



Inspection Report

License #: 3BM-CAP

Inspector: A. Keim

CIDMS # 275359

Client	Municipality of Cape Dorset		
Mailing Address	Box 30		
Inspection site location	Cape Dorset , Nunavut		
Contact name	Fred Schell	Title	Mayor
Last inspection date	July 16,2007		
Inspection start date	August 16, 2008		
Region	Qikiqtani		



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Submitted Via E-Mail
Our File: 3BM-CAP0810
Your File: _____
CIDM # 275359

May 22, 2009

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RE: August 16th, 2008 Municipal Water Licence 3BM-CAP0810

The following inspection report was generated on an inspection conducted to determine compliance with the terms and conditions of the water license issued to the Municipality of Cape Dorset by the Nunavut Water Board (NWB). The report references the applicable parts of the current Water License (3BM-CAP0810) and the findings observed under each of those Parts. During the writing of this report a review was undertaken of the documents located on the Nunavut Water Board's FTP site.

The Inspector would like to thank Fred Schell, Mayor of Cape Dorset and Acting SAO Brian McQuarrie for taking the time to meet during the inspection period and for acting as guides who were able to provide input and comments into the ongoing issues with the Sewage lagoons systems in place within the community.

Part B: General Conditions

It should be noted that during the period of inspection the Municipality of Cape Dorset was operating under a recently renewed Water License (3BM-CAP0810). The Nunavut Water Board has issued a short term water license based on a risk assessment that relies on the need for mitigative strategies to be implemented by the Licensee and monitored by the Regulator. With this direction from the Nunavut Water Board in mind, an inspection was carried out on the Municipal water and waste facilities in Cape Dorset, Nunavut.

It is noted by the Nunavut Water Board in the License that *“While the new lagoon system poses serious risks, the Board is satisfied that with appropriate conditions these risks can be mitigated. Moreover, this is likely the only mechanism for the Hamlet to come into compliance with the Act and the terms of the Licence.”*

A survey of the Nunavut Water Board website conducted subsequent to the Inspection of August 16th, 2008 and during the writing of this report shows that a great deal of correspondence concerning aspects of the design and construction of the sewage lagoon system have been posted, however no documents concerning the need for management of the risks associated with the use of the facility have been submitted to the Board by either the Licensee nor the Government of Nunavut who undertook the construction of the facility in 2007.

In discussion with the Licensee during the period of Inspection it was clearly stated a number of times by various officers of the Municipality that the Licensee (Municipality of Cape Dorset) has refused to take ownership or responsibility for the newly constructed sewage lagoon (2007) system. This system has therefore not officially been commissioned and thus is not in-effect covered under the authority of the



issued Water License for the Municipality. A fact that is reinforced by the requirements set out under the Part H: Conditions Applying to the Monitoring Program, Section 8 which reads;

8. The Licensee shall not commission the 2007 Sewage Disposal Facility until the requirements of Part H, Item 6 and Item 7 have been completed and approved.

Sections 6 and 7 outline the requirement for works to be undertaken by the Government of Nunavut as agreed to at the Public Hearing conducted in January 2008 and which read as follows within the text of the license;

6. The Licensee shall install thermistors for the purpose of validating assumptions made in the geothermal analyses for the 2007 Sewage Disposal Facilities as recommended by the Geotechnical Engineer of record and agreed upon by the Licensee, subject to a minimum of three 20 to 25 metre deep thermistors installed in crest of the west berm and at least one thermistor of that depth in the east berm.

And,

7. The results of thermistor monitoring required under Part H, Item 6, shall be submitted to the Board for approval in writing, prior to commissioning of the 2007 Sewage Disposal Facility. The results shall include an Engineer's Report, validating the assumptions of the geothermal analysis through adequate monitoring of the thermal regime for the East and West Berms and downstream foundations

At the time of Inspection this work had not been completed, the new lagoon system (2007) therefore cannot be commissioned. As the Municipality has not taken care and control or ownership of the Lagoon the Municipality has continued to use the Emergency lagoon system and the Three Tier lagoon system which have repeatedly failed during spring freshet in previous years and which during the most recent inspection of August 2008 required substantial work as noted by the Inspector.

