Applying MKT as a Compound Line

Related FAQ

- General FAQ
  Frequently Asked Questions
- SR1/SR8 and SRP1/SRP8 FAQ
  Frequently Asked Questions for SmartReader 1 and 8, and SmartReader Plus 1 and 8

SmartReader

MULTI-CHANNEL CONFIGURABLE DATA LOGGERS

ACR SmartReader data loggers are multi-channel, user configurable data loggers that are able to monitor a variety of parameters. Durability is assured with a 3-year logger warranty and 10-year battery life.

Common Specifications

Size	107 mm x 74 mm x 22 mm (4.2" x 2.9" x 0.9")
Weight	110 g (3.75 oz)
Case Material	Noryl® plastic
Operating Limits	-40 to 70°C (-40 to 158°F) and 0 to 95% RH (non-condensing)
Clock Accuracy	+/- 2 seconds per day
Battery	3.6 volt Lithium, 1 Amp-Hour
Power Consumption	5 to 10 microamps (continuous)
Battery Life	10 years under normal use (factory replaceable)
Mounting	Magnetic backing or locking eyelet
Memory Size	32 K (32,768 readings)
Sampling Method	1. Continuous (First-in, First-out) 2. Stop when full (Fill-then-stop)
Sampling Rate	User selectable rates between 8 seconds to once every 5 days
Resolution	8-bit (1 part in 256)
External Connector	Removable screw-type terminal strip with Common (-) connection
PC Requirements	IBM PC or 100% compatible with at least 2MB RAM, 2MB of hard drive disk spac and one free serial port
Software Requirements	TrendReader® 2 (compatible with Windows® 2000, XP and Vista 32bit)
Internal Temperature Sensor Type	NTC thermistor (10,000 ohms @ 25°C [77°F])
Internal Temperature	-40 to 70°C (-40 to 158°F)

Sensor Range	
Internal Temperature Sensor Accuracy	+/- 0.2°C over the range: 0 to 70°C (+/- 0.3°F over the range: 32 to 158°F)
Internal Temperature Sensor Resolution	0.4°C (0.7°F) @ 25°C; better than 1°C (1.8°F) between -25 and 70°C (-13° and 158°F); better than 2.0°C (3.6°F) between -40 and -25°C (-40°F and -13°F)

