

Plan of Compliances

Hamlet of Clyde River Water Licensed Facilities **Water License No: 3BM-CLY 0909**

Prepared by: Bhabesh Roy, M.A.Sc., P.Eng. MPE, GN-CGS.

The Hamlet of Clyde River Amendment Water License No. 3BM-CLY0308 was issued on March 18, 2009 and will be expired on November 13, 2009.

This Water License covers the following environmental facilities:

1. Wastewater Treatment Facility- Sewage Lagoon
2. Solid Wastes and Bulky Metals Management Facility- Land Fill
3. Drinking Water Supply System

This Supply system consists of

- a. Source Water – Storage Reservoir
- b. Treatment System- Water Truck fills station and
- c. Disinfection by chlorine and delivering by trucks

Plan of compliances

1. Wastewater Management Facility

Wastewater Treatment Facilities- New and Existing Sewage Lagoons:

The existing facility is under capacity and incapable satisfying the requirements of the community demand. Presently the annual average wastewater discharge volume of this community is about 36,636 cubic meters. Therefore following the condition assessment study done by Dillon Consulting Ltd in 2002, a new lagoon has been designed by Trow Associates Inc. which will operate jointly with the existing facility. The both lagoons will function as storage cell lagoons with the capacity of existing cell being 11,600 cubic meters and the capacity of new lagoon being 46,900 cubic meters. The lagoons will work in conjunction with a vast area of wetlands of 23.5 ha. The life time of the project has been designed for 20 years. The design of these facilities was already approved by NWB.

The construction of the new cell began in late June 2009 and substantially completed. The entire construction of the new cell including rehabilitation of the existing cell will be completed in summer 2010. A Standard O&M manual will be updated for efficient operation of these lagoons. The final O&M manual will contain the following documents:

1. As Built Drawings
2. Operation and Maintenance Plan
3. Sludge Management Procedure
4. Spill Contingency Plan, including Spill Response Plan for Aggregate deposits
5. Monitoring program Quality Assurance/Quality Control Plan (QA/QC Plan)
6. Ground Temperature monitoring program by thermistors

Construction progress report with schedule of completion is attached in **Appendix-A** and Draft O&M manual in **Appendix-B**. The final O&M manual will be updated once the project is entirely completed.

Effluent quality monitoring of the existing Sewage Lagoon: This is an annual one time decanting Lagoon. Samples are taken from the different monitoring points three times during decanting, at the beginning, at the middle and at the end. The compliance point has been established at the end of Lagoon pipe. The sample bottles are marked with location of sampling, date and time, and person's name following the specification and guidelines provided by the Accreditation Lab in Ottawa. Sampling, preservation, handling and shipping are followed according

to the instruction of the Lab Supervisor. Preservation and shipping procedures are detailed below in **Section F-Preservation and Shipping of Sample bottles.**

The Lab instruction sheet is attached in **Appendix - C.**

Annual Report is due in December, 2009

The Hamlet Operator maintains the followings:

A. Plan for effluent sampling during decanting:

Ten days advance notice is provided to INAC inspector before the starting date of decanting following the hamlet water License guidelines. INAC inspector sometimes visits during decanting period and takes samples together with the Foreman. The Foreman conducts proper sampling, provides quality assurance and also maintains quality control as well.

B. Quality Control Plan:

- Accuracy of Sampling, handling, shipping , testing and recording
- Precision of several test results

C. Quality Assurance Plan:

- Sample control and documentation
- Standard operating procedures for analytical methods
- Equipment preventative maintenance
- Calibration procedure
- Internal quality control activities
- Performance audits
- Data assessment procedures
- Data validation and reporting

D. Spill Contingency Plan:

Nunavut Spills Report
Please report spills to the 24-hour Spill Report Line
Phone (867) 920 – 8130
Fax (867) 873 – 6924
Nunavut Spill Report Form [Upload as per email attachment]
Contact
Department of Environment General Inquiries Phone (867) 975-5900

Form is attached in **Appendix-D**.

E. Health and Safety Procedures:

The Foreman has had necessary protective vaccination. He uses protective gear, hard hat, steel boots and coverall to be used during sampling, handling and shipping bottles to Ottawa Lab. Empty sterilized bottles are received from the Lab by either First Air or Canadian North airlines.

F. Preservation and Shipping of Sample bottles

Hamlet collects samples bottles in advance from the Ottawa Lab. Samples are directly shipped to the lab in a cooler by First Air or Canadian North carrier to make sure that lab can receive these samples within 24 hours. Due to the availability of Lab nearby the community, effluent samples are tested for BOD and TSS only. The Lab supervisor sends the test results electronically to the Hamlet. The SAO of the hamlet distributes these results to the concerned members.

No field testing is conducted. Ottawa lab address is as follows:

Caduceon Environmental Laboratories
613-526-1244
2378 Holly Lane
Ottawa, Ontario, K1V 7P1
Tel: 613-526-012

G. Enforcement by INAC

INAC inspector's instruction during **emergency decanting** is as follows:

The Sewage Disposal Facility shall be maintained and operated, to the satisfaction of an Inspector in such a manner as to prevent structural failure.