It also must be noted again that the Municipality of Cape Dorset, in March 2002 was issued a Direction from Environment Canada requiring the Municipality to prevent the discharge of raw sewage from the Three Tier lagoon from entering water's frequented by Fish (Telik Inlet).

The discharge was the result of a series of failures in the lagoon walls resulting in two of three cells leaking and the resulting overflow entering Telik Inlet. Continued use of these facilities poses a continuing threat to the Municipality and must be addressed as soon as the new Lagoon system can be operated safely and without risk to the environment and water.

Finally, in addition to the above, the Licensee was to have provided within 90 days of the issuance of the current license a plan for Compliance that clearly demonstrates the ways and means the Licensee will undertake to achieve full compliance with the conditions of this Licence. The Licensee is reminded that compliance with the License is a requirement of the Act and while it is unlikely, given the state of the New Lagoon system, to be possible to complete this Plan in totality, the Licensee must make efforts to address those items that it can and for which they are responsible.

The Licensee is reminded to ensure that an Annual report is filed with the Nunavut Water Board and the Inspector by March 31st, 2009. That report should include any and all works conducted during the period of 2008 and include a detailed report on the state of the sewage waste infrastructure in the Municipality.

Part C: Conditions Applying to Water Use

A visual inspection of the Pipe line and intake facilities was conducted during the period of inspection. No issues were noted.



Water samples were taken near the intake pipe.

The raw water from Tee Lake is pumped from the lake through the pipeline down to the holding tank. It is chlorinated on its way into the holding tank and again as it leaves the tank to enter the water truck. The chlorine residual is measured twice daily.

Noted during the inspection were pails of mixed chlorine that were nearly empty and the inadequate storage system for the chlorine stored in the pump house.

Metres and records were observed during the inspection inside the pumping station.

Part D: Conditions Applying to Waste Disposal

Sewage treatment;

The Licensee is responsible for ensuring that the Effluent discharged from the “Emergency Lagoon” or “Three tier” lagoon systems and entering the environment meet the following standards;

Parameter:	Max Concentration
Faecal Coliforms:	1X 10(6) CFU/100mL
BOD	120 mg/L
TSS	180 mg/L
Oil & Grease	No visible sheen
PH	Between 6 and 9

The licensee is reminded that these parameters are set by the Nunavut Water board and are included in the terms and conditions of the issued water license. Compliance with these terms is an obligation of the Municipality.

During the period of inspection it was noted that the outside wall of the third tier of the three tier lagoon system had considerable erosion and was in a poor state of repair. Direction was provided to the Licensee during the Inspection to take such measures as were required to ensure the structural integrity of the wall of the third tier. The Municipality was directed to provide photographs of the completed work to the inspector as soon as possible. No photos of this work have been received to date. It is important to note that this observation echo’s those observations made in previous inspection reports of the three tier lagoon system.

It was noted that Algae is still visible in the stream running down from the third cell of the lagoon into Telik inlet and algae is also visible along the shoreline and wall of Kingait Mountain where the run off enters Telik Inlet.

The licensee is reminded that prior to a planned decant of the sewage treatment lagoon system there is a requirement for the Municipality to notify the Inspector ten days in advance and to ensure the monitoring program is followed.

As it is clear that the New Lagoon system remains unused, those sections of the current license are not yet in effect.

Solid Waste Management Area;

An inspection was conducted and samples were collected at the solid waste management area (metal dump) during the inspection. In 2007 the Inspector provided the Municipality an opportunity to address those issues that were outstanding. During the 2008 Inspection the Inspector noted that the entire area around the Bulk waste metals area had been built up to prevent run off and control drainage as per recommendations made in the 2007 Inspection.



The Municipality is again commended for completing this work last year and providing the reports to the Inspector in a timely manner.

During the inspection the following locations were sampled;

1. Raw Water (Tee lake),
2. Ponding of run-off from waste metal area approximately 50 metres NW between waste metal area and Telik Inlet,
3. Run off stream at three tier lagoon.

Results from these samples indicated that treatment from the three tier lagoon is not adequate and it is clear that contaminants are migrating into Telek Inlet.