APPENDIX- E

THREE CELLS EXISTING SEWAGE LAGOONS

EDIT DATE: 30.05.2005 ACAD FILE: 41tow g:\cad\04319\2000e.dwg

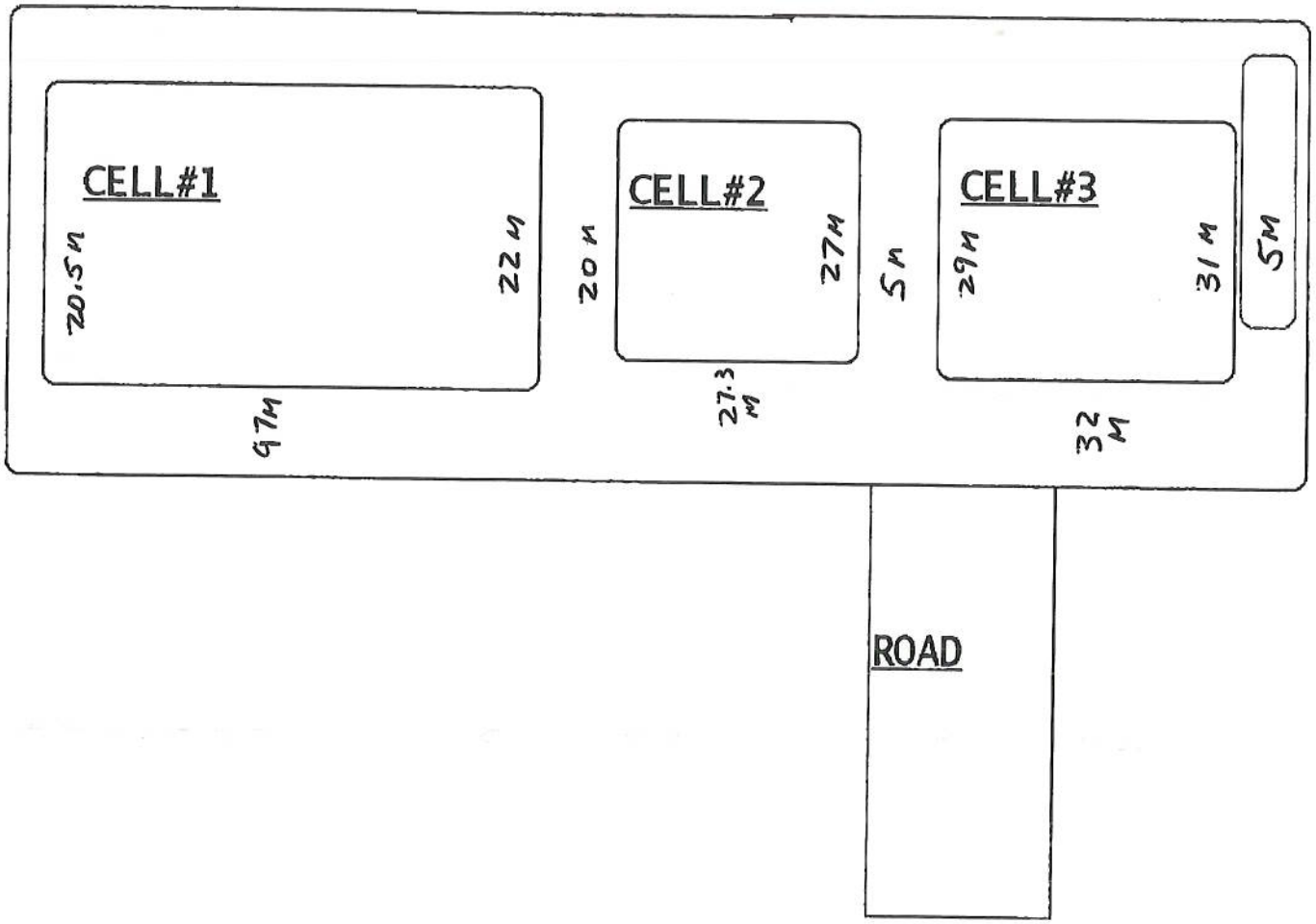
DILLON CONSULTING

PROJECT	Cape Dorset Sewage Treatment System
TITLE	Proposed Lagoon and Road
PROJECT NUMBER	05-4319-2000
DATE	June 05
FIGURE NUMBER	E

CAPE DORSET LAGOONS, 2009

SECTION OF BERM BETWEEN CELL 2 & 3 REPAIRED, SECTION OF BERM AT END OF CELL 3 RAISED 2 FEET TO FIX YEARLY EROSION.

5 LOADS OF GRAVEL USED IN REPAIRS,
APPROX. 60 CUBIC METERS



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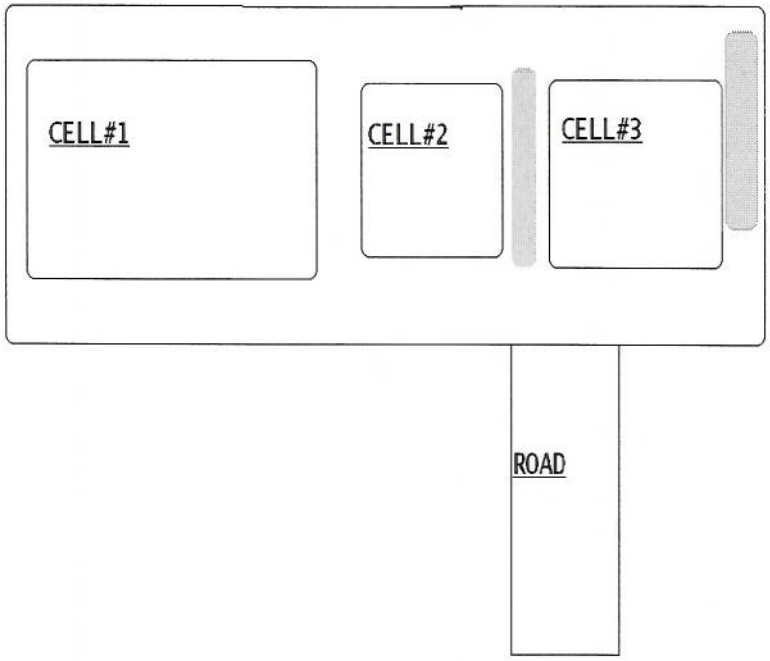
CAPE DORSET LAGOONS, 2009

SECTION OF BERM BETWEEN CELL 2 & 3 REPAIRED, SECTION OF BERM AT END OF CELL 3 RAISED 2 FEET TO FIX YEARLY EROSION.

