest values were obtained in September during excavation work to remove stone from a jetty built below the tailrace (Figure 2). Considering these measures, CRT Construction and Innavik Hydro immediately implemented the emergency response procedure (see details in Section 3). Prior to excavation of the jetty, turbidity below the construction site remained below 7.54 NTU;
- Water temperatures below the sedimentation pond varied between 8.4°C and 19.4°C and between 8.4°C and 20.0°C upstream;
- The concentration of ammonia-nitrogen (NH_4) at the outlet of the sedimentation pond remained below 0.3 mg/L, whereas concentrations upstream of the construction site (at the reference site) remained below 0.4 mg/L. These values are below the surface water quality criteria for the protection of aquatic life, both for acute and chronic effects.[1]

[1] MELCCFP. 2023. Critères de qualité de l'eau de surface. Government of Quebec, Ministry of the Environment, the Fight against Climate Change, Wildlife and Parks. Consulted at https://www.environnement.gouv.qc.ca/eau/criteres_eau/index.asp in February 2023

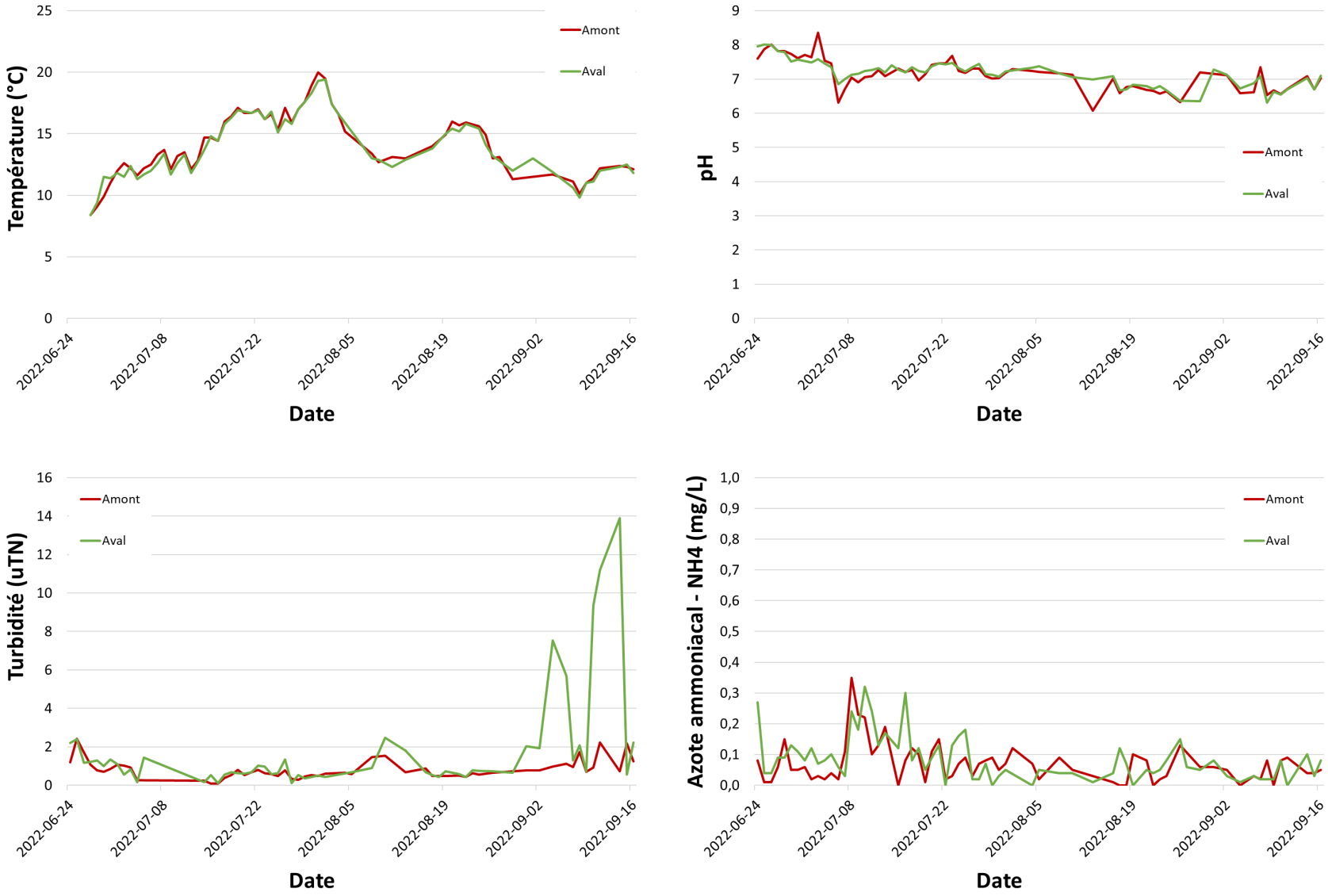


Figure 2 ***Monitoring results for water generated by excavation work in 2022***

2.2.2 Water Quality Monitoring Upstream and Downstream of Construction Site

The period covered by water quality monitoring in the Inukjuak River ran from June 20 to November 2, 2022. Water quality was continually monitored as much as possible, and measurement frequency was adjusted as a function of the level of risk of construction activities. Measurement sites were located along the Inukjuak River: one upstream of construction work (BM1) as a benchmark and two downstream of construction work (BM3 and BM4) in order to ensure that water quality was not being impacted by this work. Measurements were alternatingly taken at these two sites throughout the year. The locations of these sites are presented in Figure 3.

Figure 3 ***Locations of sampling sites for water quality monitoring upstream and downstream of construction work in 2022***

Parameters measured included temperature, pH and turbidity as well as ammonia-nitrogen (NH_4). Measurements were taken instantaneously using a multiparameter meter (HI-9829) manufactured by Hanna Instruments®.

The turbidity measured by this instrument is expressed in FNU (Formazin Nephelometric Units). However, according to the manufacturer's representative, no conversion is required to obtain the figures in NTU, as the values are identical. In the present context, the unit is largely irrelevant since the objective is simply to compare turbidity values upstream and downstream of the construction work in order to verify whether the water is disturbed by the construction site.

