Community Background

The Hamlet of Whale Cove is located within the Kivalliq Region, Nunavut, at general latitude 62°11’N and general longitude 92°35’W. The Hamlet is located approximately 80 km south of Rankin Inlet. The community has a population of approximately 419 (2014). See below for population projects until 2035.

Table 1: Whale Cove Population Projection, 2014 – 2035 (Nunavut Bureau of Statistics, August 16, 2010)

Year	Population
2014	419
2015	426
2016	433
2017	439
2018	446
2019	453
2020	460
2021	467
2022	472
2023	477
2024	482
2025	488
2026	494
2027	500
2028	506
2029	512
2030	518
2031	525
2032	532
2033	540
2034	547
2035	555

The Hamlet of Whale Cove is located on a sheltered bay off of Hudson Bay. The terrain consists of grassy, boulder-strewn ground with overburden of sand and gravel with depths up to 1 metre. A ridge of Precambrian rock 15 to 20 metres high surrounds the community. The Hamlet is located in a zone of continuous permafrost, which has an active layer of approximately 50 cm to 1 metre (in poorly drained and well drains soils, respectively). A thin organic layer supports a limited growth of lichen and moss on the low-lying areas.

The Hamlet of Whale Cove is affected by arctic air masses, and experiences a maritime arctic climate characterized by short cool summers and long cold winters. The area receives an average of 10.6 cm of rainfall

and 118 cm of snowfall per year. July mean high and low temperatures are 13.6°C and 5.9°C, respectively. January mean high and low temperatures are -26.8°C and -33.9°C, respectively. Winds are generally north-west.

Water System

The Water Supply Facility is located at Fish Lake, approximately 3.5 km north of the Hamlet of Whale Cove. A submersible pump draws water from an intake located off shore at a depth of approximately 6 m. Water is pumped into a truckfill station where it is treated by chlorine injection prior to being pumped via an overhead arm into water delivery trucks. The table below display the Whale Cove water consumption from 2009 and projected until 2035.

Table 2: Whale Cove Water Consumption, 2009 – 2035

Year	Population	Annual Water Consumption (m^3)	Daily Water Consumption (lpcd)
2009	388	12,980.56	91.66
2010	394	13,278.03	92.33
2011	400	14,288.26	97.86
2012	406	14,767.25	99.65
2013	412	14,989.97	99.68
2014	419	16,134.64	105.50
2015	426	16,401.09	105.48
2016	433	16,670.59	105.48
2017	439	16,901.59	105.48
2018	446	17,171.09	105.48
2019	453	17,440.59	105.48
2020	460	17,710.09	105.48
2021	467	17,979.59	105.48
2022	472	18,172.09	105.48
2023	477	18,364.60	105.48
2024	482	18,557.10	105.48
2025	488	18,788.10	105.48
2026	494	19,019.10	105.48
2027	500	19,250.10	105.48
2028	506	19,481.10	105.48

2029	512	19,712.10	105.48
2030	518	19,943.10	105.48
2031	525	20,212.61	105.48
2032	532	20,482.11	105.48
2033	540	20,790.11	105.48
2034	547	21,059.61	105.48
2035	555	21,367.61	105.48

The annual water consumption values from 2009-2013 in Table 2 are taken from the Annual Reports. The daily water consumption of 105.48 lpcd from 2014 to 2035 was calculated in Section 2.3 of the Design Brief – Sewage Wetland Upgrade, Whale Cove. Water Licence No. 3BM-WHA0914 states the authorized quantity from Fish Lake is not to exceed 30,000 m^3 annually. The authorized water volume will continue to meet the Hamlet`s water needs for over the next 20 years.

Sewage System

Hamlet sewage trucks pump out sewage holding tanks located in buildings. The sewage is then trucked to the Sewage Treatment Facility located approximately 1 km from the Hamlet of Whale Cove. The facility consists of a lagoon with an exfiltration berm, which allows the sewage to slowly discharge and meander through a designated 600 metre long wetlands area down gradient, away from the Hamlet and towards Hudson Bay.

Issues identified in the AANDC Inspection Report were that the 1 metre freeboard was not being maintained as required under the Dam Safety Guideline. The effluent was also draining from the lagoon to the northeast, towards the Hamlet. The sewage lagoon expansion is intended to increase the active storage of the sewage lagoon to approximately 36,161 cubic metres by raising and widening the existing berm on the west end, building up the existing berm at east end with a liner, and building additional berms along the low-lying areas. Expansion of the sewage lagoon will ensure the Licensee complies with Part D, Item 4 of the Licence by maintaining a minimum 1.0 metre freeboard. There will be one decanting pump complete with inlet piping and outlet piping. The lagoon is designed for one year of sewage storage, with a delay of overflow from the lagoon until the wetlands become active. Effluent actively decanted from the sewage lagoon to the wetlands area between August 15 and September 15 of each year will be of improved quality.

Refer to the submitted design brief and drawings for further detail on the sewage lagoon expansion project.

Solid Waste

Solid waste is collected by the Hamlet garbage compactor truck from each building, and is trucked to the Solid Waste Management Facility approximately 1.2 km from the community. The facility consists of a landfill, a bulky metals area, household hazardous waste area, and a landfarm. The bulky metals area includes segregation of various materials such as tires, white metals, and vehicles. The landfarm is located within the Solid Waste Site area.