5 LOADS OF GRAVEL USED IN REPAIRS,
APPROX. 60 CUBIC METERS



Plan of old 3 Cells Lagoons- Municipality of Cape Dorset

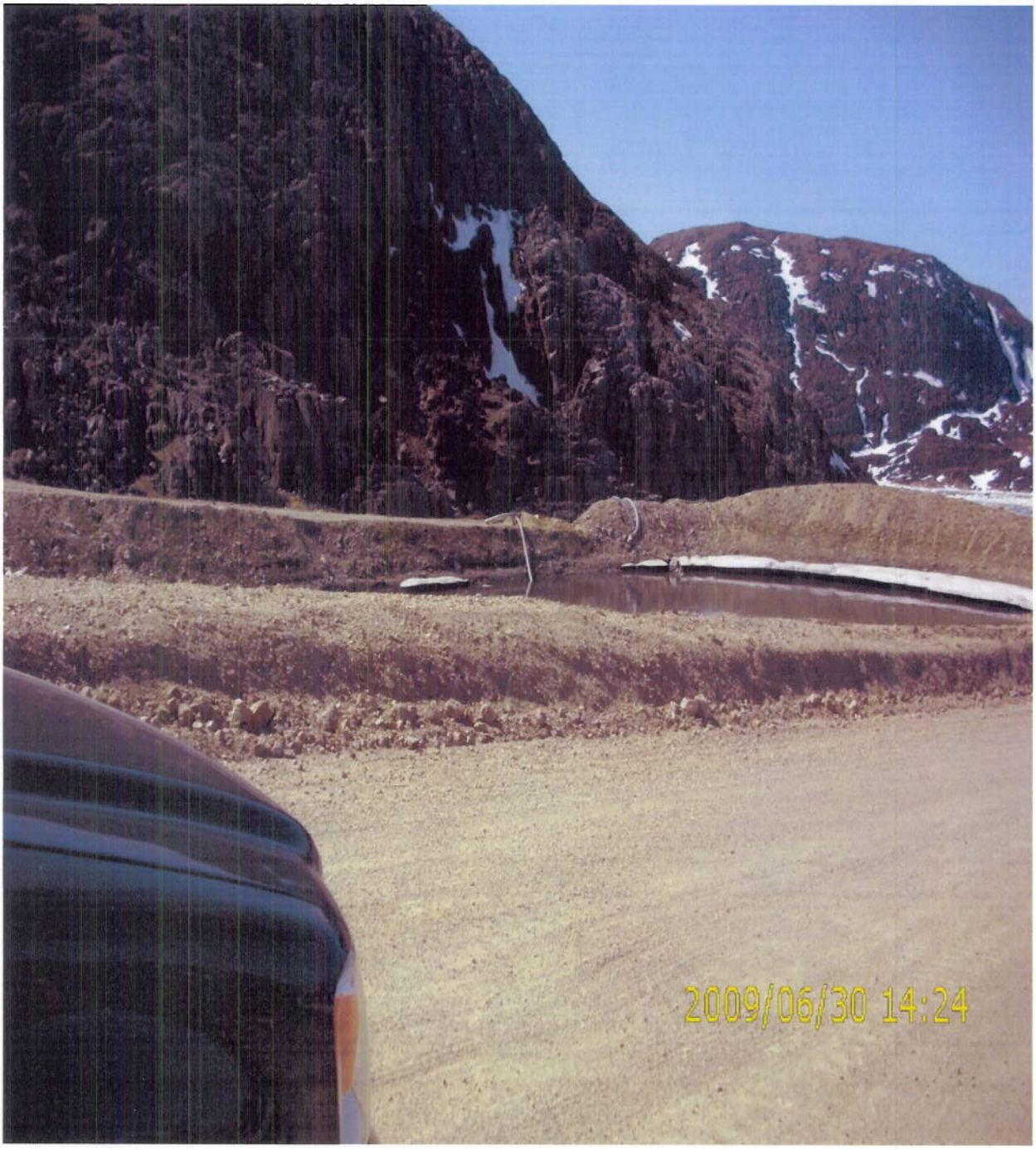


Photo of the access road to old Sewage Lagoon: Cell-1

Photo of Old Sewage Lagoon, Cell -1

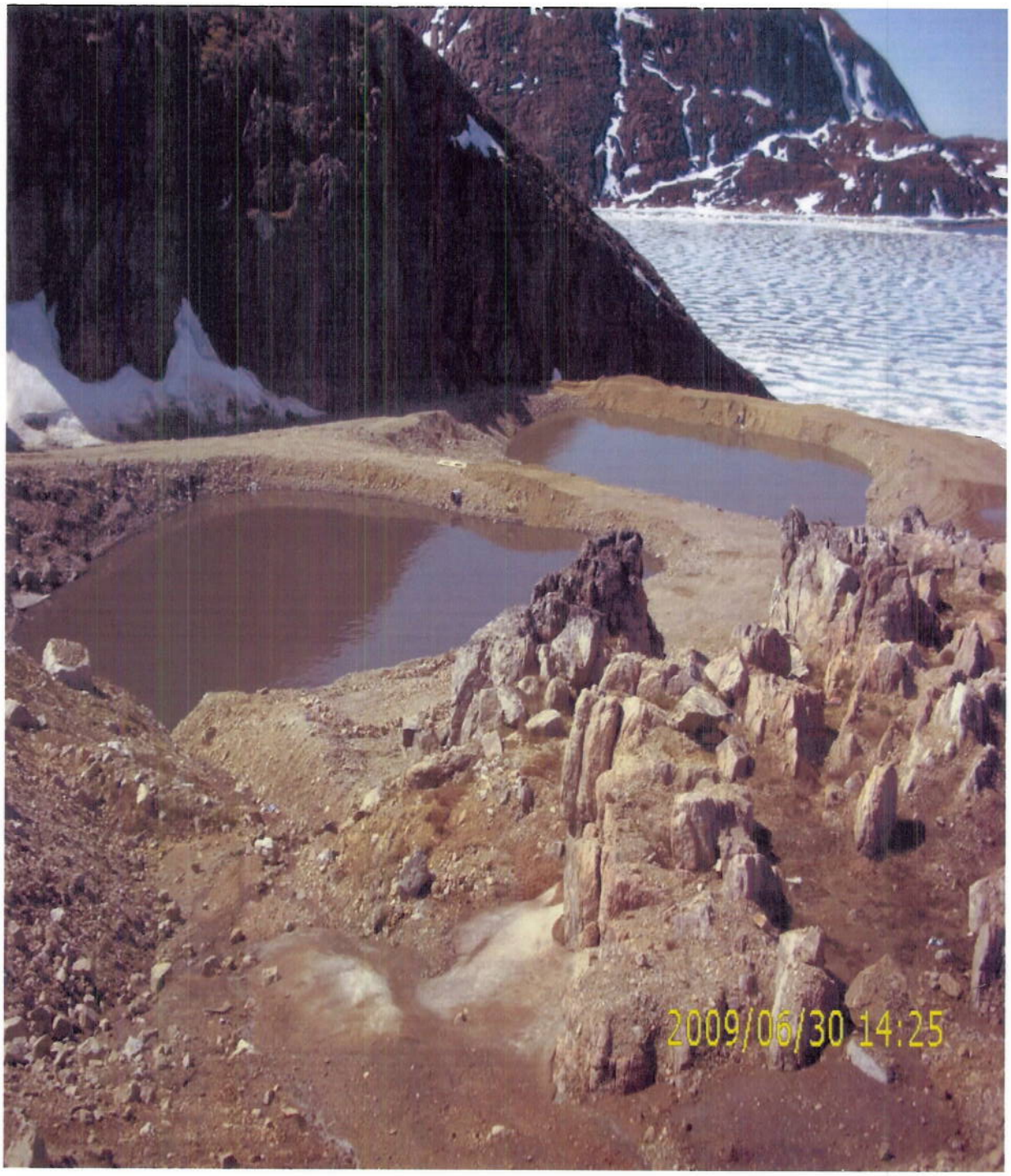


Photo of Old Sewage Lagoon : cells 2 and 3

APPENDIX-F

RESPONSE TO NWB SPREAD SHEETS

RESPONSE

ON

O&M MAUAL CONFORMITY

June 18, 2009
License 3BM-CAP0810
Cape Dorset Operation and Maintenance Manual, Sewage Treatment System Conformity Assessment
Received June 17, 2009