The results of this monitoring are presented in Figure 4. In summary:

- The pH of the water in the Inukjuak River was between 6.42 and 7.94. Generally speaking, pH values were similar upstream (BM1 mean = 7.19) and downstream (BM3 mean = 7.25; BM4 mean = 7.25) of the construction site;
- Turbidity varied between 0 FNU and 70.4 FNU. The higher values were obtained at BM3 and BM4 from September 11 to 14 during excavation of the jetty stone. During this period, peak turbidity was 26.1 FNU (September 12 – BM3). Turbidity returned to a level similar to that of BM1 beginning September 15, i.e. once work had been completed. Further, turbidity reached 11.0 FNU at BM3 on October 17, 2022 during excavation of the tailrace rock plug. This work lasted approximately one week. In both of these instances, CRT Construction and Innavik Hydro immediately implemented the emergency response procedure (see details in Section 3). Lastly, two abnormally high values were observed on June 29 at BM1 (14 FNU) and on August 2 at BM4 (70.4 FNU). These values do not coincide with any particular event; rather, they may be attributable to a faulty measurement device or human error. For turbidity, surface water quality criteria for the protection of aquatic life are linked to maximum increases over the baseline value, [2] as measured at BM1. The increase was more than 8 TNU during excavation of the jetty stone from September 11 to 14, thereby surpassing the criterion for the protection of aquatic life for acute effects. This increase was a one-off occurrence and turbidity quickly returned to normal levels;
- Temperatures varied between -0.1°C and 21.1°C;
- Concentrations of ammonia-nitrogen (NH_4) were initially meant to be measured only during blasting periods, but the measurement device provided the reading by default. Measured concentrations varied between 0.03 and 7.40 mg/L upstream, between 0.02 and 10.90 mg/L at BM3 and between 0.02 and 2.90 mg/L at BM4. Three high values were observed at the reference site (BM1), namely on August 2 (4.00 mg/L), August 29 (7.40 mg/L) and September 26 (7.26 mg/L). These values do not correspond with any event in particular. A high value was observed on September 12 at BM3 (10.90 mg/L), which could be related to jetty excavation. These one-off values are below the surface water quality criteria for the protection of aquatic life for acute effects. Average values calculated at each site are below the thresholds for the aquatic life protection criterion for chronic effects. [3]

[2] MELCCFP. 2023. Critères de qualité de l'eau de surface. Government of Quebec, Ministry of the Environment, the Fight against Climate Change, Wildlife and Parks. Consulted at https://www.environnement.gouv.qc.ca/eau/criteres_eau/index.asp in February 2023

[3] MELCCFP. 2023. Critères de qualité de l'eau de surface. Government of Quebec, Ministry of the Environment, the Fight against Climate Change, Wildlife and Parks. Consulted at https://www.environnement.gouv.qc.ca/eau/criteres_eau/index.asp in February 2023

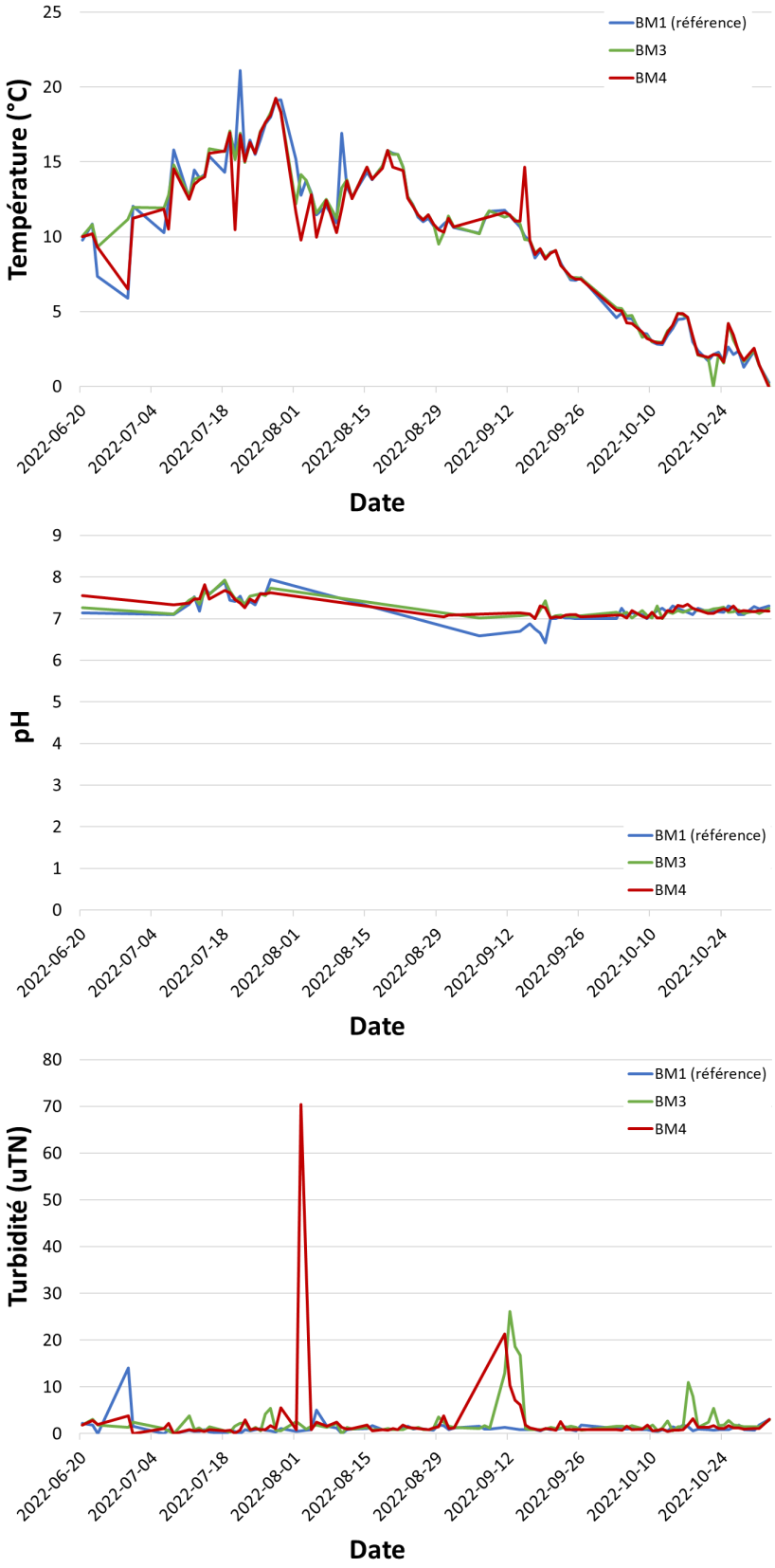


Figure 4 ***Results of water quality monitoring in Inukjuak River upstream and downstream of construction site in 2022***

3 Emergency Response Procedure

The emergency response procedure was developed in order to react quickly and in a coordinated manner should an accidental spill occur and threaten the quality of the village's drinking water. This procedure was defined at the start of construction and is presented in Appendix A. Upon commencement of construction in June 2022, a temporary water intake was installed upstream of the work site. The location of this water intake is shown in Figure 5. Photos illustrating its installation in 2021 are presented in Figure 6.