Location	Sample Parameter	Result	Guideline	Comment
Raw water: -	Within Canadian Council of Ministers of the environment Guidelines (CCME) Guidelines			
Waste Metal Dump:	Within Canadian Council of Ministers of the environment Guidelines (CCME) Guidelines			
Three Tier Lagoon	Manganese	1610 µg/L	50 µg/L	HIGH
	Iron	2840 µg/L	300 µg/L	HIGH

(Noted Parameters listed here were found to exceed the NWT Limits for Effluent Discharges)

Part E: Conditions Applying to Modifications and Construction

During the period of Inspection a number of deficiencies with the New Sewage Lagoon were pointed out by Municipal staff. These were outlined immediately following the inspection and the Licensee was to address these with the Government of Nunavut, Department of Community and Government Services and provide feedback to the Inspector. To date the Inspector has not been contacted by either party to address these issues. However it should be noted that the Municipality has brought forth continued concerns to the Inspector concerning the build up of water within the new Lagoon and the flooding of the access way in the East Dyke. This also includes a flow of water from the toes of the lagoon that was documented and photographs sent to the Inspector in September 2008.

It is noted that Section 5 of this part states that the Licensee shall, within sixty (60) days of issuance of this Licence, provide a summary report along with revised stamped as-built plans and record drawings of the 2007 Sewage Disposal Facility, to reflect the clarifications and omissions identified through the Licence application review and detailed in the attached Schedule 1 (of the recently issued Water License 3BM-CAP0810). A review of the Nunavut Water Board FTP site was unable to locate this document.

The Inspector seeks clarification on who is to submit this document and when it will be provided.

Part F: Conditions Applying to Operations and Maintenance

The Water Intake Facility was well maintained and found to be working and in good order.

A request to the Licensee to review the Sewage and Solid Waste Disposal Operations and Maintenance manual was not successful. The Licensee has not taken possession of the new lagoon facility and thus, in the opinion of the Inspector, it is unreasonable to expect the Licensee to have addressed this in a produced Manual.



A draft manual was reviewed during the period of Inspection however it was not complete and did not contain all of the required documentation. The Licensee however did commit again to having the document completed and ready for submission by March 31st for inclusion in the annual report.

The Licensee is also required, as per section 2 of this Part to submit an Operation and Maintenance Manual for the Water Supply Facilities and the Solid Waste Disposal Facilities prepared in accordance with the “*Guidelines for Preparing an Operation and Maintenance Manual for Sewage and Solid Waste Disposal Facilities*”, October 1996. This document was not found during the same review of the Nunavut Water Board FTP site.

The Inspector seeks clarification on its submission from the Licensee.

Part: G Conditions Applying to Abandonment and Restoration

The Hamlet of Cape Dorset is currently using the Three tier and Emergency Sewage lagoons. It is thus unreasonable to expect the Licensee to have submitted a plan for their Abandonment and Restoration at this time.

The requirement to have submitted a plan to have addressed conceptually the A&R requirements of the community at this time is not, in the opinion of the Inspector, a reasonable expectation of the Licensee at this time.

Part H: Conditions Applying to the Surveillance Network Program (Monitoring Program)

During the period of Inspection the Inspector found adequate signage where required. The licensee is reminded that they must ensure that adequate signage remains in place.

Again, as the New Lagoon (2007) has not yet been commissioned and no sewage has been deposited in the lagoon the majority of the required sampling is not yet required. However for those remaining sites that are currently in use and covered under the license as issued the Inspector noted that the Licensee had not complied with section 2 of this part.

The Municipality is reminded that they must collect samples at the following noted sampling sites (Cap 3, 4 and 5) inclusive. These samples are to be collected one week prior to discharge, once at the beginning of the discharge and then weekly thereafter for the duration of the discharge.