Part, Item	Condition	Location in O&M Manual	Comment/Issue	Response by the Licensee
F,1	The Licensee shall submit to the Board, for approval in writing, within ninety (90) days of issuance of the License and prior to commissioning of the 2007 Sewage Disposal Facilities, a revised Operation and Maintenance Manual, Sewage Treatment System, Hamlet of Cape Dorset, November 7, 2007. The revision shall include the requirements of Schedule 2.	Plan received June 17, 2009.	The cover page is dated October 24, 2007, which is earlier than the version currently on the record which is dated November 7, 2007. This is confusing since the License requires an revision to the November 7, 2007 O&M Manual. The cover page should be revised and an explanation provided for why it was submitted with an October 24, 2007 cover. The OM Manual should also be resubmitted in an unlocked electronic pdf format that has not been scanned. This will facilitate its review by parties.	The O&M manual has been revised satisfying schedule 2 of the water license on July, 2009. Previously the document was submitted as a hard copy and also in a CD. The revised O&M manual will be submitted electronically and also as a hard copy.
Schedule 2				
i	Expansion of Section 3.4.5 to include terms and conditions for the disposal of sludge as provided for in the Draft Guidelines for Discharge of Domestic Wastewater in Nunavut, 2000;	Section 3.4.5 has not been updated	Response from Licensee required.	Please see the response in the O&M manual.
ii	Section 3.4.6 should include a description of the installation of thermistors required under Part H, Item 6, including the number, locations and depths of thermistor beads used to monitor the berms, and a description of the method and frequency of monitoring requirements;	Section 3.4.6.; Table 7; Figure 5, pg 16.	The description of the method and frequency of monitoring appears to lack some detail. E.g. Calls for daily and/or weekly monitoring and recording of thermistor measurements and calibration on an as required basis, while Mr. Roy's letter of November 25, 2008 states regular thermal temperatures of the berms will be taken every four months.	Yes, the thermistors reading will be taken on a four months interval as indicated in the O&M manual. Again, thermistor beads are recording temperature at every eight hours interval.
iii	Section 3.4.6 should include a description of the installation of monitoring wells required under Part H, Item 7, including the number, locations and depths of thermistor beads used to monitor the berms, and a description of the method and frequency of monitoring requirements	Section 3.4.6.; Table 7; Figure 5, pg 16.	Same as previous. Further, Part H, Item 7 of the License requires the submission of geothermal monitoring results with 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. Based on information on the public registry, this has not been provided.	We have been monitoring the thermistors and collecting data from the data loggers. Recently data were collected from Dec.15, 2008 to May 15, 2009. According to the geothermal modeling done by AMEC,2005, the data will be collected and analyzed for first twelve months period during the operation of the new sewage Lagoon in order to validate the assumed parameters in the geothermal modeling during the design phase. Unfortunately the Lagoon was not approved to commission yet. The temperature data were obtained only from Dec.15 2008 to May 15, 2009 during empty condition of the lagoon.
iv	Description of the details of any repairs, upgrades and maintenance required for the use of part or all of the 2001 Sewage Disposal Facility or Emergency Sewage Disposal Facility;	Not found. Work may not have been carried out. Clarification required.	Part G, Item 1 requires the Licensee submit to the Board, for approval in writing, within ninety (90) days of issuance of the License, a detailed Final Abandonment and Restoration Plan for the 2001 Sewage Disposal Facility and the Emergency Sewage Disposal Facility. The Plan should incorporate, where applicable, the appropriate sections as described in Part G, Item 2.	The existing three cells lagoon berms have been repaired to keep using until the new facility will be commissioned. During using the new facility, the old facility will be still kept active for any emergency backup. The photos attached in **Appendix -E** shows the location of these cells and repair works done on the berms.
v	Include a contingency plan for the operation of the 2007 Sewage Disposal Facility during periods where accessibility to the facility is limited and alternative measures are required for the handling of sewage. This may include operation and maintenance of any older facility or portion of, that would be retained as the contingency;	Not found.	Response from Licensee required.	The existing 3 -cells lagoons entirely will be used for any kind of emergency. This is the contingency plan. After one year satisfactory operation of the new lagoon, it might be wise to decide whether all three cells or a part will be retained as the contingency plan/emergency backup.
vi	Provision for the monitoring of effluent discharges from the 2001 Sewage Disposal Facility and the Emergency Sewage Disposal Facility;	Table 5, Pg 11 lists CAP-4 and CAP-5 Monitoring Stations. P. 12 indicates the frequency of sampling required.	Ok.	N.A
vii	Inspection program for the 2001 Sewage Disposal Facility, the Emergency Sewage Disposal Facility and 2007 Sewage Disposal Facility, detailing the frequency and inspection requirements by the operator(s) of the facility;	Section 3.4.7, Pg 17.	It is unclear in the O&M Plan what facilities are subject to geotechnical review by the engineer during the site inspection. Clarification from the Licensee required.	This should be 2007 sewage disposal facility.