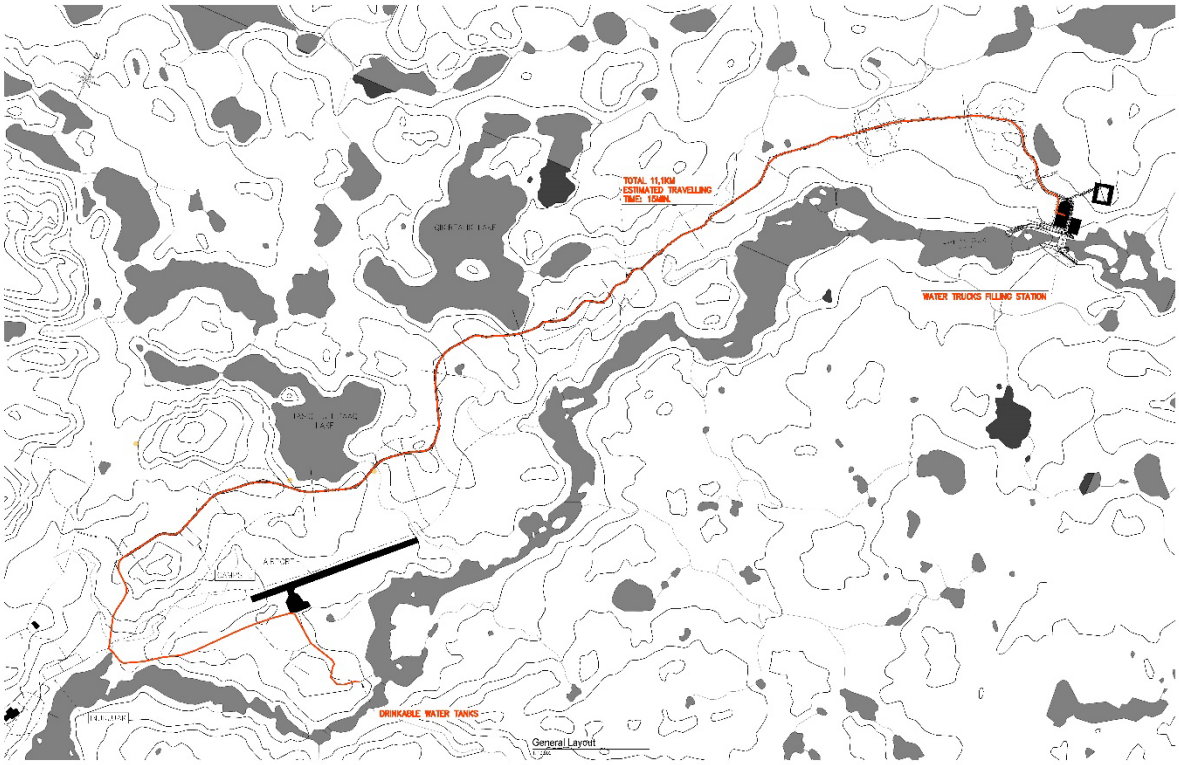


Figure 5 Location of temporary water intake upstream of construction site

Figure 6 Installation of temporary water intake

As mentioned in the previous section, the emergency response procedure was pre-emptively introduced on September 11 and October 14, 2022 due to an increase in turbidity downstream of construction work in the Inukjuak River. The following sections summarize how these procedures were carried out.

Activation due to rise in turbidity during excavation of jetty stone – September 11, 2022

Installation of stone in the jetty below the tailrace began on July 26, 2022. Both the Northern Village and community members were informed of the commencement of work. In September, excavation of the jetty stone was carried out and an increase in turbidity was noted (Figure 7). The emergency response procedure was initiated due to sediment flow to the pumping station (BM4; Figure 3).

Figure 7 Formation of a plume following jetty excavation

Excavation of the jetty was completed on September 14, 2022 at approximately 15:30. The following morning, i.e. September 15, the town manager re-opened the valve at the pumping station based on the water quality results. For the entire duration of construction work, CRT Construction made a tanker truck available to the Northern Village to facilitate the delivery of water to local residences. This tanker truck drew water at the temporary water intake upstream of the construction site, then parked at the camp on the outskirts of the village. From there, tanker trucks owned by the Northern Village came to fill up and

subsequently distribute the water to local households. This measure was maintained until September 15 inclusively in order to completely fill the reservoirs of the Northern Village's treatment facility.

Activation due to rise in turbidity during excavation of tailrace rock plug – October 14, 2022

Rock plug excavation in the tailrace resulted in increased turbidity in the Inukjuak River (Figure 7). This work lasted one week. The emergency response plan was implemented from October 14 to 21, 2022 based on the water quality results. During this period, CRT Construction made a tanker truck available to the Northern Village to help deliver water to local residences. This tanker truck drew water at the temporary water intake upstream of the construction site, then parked at the camp on the outskirts of the village. From there, tanker trucks owned by the Northern Village came to fill up and subsequently distribute the water to local households.

4 Conclusion

In compliance with the certificate of authorization, Innavik Hydro and CRT Construction monitored water quality in the Inukjuak River in Year 3 (2022) of construction of the Innavik Hydroelectric Project. Maintaining water quality in the Inukjuak River is an issue due to the fact that the water intake for the Northern Village's drinking water supply is located at the mouth of the river, approximately 7 km downstream of the project.

Monitoring work has demonstrated that this is essentially a question of managing water generated by excavation and water-related work, notably in terms of controlling sediment flow. The emergency response procedure has helped maintain the community's water supply thanks to a temporary water intake and close collaboration with the Northern Village.

Annexe A Emergency Response Procedure

CRT CONSTRUCTION

INNAVIK HYDROELECTRIC PROJECT

EMERGENCY RESPONSE PROCEDURE

VILLAGE'S DRINKABLE WATER SOURCE

Revision	Prepared by:	Revised by:	Date
04	Erick Gaudreau	Alain Labonté	2020-07-01

Document type	*Number*	*Revision*
PRO	001	04

TABLE DES MATIÈRES

LIST OF APPENDIX

1. Emergency Response Procedure

This plan will be in effect only when the road access to the temporary water intake is completed, when the temporary pumping equipment is in place and when the work will be inside the high-water level mark of the river. Any of the creek crossing will be upgraded after the plan is in effect.

The effectiveness of an emergency response often depends on the speed of the response. As soon as an abnormal situation arises, it is important to raise the alarm as soon as possible.

Certain situations which seem banal at the start can deteriorate very quickly. If the emergency response team is notified as soon as an abnormal situation is discovered, they can respond quickly. The witness of a dangerous situation must gather as much information as possible in order to be able to describe the situation to the responders.

The manager of the site where the event took place must immediately contact the site superintendent. The Superintendent will issue a work stoppage warning if deemed necessary. Then, he will be in charge of setting up the alert and emergency management procedure. Depending on the case, the superintendent will take charge of the intervention or designate a person responsible. He will then decide if external resources are necessary, and will manage the support and interactions with these resources, if applicable.