These samples shall be analyzed for the following parameters;

Biochemical Oxygen Demand (BOD ₅)	
Carbonaceous Biochemical Oxygen Demand (CBOD ₅)	
Total Suspended Solids	pH
Conductivity	Oil and Grease (visual)
Fecal Coliforms	Total Organic Carbon (TOC)
Nitrate-Nitrite	Ammonia Nitrogen
Total Phosphorus	Total Phenols
Magnesium	Calcium
Sodium	Potassium
Chloride	Sulphate
Total Hardness	Total Alkalinity
Total Trace Metals as determined by a standard ICP Scan (to include at a minimum, the following elements: Al, Sb, Ba, Be, Cd, Cr, Co, Cu, Fe, Pb, Li, Mn, Mo, Ni, Se, Sn, Sr, Tl, Ti, U, V, Zn),	
Total Arsenic	Total Mercury



Additionally at Cap-2 (Runoff from the Solid Waste Disposal Area), as per Section 4 of this Part the Licensee must sample during period of observed flow for the following parameters;

BOD ₅	Fecal Coliforms
pH	Conductivity
Total Suspended Solids	Ammonia Nitrogen
Nitrate-Nitrite	Oil and Grease
Total Phenols	Total Alkalinity
Total Hardness	Calcium
Magnesium	Potassium
Sodium	Sulphate
Total Arsenic	Total Cadmium
Total Copper	Total Chromium
Total Iron	Total Lead
Total Mercury	Total Nickel

These samples are to be collected and analysed in accordance with a Quality Control / Quality Assurance plan. There is no indication that this was completed by the Licensee even after this was noted in the 2006 and 2007 Inspection reports.

As follow up to the inspection report of 2007 the Municipality stated that they had not removed any solids from the three tier lagoon in the last year.

Non-Compliance: Issues identified during the inspection and/or review of relevant material

Issues with a known or anticipated human health impacts;

- Sewage treatment in the community continues to be below an acceptable standard.
- Collect and submit for analysis the samples required on the Monitoring Program.
- Complete required works as necessary to ensure commissioning of the new lagoon system is undertaken before the period of the next inspection.
- Undertake such works as are necessary to prevent the failure of the three tier lagoon system.

Issues where there is a known or anticipated environmental impairment;

- Undertake such works so to mitigate and remediate such lands and waters as were effected by the run off and erosion noted on the roadway to the new lagoon.
- Undertake such works as required to prevent the failure and erosion of the new lagoon system into lakes and waters downstream of the new lagoon system.

Issues where there is a known or suspected violation of a requirement of the Water License;

- Implement the requirements listed under the Monitoring Program (Part H – all parts that apply currently and not subject to the commissioning of the new lagoon (2007)).
- Submission of a Summary Report including revised as-built plans for the New Lagoon (2007) (Part E (5)).
- Develop and submit an *Operation and Maintenance Manual, Sewage Treatment System, Hamlet of Cape Dorset, November 7, 2007* subject to the requirements of Schedule 2 (Part F (1)).
- Operation and Maintenance Manual for the Water Supply Facilities and the Solid Waste Disposal Facilities (Part F(2)).
- Develop and submit to the Nunavut Water Board a Compliance Plan (Part B (6)).
- Installation of Thermisters and ground monitoring wells as per the Monitoring Plan (Part H).

During the period of Inspection it was clear to the Inspector that the Licensee has grave concerns over the commissioning and use of the New Lagoon (2007). The Licensee has instead opted to continue to use the existing systems in the community.



The Inspector has also noted that because works and the installation of required monitoring equipment has not taken place this precludes the use of the facility under the authority of the current Water License. The Licensee thus did not have the option under the authority of the current license to use the new facility. This has forced them to continue to use the current facilities which have in the past failed and put the Licensee into Non-compliance.

It is also clear that the License has not undertaken the required sampling nor put in place sufficient effort to develop the required plans as identified under the issued license. This poses a risk to the environment and water and places the Licensee in Non-conformity with the issued license.

The Municipality of Cape Dorset continues to operate in Non-conformity with those terms and conditions of the Water License issued in 2008 for which they are responsible and which apply in these circumstances. A plan to address these issues of Non-compliance is required to be submitted prior to the next Inspection scheduled in July 2009.

Further the Inspector requires those works, as outlined in the current license, which have not been completed by the Government of Nunavut, Department of Community and Government Services to be undertaken to ensure the Licensee is able to bring themselves into compliance with the issued License.

A. Keim

Inspector's Name

Inspector's Signature

Cc:

Bernie MacIsaac – A/ Manager Field Operations Section- Indian and Northern Affairs Canada

Phyllis Beaulieu – Manager Licensing – Nunavut Water Board

Bhabesh Roy, Regional Engineer - Qikiqtani – Dept of Community and Government Services, Government of Nunavut