viii	Appendix C of the O&M Manual to include forms to document the recommendations and follow up work required as a result of the annual geotechnical inspection.	Appendix C is entitled "Guidelines for Wastewater Sampling". Appendix D contains O&M log sheets.	Forms to document the recommendations and follow up work required as a result of the annual geotechnical inspection were not found in Appendix C or D. Response from the Licensee required.	The follow up inspection result will be accommodated in 2009 Hamlet Annual report.
ix	Section 4 – Spill Contingency Plan be revised to comprehensively address specific recommendations provided during the review process by GN DoE as follows:	**There appears to have been no revisions made to Section 4. It appears ix.a through ix.l not addressed.**	There appears to have been no revisions made to Section 4. It appears that no other SCP is on file therefore the information should be provided in Section 4 of the O&M Manual as requested. Response from Licensee required.	This has been revised and shown in the revised O&M manual on July ,2009.
ix.a	The date the contingency plan was prepared.			See the Revised O&M manual
ix.b	The name and address of the person in charge, management or control. This is an on-site person responsible for managing the facility. This person would be initially responsible for clean-up activities.			See the Revised O&M manual
ix.c	The name and address of the owner if different from the person in charge. This is the person ultimately responsible for the facility, usually the owner.			See the Revised O&M manual
ix.d	The name, job title and 24 hour telephone number for the persons responsible for activating the contingency plan. This ensures the employee discovering the spill can activate a response and provides a 24 hour point of contact for the authority investigating the spill.			See the Revised O&M manual
ix.e	A description of the facility including the location, size and storage capacity. This is important if persons are unfamiliar with the facility or area. The description could include a map and/or diagrams.			See the Revised O&M manual
ix.f	A site map that is intended to illustrate the facilities relationship to other areas that may be affected by the spill. The map should be to scale and be large enough to include the location of your facility, nearby buildings or facilities, roads, culverts, drainage patters, and any nearby bodies of water.			See the Revised O&M manual
ix.g	The steps to be taken to report, contain, and clean up and dispose of a contaminant in the case of a spill.			See the Revised O&M manual
ix.g.1	Reporting: Notification of all parties involved. This can include internal and external reporting procedures as well as a copy of the spill report;			See the Revised O&M manual
ix.g.2	Clean up: Removal of the contaminant from the environment, a detailed of actual containment and clean up techniques. (2 steps: contain and remediate; be aware of fire);			See the Revised O&M manual
ix.g.3	Disposal: Is the treatment of the contaminant such that it is no longer a threat to the environment. Plans may include location of disposal sites approved to accept wastes, means of storage prior to disposal and other approvals required. (Waste Manifest document).			See the Revised O&M manual
ix.h	The means by which the contingency plan is activated. This should outline internal company procedures to activate appropriate response equipment and personnel.			See the Revised O&M manual
ix.i	A description of the training provided to employees to respond to a spill. A sound training program is necessary when dealing with an emergency situation.			See the Revised O&M manual
ix.j	An inventory and the location of response and clean up equipment available to implement the plan. This includes your equipment as well as any to be used by another person responding to the spill on your behalf.			See the Revised O&M manual
ix.k	SPILL KIT (FUEL)The kit can include but not limited to the following: shovel, pick-axe, drums, booms, absorbent pad/sheet, disposable protective gloves/coveralls, sorbent and containment materials, and disposal bags.			See the Revised O&M manual
ix.l	A list of local contractors or clean up specialists who may be called upon to assist in responding to spills. A list of emergency numbers such as fire, ambulance and police.			See the Revised O&M manual

x	Section 4 – describe the measures to be implemented for a spill during the collection and transportation of wastewater. This spill response is to be expanded to include spill scenarios resulting from the leakage or failure of a containment structure for the Sewage Disposal Facilities; and	Not found.	Section 4 has not been revised. Response from Licensee required.	See the Revised O&M manual
xi	Appendix B to include specific reference to monitoring stations and required frequency of sampling and the analyses required by the License.	Not found.	The Appendix has not been revised. Response from Licensee required.	See the Revised O&M manual