Below, the flow chart of the emergency response plan and in the emergency phone number list:

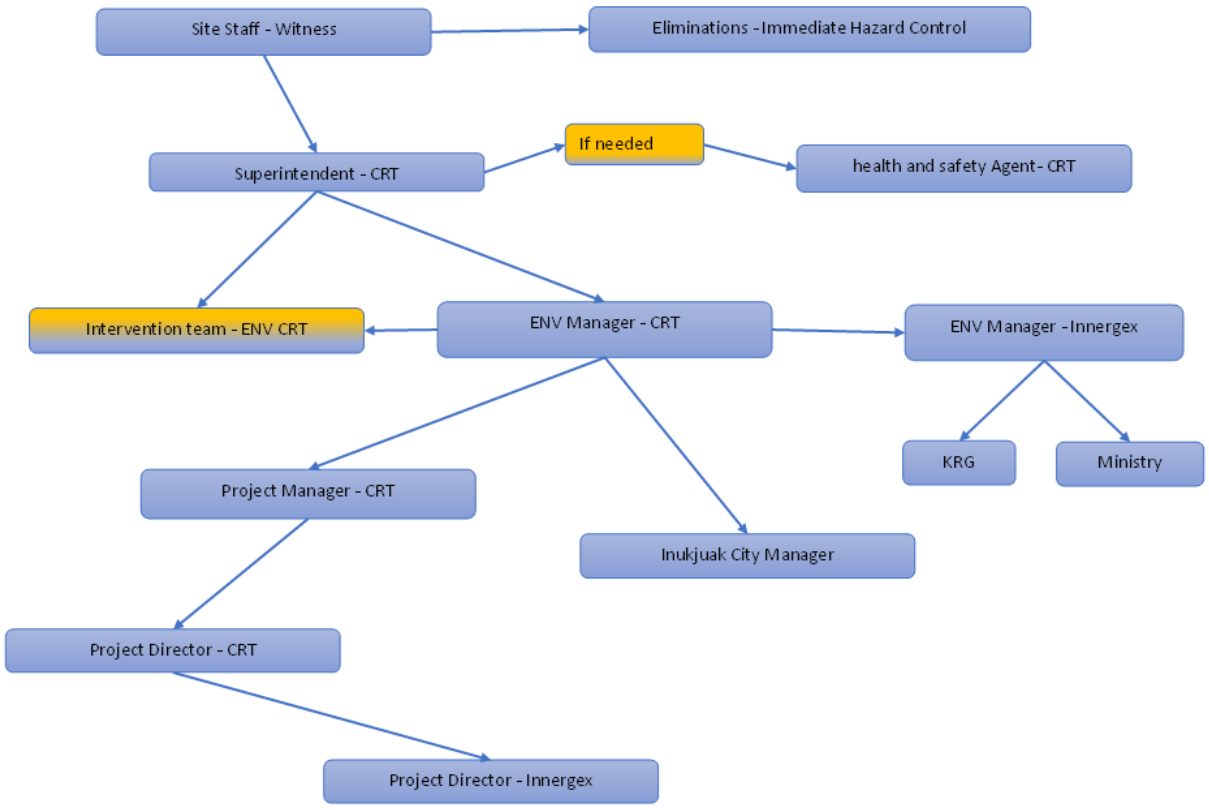


Figure 1: Organizational chart

INTERNAL RESOURCES				
Always call on business number before personal number				
Name	**Title**	**Company**	**Business number**	**Personnal number**
Alain Labonté	Project Director	CRT	(418) 564-8051	
François Hébert	Senior Director – Hydroelectric	Innergex	514 249-2677	
Maxim Desjardins	Project Manager	CRT	418.858-0781	
Sabin Savard	Superintendant	CRT	1-514-706-8801	
Jean-Gabriel Dorval	Environmental manager	CRT		418-473-9319
Jeanne Gaudreault	Senior Manager - Community Relations and Environment	Innergex	514 220-0892	
Martin Lacas	Health and safety coordinator	CRT	514-266-6965	

EXTERNAL RESOURCES	
Organization	**Phone number**
Kativik regional police (CPRK)	**Emergency: 819 254-9111**
Inukjuak police station	Phone : 819 254-8144
Fire department	**Emergency: 819 254-9000**
Service des incendies d'Inukjuak	Phone : 819 254-9000
Health services	**Emergency: 819 254-9090**
CLSC d'Inukjuak	Phone : 819 254-8540
Emergency medical team (ambulance)	**Emergency: 819 254-9000**
First responder	Phone : 819 254-8822
MELCC – Urgence-Environnement	Phone : **1 866-694-5454**
Ministère des Forêts, de la Faune et des Parcs (MFFP) sans frais :	Phone : 1 844 523-6738
Direction de la protection de la faune du Nord-du-Québec	Phone : 418 748-7701
Environnement Canada	Phone :1 800 668-6767
Municipal office	
Village nordique d'Inukjuak	Phone : 819 254-8822
Other	
Services d'évacuation héliportée (AirMedic)	**Emergency: 1 877 999-3322** Other: 450 766-0770

EXTERNAL RESOURCES	
Organization	**Phone number**
CANUTEC (emergency involving dangerous goods)	613-996-6666
Kativik Regional Government – Environmental specialist	1-877-964-2961
Société de protection des forêts contre le feu (SOPFEU)	Phone : 1 800 463-3389

2. CONTAMINATION OF THE VILLAGE'S DRINKABLE WATER SOURCE

2.1. DEFINITION

An event that could potentially make the water drawn from the village's drinkable water system improper for human consumption. This could be caused by a spill or a significant increase of sediment in the water.

The temporary intake water will be located in the river upstream side of the work area. This intake will be use also for the water need during the construction period. The appendix B is showing the location of the temporary water intake. The Schedule B is showing the traffic and travelling plan. The appendix C is showing the pumps technical information. The pump will be in service 24/24 hours, 7 days per week.

2.2. VOLUME OF WATER REQUIRED CALCULATIONS

The Village's consumption data were provided. The daily water consumption of 270m^3 / day over a period of 10 hours, or an average of 27m^3 / hr. The existing reservoir has a total capacity of 273m^3 and the water reserve must not go below 150m^3 in order to keep a minimum volume in the event of a fire. This means from the following calculation; the maximum response time is approximately 4 hours:

Total volume, 273m^3 - minimum fire reserve 150m^3 = Total available 123m^3

Total available 123m^3 / consomation27m^3/hr = 4.56 hrs.

- The first tanker truck filled with water must arrive within **4** hours after the gate had been closed.

The pump has a rate of 100 m^3/h with a total head of 20 meters, as can be seen in Appendix C.

CRT has two tank trucks with a transport capacity of 20m^3 / 70min and 35m^3 / 120min respectively, including filling time and transport time. The time required to fill the tank trucks are 12 minutes (20m^3) and 21 minutes (35m^3).The total daily capacity is around 34.5m^3 / hr or 828 m^3 / day.

Truck 1 : 20m^3 / (1.166hr) = 17m^3/hr

Truck 2 : 35m^3 / (2 hr) = 17.5 m^3/hr

Total m^3 /hr : 17m^3 + 17.5m^3 = 34.5m^3/hr

34.5m^3 / hr * 24hr = 828m^3 / day

In conclusion, the rate of filling of the Village's tank will be limited by the time of consumption of those.

2.3. PROCEDURE

2.3.1. ROLE OF WITNESS

- Notify the site superintendant as soon as an incident occurs. The risk can come from but is not limited to: cofferdam breach, silt from work underway (fine sand) will create high level of turbidity, equipment will have an accident with oil or fuel spill.
- In the event of a spill, control the spill according to the environmental emergency plan (see Appendix E).
- In the event of a cofferdam rupture, ensure that a turbidity curtain is in place and install a second if necessary. Also install a second cofferdam to circumscribe the area.
- In the case of a significant increase of sediment, control erosion according to the environmental emergency plan.

