Operation & Maintenance Plan for Whale Cove Municipal Water Licence: Water Supply Facilities 2022

Table of Contents

List of Figures

List of Tables

1.0 Site Description

Date this plan was prepared: March 31, 2022

1.1 Location of the water supply and water treatment plant (WTP)

Municipality: Whale Cove
Latitude: 62°11'48.61"N
Longitude: 92°33'52.83"W

1.2 WTP History

Year of commissioning the WTP: 1991
Design life of the WTP: N/A

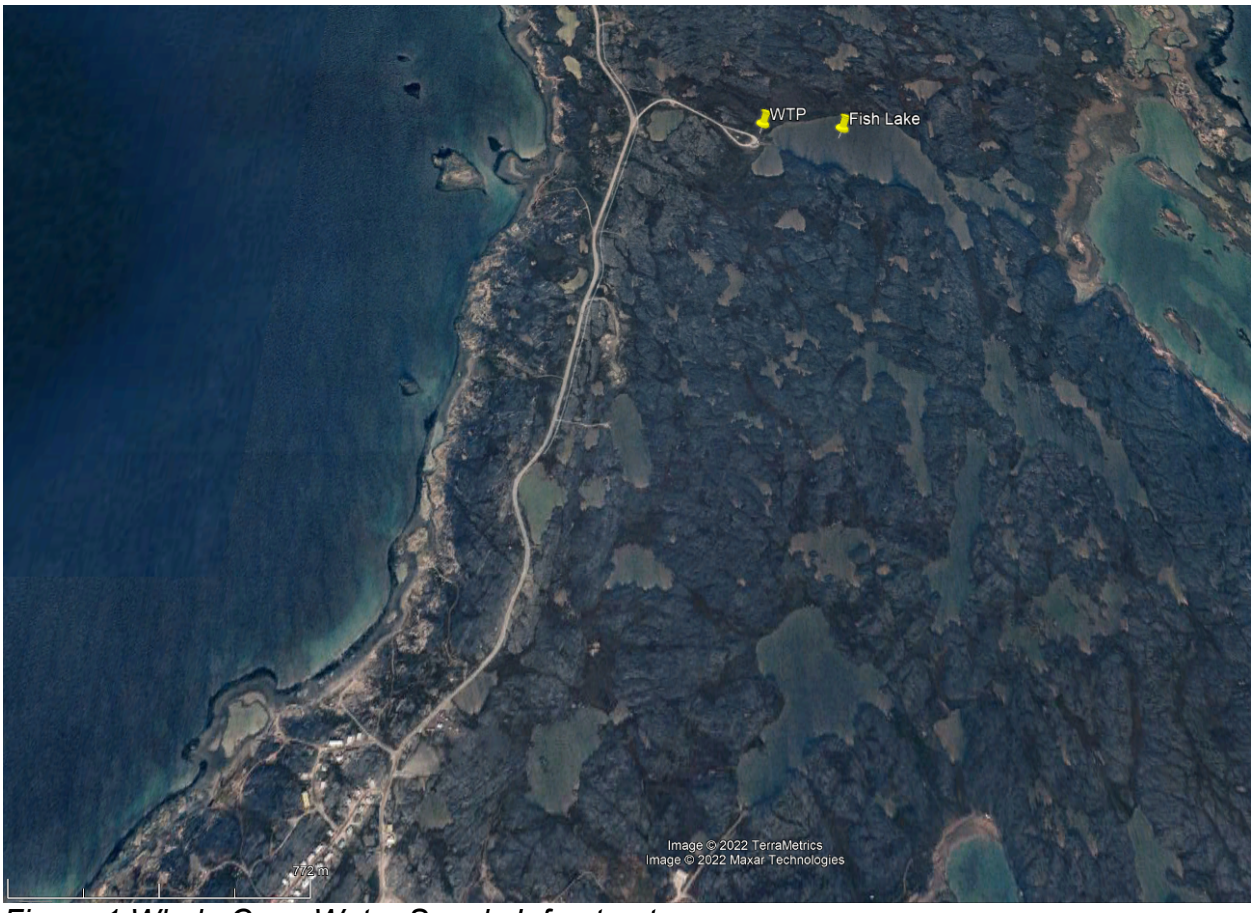

Figure 1 Whale Cove Water Supply Infrastructure

2.0 Staff and Training

2.1 Staff

Role:	Senior Administrative Officer	**Name:**	Brian Fleming
Phone:	(867) 896-9961	**Email:**	sao@whalecove.ca

Responsibilities: The SAO:

- manages the drinking water distribution program and municipal staff
- ensures annual reporting to the Nunavut Water Board (NWB) is prepared by the Government of Nunavut Department of Community and Government Services (GN-CGS)

Role:	Settlement Maintainer	**Name:**	Paul Voisey
Phone:	(867) 896-9305	**Email:**	N/A

Responsibilities: The settlement maintainer is employed by the Government of Nunavut Department of Community and Government Services (GN-CGS) and is responsible for:

- carrying out proper operation of the water supply system
- completing sampling and inspections
- operation and maintenance of the intake and overland pipeline from Post River to the reservoir
- chlorine solution preparation
- sampling of treated water
- monthly and annual inspections

Role:	Water Truck Drivers	**Name:**	Various
Phone:	N/A	**Email:**	N/A

Responsibilities: The water truck drivers fill truck for distribution of drinking water to the municipality. They also record and report the quantities of delivered water.