RESPONSE

ON

REQUIREMENTS -2007 LAGOON OPERATION

License 3BM-CAP0810

Requirements prior to commissioning the 2007 Sewage Lagoon

Part, Item	Condition	Date Received	Comment	Response by the Licensee
E,5	The Licensee shall, within sixty (60) days of issuance of this License, 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 License application review and detailed in the attached Schedule 1.	17-Jun-09	Record drawings submitted as Appendix A of the O&M Manual. However, they appear identical to those on file dated November 2007, signed November 12, 2007. Clarifications and omissions appear to not have been made. Response from Licensee required.	Revised As-built plan and record drawings are the part of the updated O&M manual on July 2009.
F,1	The Licensee shall submit to the Board, for approval in writing, within ninety (90) days of issuance of the License and prior to commissioning of the 2007 Sewage Disposal Facilities, a revised Operation and Maintenance Manual, Sewage Treatment System, Hamlet of Cape Dorset, November 7, 2007. The revision shall include the requirements of Schedule 2.	17-Jun-09	See issues identified in first worksheet	Revised O&M manual on July 2009 is available.
H,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.	25-Nov-08	Mr. Roy's letter acknowledged and distributed December 8, 2008. This letter however provided notice that the instrumentation was installed, however no confirmation documentation as to the installation being completed as recommended by the Geotechnical Engineer of record. Requires INAC confirmation of compliance (see H25i).	Thermistors were installed as shown in the as built drawing included with the updated O&M manual on July ,2009.
H,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	Not on File.	Mr. Roy's (GN-CGS) letter of November 25, 2008, states that thermal temperatures of the berm will be taken every four months and that information will be included in the annual report. No data was available in the 2008 annual report.	Data collected from Dec.15 , 2008 to May 15, 2009 are attached in **Appendix-C**. This information will be included with the hamlet 2009 annual report. The twelve months recorded data are not available yet during the operation of this facility to validate the assumptions of the geothermal analysis done by AMEC in Oct.13, 2005. AMEC report is attached in **Appendix-B.**
H,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.	See H6 and H7		See the documents attached with the forwarding letter along with the revised O&M manual on July 2009..
H,9	The Licensee shall, within ninety (90) days of issuance of this License, provide a Temperature Monitoring Program and Implementation Plan for ongoing collection of ground temperatures within each berm structure and foundation of the 2007 Sewage Disposal Facility through the installation of thermistors. This Plan shall take into consideration the following: i. Locations of thermistors, to be incorporated into the Monitoring Station Table under Part H, Item 1; ii. Appropriate thermistor configuration, overall depth and spacing of bead locations to provide the level of data collection that will capture any extreme variations in temperature and provide the information needed to validate the assumptions made in the geothermal analysis. iii. The frequency of temperature readings shall be such to allow the determination of the maximum freeze and thaw of the berm and underlying native materials and provide adequate data for thermal modeling of the berms. **iv. This frequency may be reviewed and adjusted upon collection of adequate data and** as recommended by the Geotechnical Engineer in order to assess the berms through thermal modeling and provide an assessment with respect to berm stability and potential seepage. v. This information is to be reported along with the results of the annual geotechnical inspection as required under Part F, Item 6. **vi. An implementation schedule that will allow collection of data for confirmation of core-**	Not on file	Past due. Response from Licensee required.	See the documents attached with the forwarding letter along with the revised O&M manual. The new lagoon has not yet commissioned. Therefore annual report during operation of this facility is not available. The thermistors were installed. Temperature data have been recorded since December 15, 2008. This information will be reported along with the hamlet water License annual report of 2009. Beads of each thermistor are recording temperature at eight hours interval at the field. The temperature data will be collected from the data loggers on a four months interval.
H,12	The Licensee shall install groundwater monitoring wells at the 2007 Sewage Disposal Facility to obtain at least one monitoring season of data prior to the expiry of the License. At least one groundwater monitoring well shall be located upstream of the 2007 Sewage Disposal Facility for background data collection, at least one groundwater monitoring well shall be located downstream of the landfill and at least one groundwater monitoring well shall be located downstream of the metals dump.	Not on file	No discussion found in the O&M Manual. Response from Licensee required.	Not done yet. The proposed coordinates are attached. The wells will be dug following the instruction of the Water Board in the following locations: Upstream of the new lagoon:64°13'14.66"N; 76°**33'56.66" W** ;Downstream of the landfill site: 64°13'40.59"N; 76°34'27.13"W Downstream of the metal dump: 64°13'57.10"N; 76°34'10.72" W
H,25	Her Majesty in the right of Canada shall: i. Monitor the Licensee's installation of thermistors and notify the Board when the installation of thermistors is complete and in compliance with Part H, Item 6; ii. Monitor the Licensee's validation of the assumptions of the geothermal analysis through adequate monitoring of the thermal regime for the East and West Berms and downstream foundations under Part H, Item 7, and notify the Board when satisfied the assumptions of the geothermal analysis have been validated; and iii. Monitor the 2007 Waste Disposal Facility and notify the Board immediately if the Project is commissioned prior to the completion of i. and ii., or in contravention of any other condition of the License.	Correspondence not on file.	Verification from INAC required.	The four thermistors were installed in two different berms and data were collected from the field from Dec.15,2008 to May 5, 2009. These are attached. Validation of the assumptions of the geothermal analysis will be done on the first twelve months data during the operation of the new sewage lagoon as indicated in AMEC report oct.13, 2005, **Appendix-C.**