2.3.2. ROLE OF THE SITE SUPERINTENDENT

- Receive the call.
- Immediately notify Innavik Hydro and the village civil security manager.
- Apply the alert process in section 1 and designate the person in charge of the intervention.
- If the pump is running, immediately notify the concrete batch plan staff to stop production and begin the process of pumping potable water for the village.
- If the pump is not in operation, notify the manager to start the pump and begin the process of pumping potable water for the village.
- Contact the superintendent to have the tanker on the way to supply the village with water.
- Notify on the radio that the road will be used by the tanker to supply water to the village.
- Take note of the water meter at the start of the process. (Permit to take water Art.22)

2.3.3. ROLE OF THE INTERVENTION SUPERINTENDENT

- Inform the relevant authorities immediately with Innavik Hydro. Inukjuak village officials must be notified promptly to stop the standard pumping of drinking water and to shut off the village supply valve.
- Begin the emergency protocol for the supply of emergency drinking water.
    - The two tank trucks will be sent to the water intake which is located near the concrete batch plan (capacity of 20 m^3 / 70 min for the first truck and 35 m^3 / 120 min for the second truck);
    - The trucks will go back and forth from the water intake to the village pumping station as long as the notice is not close;
    - Emergency measures will be put in place to stop and control the source;
    - Village water tests will be performed by Innavik Hydro;
    - TSS turbidity tests will be performed by CRT
- Upon an incident, CRT will monitor the water quality until it is back to a quality equal to the temporary water intake. The usual monitoring is the responsibility of Innavik Hydro.
- As soon as the situation returns to normal and the laboratory results are in compliance, the municipality and Innavik Hydro will be notified of the resumption of standard pumping and a report will be given to the authorities, if required.
- Complete the environmental incident report, if the contamination was caused by a spill (see Appendix F).

2.3.4. Role of the Superintendent at the Village Pumping Site

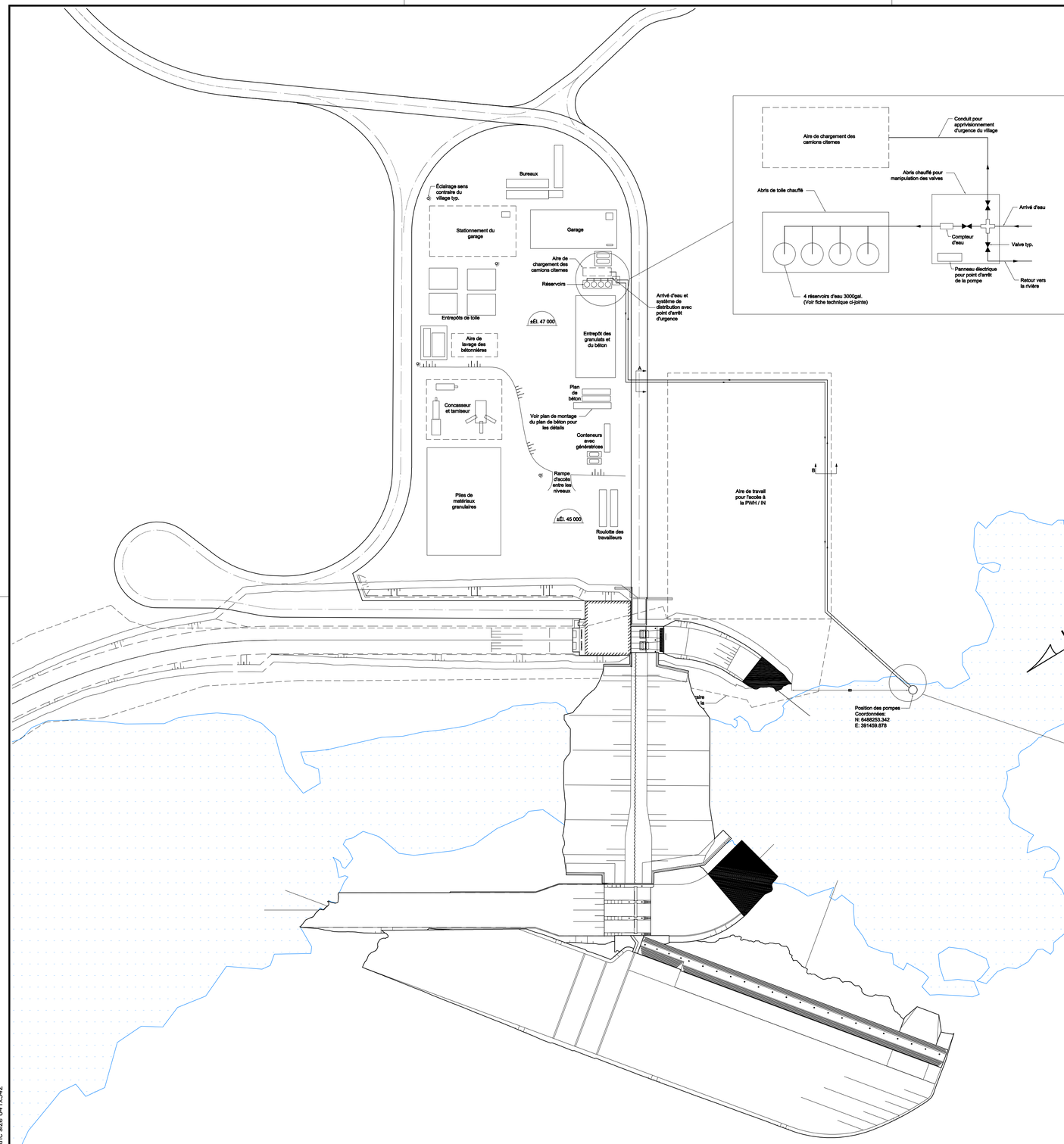
- Have the pumping site door opened by the public safety officer.
- Close the primary water gate (20 sec.) and install a lock system to insure it can't be open.
- Install the vacuum type filling pump, connect to the water tank drain line.
- Install and connect the flexible hose for pumping directly into the well.
- Do regular inspection on site at all times to ensure the smooth running of each arrival and departure of trucks.
- Ensure the pump is functional and fueled.