2.2 Training

Training records were last updated: 2020

Table 1 List of trainings obtained by staff

Staff member	GN Small Systems Course	GN Class I Systems Course	Other:
N/A	☐	☐	☐

Note: The Whale Cove Small Systems Course was cancelled in March 2020 due to COVID-19. Small Systems Courses are expected to resume in 2022/23.

3.0 Security and Control

Access Control of to the facility:

- Locks on doors
- Signage

4.0 Facility Design

As built drawings for the current WTP are not available however new as-builts will be submitted as part of the new Water Supply Operations and Maintenance Plan once the new WTP is commissioned in 2024/25.

5.0 Raw Water Sources

5.1 Raw Water Source

Raw water source fill system type: Direct from Lake

Alterations to the natural water source have occurred due to the WTP:

None

Name of primary raw water source:	Fish Lake
Type of raw water source:	Lake
Volume Available for winter withdrawal:	219,000 m^3
Watershed Size:	324 ha
Net Water Availability:	522,500 m^3/year
Average annual quantity of water drawn:	17,000 m^3/year
Maximum allowable withdrawal:	30,000 m^3/year
Ice formation on the water source (Month):	September
Ice breakup on the water source (Month):	June or July

Equipment:

- The surface water intake was constructed using a single vertically mounted drum screen and inclined shaft casing. The intake was installed at a depth of 6 m.

- A submersible pump is mounted on a skid and located inside the casing about 15 m from the intake. The skid can be removed from the casing for servicing by means of a wire pull arrangement.

- The 100 mm diameter un-insulated, heat traced HDPE discharge line is carried inside the 300 mm diameter, 120 m long, HDPE insulated casing. The casing is ballasted and protected by a granular berm and riprap.

5.2 Operations

Overview of the operations process:

The following procedure is followed:

1. Untreated water from the lake is transferred by submersible pump to the water distribution vehicles through the truckfill station, at a rate of approximately 1,000 L/min (minimum recommended for fire protection)

2. All controls necessary for water withdrawal and truck filling are located in a control panel accessible to the truck driver from the outside of the building.

3. The pumphouse is powered by fuel from an onsite storage tank and has a standby generator. Both must be monitored daily.

5.3 Maintenance

Overview of the maintenance process:

1. The roadway and truck pad shall be maintained by snow clearing in the winter and grading in the summer and repaired as necessary.

2. Ditches and drainage channels at the Water Supply Facility shall be inspected during the summer for erosion and repaired as necessary.

3. The truckfill station, signage, and berms shall be inspected regularly and repaired or replaced as necessary.

4. This facility is owned and operated by the GN-CGS, and any issues should be reported to the Kivalliq municipal engineer immediately.

5. The water delivery program is managed by the Municipality and issues identified by truck drivers should be reported to the SAO immediately.

6.0 Water Treatment Process

A brief overview of the water treatment process:

Water is drawn in from the raw water reservoir adjacent to the WTP where it undergoes:

- Chlorine Disinfection: Truck-fill arm injection

Total annual water usage: 17,000 m^3
Water distribution method: Trucked
Treated water storage: None
Rate of truck-fill: 1000 L/min

7.0 Monitoring

Regulatory Inspection: The annual Crown Indigenous Relations and Affairs Canada (CIRNAC) inspection will take place accompanied by the licensee and/or with a licensee representative from GN-CGS. The inspection will be reviewed by a GN-CGS municipal engineer and submitted with the annual report.

Table 2 Licence requirements related to O&M of the water supply facilities

Requirements	**Reported**
Monthly and annual quantities of fresh water obtained from all sources	Annual report submitted to NWB
A summary of modifications and/or major maintenance work carried out on the WTP	Annual report submitted to NWB
A list of spills and unauthorized discharges.	Annual report submitted to NWB
A summary of any studies requested for the WTP and future planned studies planned	Annual report submitted to NWB

Volume of Potable Water Supply at Post River Monitoring Program Station WHA-1	Annual report submitted to NWB

8.0 Modifications and Upgrades

Modifications or upgrades needed for the water supply facility:

The current WTP will be replaced with a facility that meets the Guidelines for Canadian Drinking Water Quality.

Planned modifications or upgrades:

A project to replace the existing WTP is ongoing. The new WTP is expected to be commissioned in 2024/25. The new facility will refurbish the existing raw water intake line and construct a new redundant intake line next to it. A fish screen that meets the Fisheries and Oceans Canada guidelines will be installed on both intake lines. A new Water Supply Operations and Maintenance Plan will be prepared and submitted once the new WTP is complete.

Additional Comments or Notes

No as-built drawings exist for the 1991 facility however as-builts will be prepared upon commissioning of the new WTP and submitted along with a new Water Supply Facility Operations and Maintenance Plan.