RESPONSE

ON

GENERAL REQUIREMENTS

License 3BM-CAP0810

General License Requirements

Part, Item	Condition	Date Received	Comment	Response by the Licensee
B,1	Annual Report	7-Jan-09	Substantially deficient wrt monitoring program data. Response from Licensee required. The annual report should also address any concerns brought forward through INAC inspections.	The temperature data were not available at the time when the annual report was sent to NWB. However, the temperature data were collected from Dec.15, 2008 to May15, 2009 and attached in Appendix-C. This information will be included in hamlet 2009 annual report.
B,6	The Licensee shall submit to the Board, for approval in writing, within the lesser of ninety (90) days or the filing of any application in relation to the 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 License.	Not on file.	Response from Licensee required	CGS consultant will be dealing with the general O&M issues of the license like plan of compliances etc.
F,2 Has this been submitted?	The Licensee shall submit to the Board, for approval in writing, within ninety (90) days of issuance of the License, 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. The Plan shall include a specific section addressing waste management and the proper diversion and segregation of wastes, the storage, transport and disposal of hazardous wastes materials.			The Hamlet environmental consultant is on board and they will be working on the waste management issues. A copy of water supply O&M manual is with the NWB already.
F,5	An inspection of all engineered facilities related to the management of water and waste shall be carried out annually in July, by a Geotechnical Engineer in accordance with the Canadian Dam Association, Dam Safety Guidelines, November 2007, where applicable. This inspection shall include the access road alignment with respect to water resources and the diversion and passage of water through culverts. The engineer's report shall be submitted to the Board within sixty (60) days of the inspection, including a covering letter from the Licensee outlining an implementation plan addressing each of the Engineer's recommendations.	Not on file.	July 2008 inspection past due. Response from Licensee required.	The 2007 facility has not been commissioned. Therefore no inspection was made on it yet. An inspection report on all the engineered facilities will be conducted during this summer and included hamlet 2009 annual report.
G,1	The Licensee shall submit to the Board, for approval in writing, within ninety (90) days of issuance of the License, a detailed Final Abandonment and Restoration Plan for the 2001 Sewage Disposal Facility and the Emergency Sewage Disposal Facility. The Plan should incorporate, where applicable, the appropriate sections as described in Part G, Item 2.	Not on file.	Past due. Response from Licensee required.	Attached in the O&M manual. Abandonment and restoration plan of the old lagoons will be developed only when the new facility is approved for commissioning and functions successfully for one complete year.
G,2	The Licensee shall submit to the Board, for approval in writing, within six (6) months of issuance of this License, a preliminary or conceptual Abandonment and Restoration Plan for the Hamlet of Cape Dorset, Water and Waste Disposal Facilities and all associated structures not covered under Part G, Item 1, with end objectives to return the site to pre-use conditions.	Not on file.	Past due. Response from Licensee required.	Yes, the preliminary or conceptual abandonment and restoration plan will be submitted respectfully six (6) months prior to implementation as directed by the Water Board.
H,20	The Licensee shall revise the "Guidelines for Wastewater Sampling, October 27, 2007" and submit to the Board for approval by an Analyst in writing a Quality Assurance/Quality Control (QA/QC) Plan for the Hamlet of Cape Dorset, within ninety (90) days of issuance of this License. The Plan shall use as a guide the document "Quality Assurance and Quality Control Guidelines for use by Class "B" Licensees in Collection of Representative Water Samples in the Field, and for Submission of a QA/QC Plan, July 1996". The Plan shall address the use of field blanks, replicate sampling and certified reference material in order to assess accuracy, precision and field contamination	Not on file.	Appendix C of the O&M Manual (Guidelines for Wastewater Sampling) is dated October 24, 2007 - which is earlier than the October 27, 2007 version that the NWB refers to in condition H,20. No revision has been made. Response from Licensee required.	Revision has been made in the O&M manual on July 2009. This O&M manual is now available..