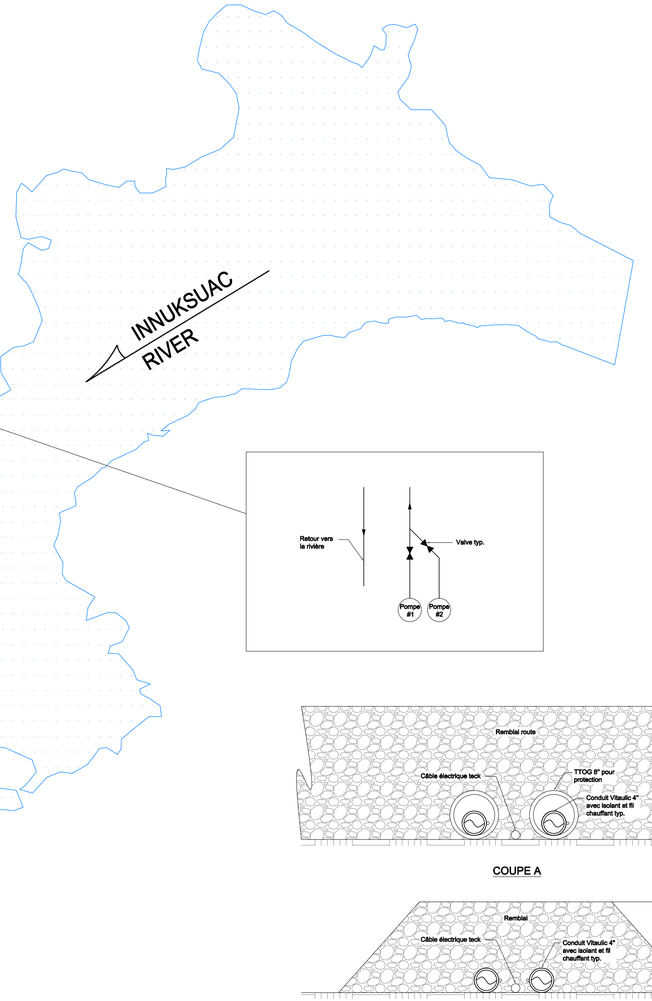
2.3.5. Practice test

Before the start of work close to the high-water level mark. A practice test of the emergency procedure will be carried out with the various parties involved to validate the communication chain, the response time and the effectiveness of the emergency plan. Thereafter, update meetings will be held frequently at the beginning of each month with all the emergency team members to ensure that the emergency plan for the village's water supply is operative.

Appendix A

Water intake location plan





COUPE A

COUPE B

NOTES:

1. Les dimensions inscrites sont en mètre (SI)
2.
3.
4.

0	C.GOD	POUR APPROBATION
2020/03/26		
REV.	TECH.	RÉGISTRE DES RÉVISIONS OU ÉMISSIONS
DATE		

SCEAU

CRT CONSTRUCTION

CLIENT

INNAVIK HYDRO LP

PROJET

PROJET HYDROÉLECTRIQUE INNAVIK

TITRE

PLAN GÉNÉRAL DE LA PRISE

POUR ACTIVITÉS AU CHANTIER ET PLAN D'URGENCE POUR LE VILLAGE

Date	Préparé par	Approuvé par	
MARS 202	C. GODBOUT	É. GAUDREAU	
Échelle	Consultant #		Client #
TEL QUE MONTRÉ			
Dessin #			Révision
CRT-005			0

A1-MOD metric size 841x542

Appendix B

Circulations plans

N

TOTAL 11,1KM
ESTIMATED TRAVELLING
TIME: 15MIN.

QIKIRTALIK LAKE

INNUKSUAC
RIVER

WATER TRUCKS FILLING STATION

TASIQ TULLIPAAQ
LAKE

AIRPORT

CAMPSITE

INUKJUAK

DRINKABLE WATER TANKS

General Layout
1: 10,000

Appendix C

Pumps

Electric Motor Driven

Submersible Pump

Model S4C1-E10

Size 4”

Certified in Canada

CERTIFIED PERFORMANCE

PUMP SPECIFICATIONS

Diffuser: G-R Hard Iron;
Maximum Operating Pressure 69 psi (476 kPa).*
Impeller: G-R Hard Iron.
Wear Plate: Carbon Steel ASTM A36.
Seal Plate: G-R Hard Iron.
Intermediate: Aluminum Alloy 356-T6.
Casing: Aluminum Alloy 6061-T6 with Chromicoat.
Motor Housing: Aluminum Alloy 356-T6.
Motor Shaft: Stainless Steel Type 416.
Shaft Sleeve: Stainless Steel Type 304.
Bearings: Upper - Open Single Row Ball Bearing.
Lower - Two Synthetic Seals, Double Row Ball Bearing.
Discharge Flange: Aluminum Alloy 356-T6.
Gaskets: Cork with Nitrile Binder (NC710).
O-Rings: Buna-N.
Wetted Hardware: Standard Plated Steel and Stainless Steel.
Strainer: Urethane Coated Steel; 50.6% Open Area,
0.375” (9,5 mm) Diameter Openings.
Hoisting Bail: Urethane Coated Steel.

Standard Equipment

NEMA Type 3R Rainproof Control Box. *(See Section 130, Page 90.)*
Provides On-Off, Circuit Breaker and Motor Overload Protection.

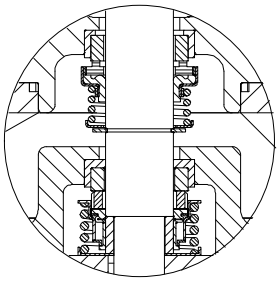
Optional Equipment

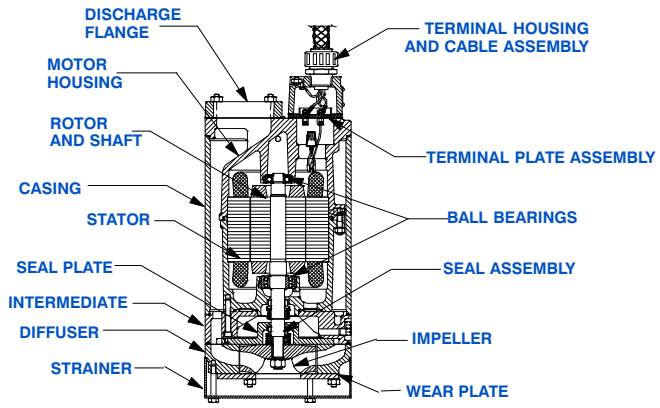
Liquid Level Control: *(See Sec. 130, Page 150.)*
a. Turtle Type Pressure Activated Level Switch.
b. Float Activated Level Switch.
Staging Adapter Kit.

MOTOR/CABLE SPECIFICATIONS

Motor: Oil Filled Enclosure; 10.0 H.P.; 3450 R.P.M.; Three Phase: 200/230/460/575 Volt, 60 Hz, 39/34/17/13.6 Full Load AMPS, 12.2 kW (Max.)
Power Cable:
200/230/460 Volt: 6 Wire; Type GGC; 8 AWG. 3 Power Conductors, 2 Ground Conductor and 1 Ground Check.
575 Volt: 4 Wire; Type SO/SOW/SOOW; 10 AWG; 3 Power Conductors, Plus 1 Ground. Nominal Length 50 Feet (15 m). Standard.
(*Specify Alternate Length at Time of Order.*)
Recommended Generator Size: 15 kW Across the Line Start.
**Consult Factory for Applications Exceeding Maximum Pressure and/or Temperature Indicated.*

WARNING!
Do not use in explosive atmosphere or for pumping volatile flammable liquids.