As such, it is my interpretation of this section that you are authorized to take whatever actions as are necessary to prevent the structural failure of the lagoon. That being said, I, as the inspector will require the Municipality to take actions to mitigate any environmental damage as well.

To determine any actions that may be required it will be incumbent on the municipality to sample any discharge from the lagoon at the beginning, middle and end of the discharge. The discharge will be samples for the following parameters;

BOD	Faecal Coli forms
pH	Conductivity
Total Suspended Solids	Ammonia Nitrogen
Nitrate-Nitrite	Oil and Grease (visual)
Total Phenols	Sulphate
Sodium	Potassium
Magnesium	Calcium
Total Arsenic	Total Cadmium
Total Copper	Total Chromium
Total Iron	Total Lead
Total Mercury	Total Nickel
Total Zinc	Total Petroleum Hydrocarbons TPH
BTEX	

If you have any questions please do not hesitate to call me at the office or on my cell 1-867-445-1978.

Andrew Keim
Water Resources Officer
INAC Nunavut Regional Office
P.O. Box 2200
Iqaluit, Nunavut X0A 0H0
NEW Email: Andrew.Keim@inac-ainc.gc.ca
Phone: (867) 975-4289
Fax: (867) 979-6445

2. Wastes Management Facility:

Hamlet is planning to manage domestic wastes, bulky metal wastes and contaminated soil remediation in the proposed new facility and decommission of the existing facility (landfill site).

Solid Waste Management: The solid waste management in the community is managed by Land fill open dumping process. Currently the facility is inadequate capacity to satisfy the needs of the Community. Dillon Consulting Ltd did feasibility study and recommended a new site in 2002 as shown in **Appendix-E**. Recently Trow Associates Inc. has been hired to adequately design this facility to accommodate all different types of wastes of the community in one compound. Trow's Terms of Reference is attached in **Appendix - F**. Design will be prepared satisfying GN-CGS Capital Planning Standard and Criteria. Once the NWB approves the design, the project will be ready for construction.

A standard O&M manual will be prepared satisfying NWB guidelines; **"Guidelines for preparing an Operation and Maintenance Manual for Sewage and Solid waste Disposal Facilities, October 1996 of NWT."**

This facility is scheduled for construction and commission in 2011.

3. Water Supply System

Source Water:

Location: The community drinking water source is a natural lake and has sufficient storage capacity for the annual consumption of the community. Recently a bathymetry surveys was conducted by Natural Resources Canada.

Monitoring Plan: The facility will be fenced avoiding any animal or equipment entering inside. Also a Signage will be provided for the awareness to the visitor. Currently no fund is available. This plan will be implemented once the capital dollars are available. Annual sampling and testing are done by the GN Health inspector following National drinking water guidelines.

Treatment:

Water Truck fills Station: Water is extracted from the Storage Pond by intake pipe associated with heat trace. A filter is fixed at the end of the intake pipe. Water is disinfected by chlorine before filling the tank of the truck.

Distribution: Drinking water is delivered to the community by trucks.

Monitoring Plan: The Hamlet always makes sure that the heat trace is in working condition in winter and Chlorinator works satisfactorily disinfecting water before filling the water tank. The Hamlet Water Testing Technician tests chlorine residual, temperature and pH in each and every truck water before delivering to the houses. They also test tap water at Health centre, Hamlet office and also randomly in different houses. They normally use HACH KIT for monitoring chlorine residual. The technician is trained. They are also provided field training by the GN health inspector. They annually attend NTWWA workshop for operators training session and obtain class room training and field training as well. NTWWA provides them certificate for continuing education. They use log book for recording truck number, date and time of testing, name of technician and the test results. A sample page is attached in **Appendix- G**. Guidelines of disinfection procedure by GN-DOH is attached in **Appendix-H**.

QA/QC: Hamlet sends monthly samples to Iqaluit Lab. for testing microbiological parameters. Hamlet collects samples and hands over to their local health centre. The health centre preserves the samples and ship out to Iqaluit lab by the first plane. Sampling, preservation, shipping, handling and testing are followed by Iqaluit Lab satisfying the conditions of Canadian accredited lab requirements and the National Drinking Water Guidelines. The guidelines of drinking water

quality management by GN-DOE is attached in **Appendix-I**. All the test results and documents are kept in compliancy with the Water License.

A. Preservation and Shipping of Sample bottles

Water sample bottles:

Water samples are kept cool in a cooler with ice and delivered to Health centre for onward shipment by plane to Iqaluit Environmental Lab for testing microbiological parameters mainly finding out the presence of E-coli contents. Iqaluit lab. Contact address is as follows:

GN Department of Health and Social Services: Baffin Region
P.O.Box: 1000 Stn.; 1046; C.P.1000, Iqaluit, NU; X0A 0H0
Ph: 867-975-4833; Fax: 867-975-4830

B. Quality Control Plan:

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