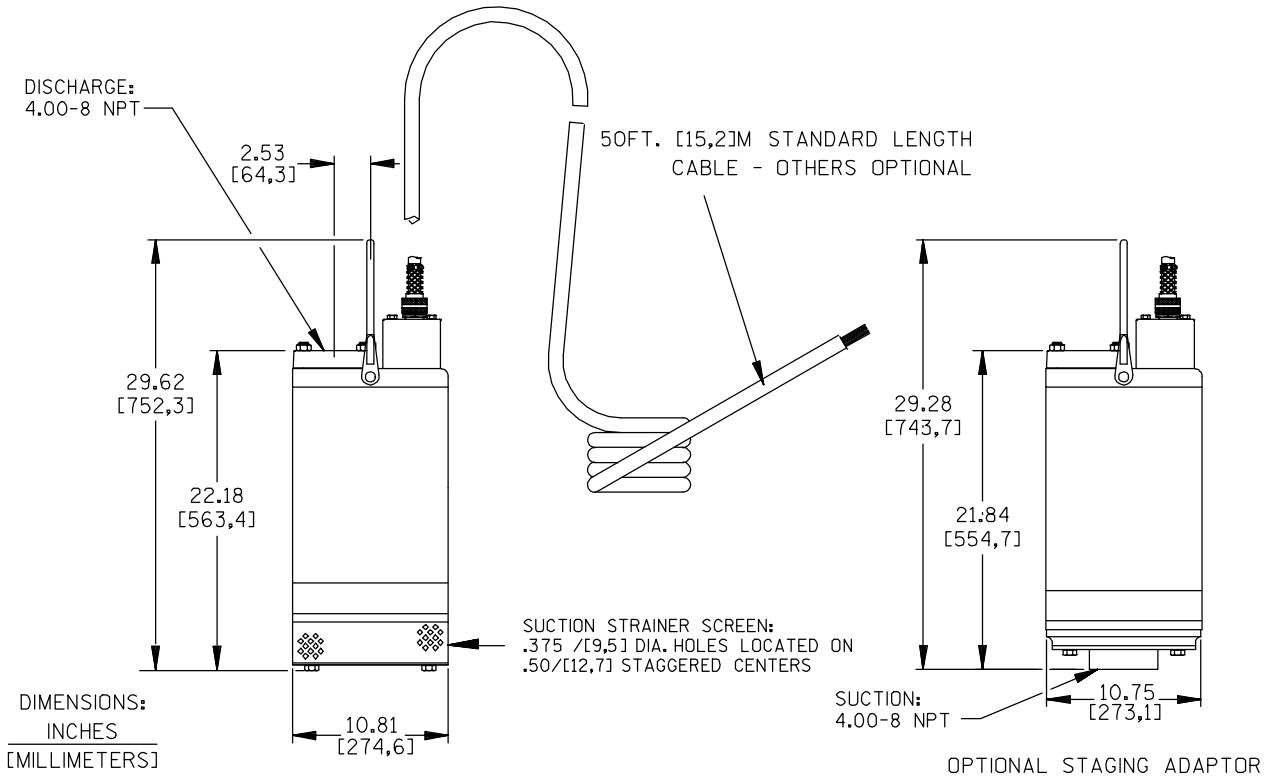
SEAL DETAIL
Tandem, Oil Lubricated.

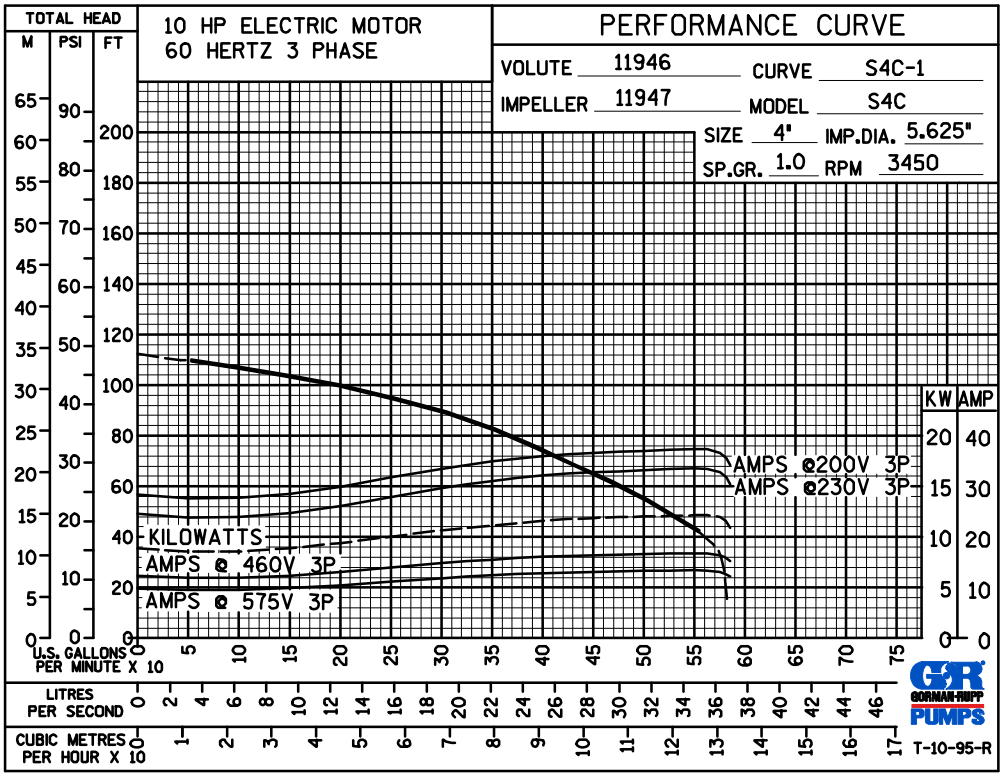
Upper Seal: Type 21, Mechanical. Carbon Rotating Face. Ceramic Stationary Face. Buna-N Elastomers. Stainless Steel 18-8 Cage and Spring.

Lower Seal: Type 2, Mechanical. Tungsten Titanium Carbide Rotating Face and Silicon Carbide Stationary Face. Fluorocarbon Elastomers (DuPont Viton® or Equivalent). Stainless Steel 303/304 Cage and Spring.

Maximum Temperature of Liquid Pumped, 122°F (50°C).*

Specification Data	APPROXIMATE DIMENSIONS and WEIGHTS	NET WEIGHT: 254 LBS. (115 KG.) SHIPPING WEIGHT: 269 LBS. (122 KG.) EXPORT CRATE:13.3 CU. FT. (0,38 CU. M.)
SECTION 130, PAGE 820C		





Appendix D

Emergency measures plan

Emergency measures plan

CONTAMINATION OF THE VILLAGE DRINKABLE WATER SOURCE

Witness of an event:

- ❖ Notify the site manager as soon as an incident is noted or as soon as there is a possibility that the water source is contaminated by any way.

CRT site manager:

- Immediately notify Innavik Hydro and the village officials.
- If the pump is running, immediately notify the concrete plan staff to stop production and begin the process of pumping potable water for the village. If the pump is not in operation, notify the person in charge of putting it into operation and starting the pumping procedure for drinkable water for the village.
- Contact the superintendent to have the tank truck on the way to supply the village with water and notify on the radio that the road will be used by the tank truck to supply the village with water.

Inukjuak village officials:

- ➢ Interrupt the standard pumping of drinkable water and close the system supply valve.

Start the emergency protocol for the supply of drinkable water:

- ✓ The two tank trucks will be sent to the water intake which is located near the concrete batch plan (capacity of 20 m^3 / 70 min for the first truck and 35 m^3 / 120 min for the second truck);
- ✓ The trucks will go back and forth from the water intake to the village tanks until the notice is not closed;
- ✓ Emergency measures will be put in place to stop and control the source;
- ✓ Village water tests will be performed by Innavik Hydro;

Stopping the emergency protocol for the supply of drinkable water:

As soon as the situation returns to standard and the laboratory results are in compliance, the municipality will be notified of the resumption of standard pumping and the trucks will be notified.

Appendix E

Environmental emergency plan (extracts)

11.7 EROSION

The work area must be circumscribed to avoid the dispersion of sediments. Any work resulting in unconsolidated soil (excavation, storage, disturbed soil, etc.) shall be accompanied by erosion and sediment control (ESC) measures to mitigate the risk of reaching a water body or wetland. As the construction project moves forward, all disturbed areas shall be permanently stabilized. If a delay was to occur in the completion of work, all erosion and sediment control measures must remain in place until permanent stabilization is possible.

The ESC measures should be adapted to the different construction steps that will occur during the work seasons. The general contractor intends to use sediment barrier or fences, compacted straw or any other relevant device to retain fine-grained soil if there is any water runoff. The ESC devices will be visually inspected and maintained, if their efficiency is decreasing.

11.7.1 TEMPORARY STABILIZATION OF EMBANKMENTS

A geotextile membrane shall be used to stabilize embankment that may be affected by erosion or produce sediment runoff. If gullying is detected on stabilized surfaces, the general contractor must implement supplementary measures, as soon as the situation is reported by a site supervisor.
Any unconsolidated material pile, such as excavated ground, located closer than 30m from a water body or wetland shall be protected by temporary stabilization measures to avoid any sediment runoff into the water. A geotextile membrane installed to stabilize an embankment shall be held in place by relevant devices.

11.7.2 TEMPORARY SEDIMENT BARRIER

Temporary sediment barrier made of a geotextile membrane shall be adequately installed. The installation of a sediment barrier crossing completely (perpendicular to the flow and intercepting its entirety) a stream is forbidden. At the beginning and for the duration of the various work phases, the general contractor must install sediment barriers at the locations where sediments can be transported by runoff. To ensure a good efficiency of those devices, they shall be properly maintained for the complete duration of the work. The removal of a sediment barrier shall be carefully executed to avoid releasing all the sediments accumulated.
Visual inspection will be done particularly before and after a rainfall event. It will allow to verify the efficiency of the geotextile membrane and to address deficiencies.
If a simple temporary sediment barrier is deemed unefficient, a mat made of Type II geotextile membrane would be used as cover material to ensure the temporary stabilization of the embankment.

11.7.3 SEDIMENT FILTER TUBES

The installation of a sediment filter tube across a stream (perpendicular to the flow and intercepting its entirety) is forbidden.

11.7.4 SEDIMENT TRAP AND BERM

The construction of a berm or a sediment trap across a stream (perpendicular to the flow and intercepting its entirety) is forbidden. The trap shall be cleaned when it reaches 50% of its capacity. A cleaning of all the sediment traps must occur before any prolonged temporary closure of the construction site. Preventive cleaning should be realized before a weather alert regarding unusually high rainfall.

12.1 SPILL OF CONTAMINANTS

12.1.1 DEFINITION

A situation that resulted in a contaminant spill requiring a prompt, safe and efficient intervention to protect the population and environment. The definition of contaminant includes hazardous material like flammable, corrosive, reactive, toxic or any other substances that can endanger life or affect the environment.

12.1.2 PROCEDURE

Role of the first witness

1. Stop all work around the spill.
2. Identify the spilled product – check the packaging, warning labels, material safety datasheet (MSDS), etc.
3. Plug the leak and contain the spill with the closest emergency spill kit, if possible and safe to do so.

4. Immediately inform the site supervisor and the superintendant if a spill involving hazardous material occurs.
5. Be ready for further instructions from the person in charge of the spill response.

Role of the site manager

1. Receive the information
2. Initiate the alert and emergency management procedure (see section 1 of this document) and decide who will be the person in charge of the spill response.

Role of the person in charge of the spill response

1. Collect primary informations regarding the location of the incident and the severity of the situation.
2. Immediately contact Urgence-Environnement and give them information regarding the contaminant and the estimated volume.
3. With the help of the response team, implement a safety perimeter around the spill to reduce the risk of exposition or explosion.
4. Determine if the resources required to remediate the situation are available :
    a. If the resources are available: collect the contaminated material and residual hazardous material and store them in distinct waterproof containers. If appropriate, use the emergency spill kits to circumcise the spill or continue the surveillance of the situation.
    b. If the resources are not available : use external resources to remediate the spill. Organize a meeting point on-site for the emergency services and site personnel. Designate a worker to guide the emergency services (ambulance, fire department or police force) to the meeting point so that their intervention is timely.
5. Oversee that the site remediation is completed according to the criteria of the *Environment Quality Act.* The contaminated soils and residual hazardous material shall be transported to a MELCC authorized disposal facility. The site remediation shall be confirmed by analysis done in an accredited laboratory.
6. Prepare an environmental inciddent report :
    a) Description of the incident;
    b) Names of the witness;
    c) Contaminant description;
    d) Estimation of the quantity (L) of spilled contaminant;
    e) Estimation of the quantity (m^3) of contaminated soil removed;
    f) Add the incident to the environmental incident register;
    g) Take pictures of the spill area before and after the site remediation;
    h) Locate the spill using a GPS;
    i) Containers used for the spill and location of the storage;
    j) Unconformities, corrective actions and preventive measures taken.

Appendix F

Environmental incident report

Environmental Incident Form

To be completed by the first witness

Send to the Project Director

Location		
Site description:		
If applicable:	Km _____	
GPS coordinates:	Longitude _____	Latitude _____
Date of communication of the incident:		

Date of the incident	Time of the incident	Duration of the incident
Substance at issue	**Volume involved**	**Product trade name**
Company Name in question	**Defective equipment**	**Equipment repair date**

Cause and description of the incident

Reason for the incident (check)		
☐ Weather conditions	☐ Absence of procedure	☐ Equipment breakdown
☐ Lack of training	☐ Erreur humaine	☐ Carelessness during a procedure

Affected area (m2)				
Nature of the affected site		**Ground slope**	**Meteo**	
☐ Sand / Gravel	☐ Concrete	☐ Low 2%	☐ Cloudy	☐ Snowy
☐ Rock	☐ Grass	☐ Average 2-10%	☐ Sunny	☐ Calm
☐ Clay	☐ Snow	☐ Strong 10%	☐ Rainy	☐ Windy
☐ Asphalt				
☐ Body of water: _____				
Distance from sensitive elements (in meters)				
Housing: _____	Watercourse: _____	Road: _____	Well: _____	Other: _____

Measures to control the situation	
Cleaning start date: _____	Cleaning end date: _____
Description of the intervention:	
Quantity recovered:	
Disposal location:	
People involved in cleaning	
☐ Contractor involved	☐ Specialized companies ☐ Other: _____

Written by	

Signature of witness	
Date	
Report receipt date	
Signature of responsible	

Related documents	Note: Attach pictures of the spill when sending the form c.c. :Project Director