Indian and Northern Affairs Canada
Affaires indiennes et du Nord Canada

INAC, Nunavut District
Box 100
Iqaluit, NU
X0A 0H0

tel.: (867) 975-4275
fax.: (867) 979-6445

CANADA REMEMBERS
LE CANADA SE SOUVIENT

Your file Votre référence

Our file Notre référence
N6L3-0779 (expired)

WATER BOARD
JAN 09 2001
PUBLIC REGISTRY

INTERNAL	
PC	92
LA	Jan 12/01
OM	
TA	Copy
BRD	
Nirb DSD DFO	Jan 24/01

December 6, 2000.

Ron Roach
Senior Administrative Officer
Municipality of Rankin Inlet
P.O. Box 310
Rankin Inlet, NU X0C 0G0

July 27, 2000 Water Licence Inspection - Report

Firstly, I wish to thank Noah Makayak and Dennis Althouse for their much appreciated time and assistance provided during the tour of the Municipality's water use and waste disposal facilities. Attached for your records is the Municipal Water Use Inspection Report pertaining to the July 27, 2000 inspection; while the Inspector recognizes that the shared nature of the ownership and upkeep of the facilities somewhat complicates matters for the Municipality, the following operational and administrative issues must nonetheless be addressed:

- **Sewage disposal:** Treated sewage is discharged to Prairie Bay via a deep water conveyance line (figure 1). However, the extent of the sewage treatment plant is minimal, being limited to a rotating screen (figure 2) which reportedly often raises the quantity of suspended solids in the effluent. It was also mentioned that upgrades to the water supply network had achieved a reduction in municipal water consumption, yet consequently reduced the dilution of the sewage discharge. Hence, the attached analytical results reveal that the treated sewage discharge at Surveillance Network Station (SNP) station 0779-3 does not meet the required effluent quality standards.

As such, the Municipality needs to ensure that the effluent from the sewage waste disposal facility meets the thresholds imposed within its Water licence, even if the Municipality neither directly owns nor operates the undertaking. Accordingly, by copy of this letter to the Department of Public Works and Housing (DPW&H), the Inspector recommends that the Municipality establish a closer work relationship with the owner/operator of the municipal water use and waste disposal facilities it is ultimately responsible for as Licensee of Water licence N6L4-0779.

Canada

In parallel, Nunavut Water Board (NWB) approval has yet to be granted for the disposal of sewage screenings originating from the sewage treatment facility. Therefore, the Inspector requests that the Licensee either update or validate the attached memorandum relating to the now ongoing disposal of sewage screenings at the solid waste disposal site (figure 3). Formal NWB review could then proceed in a timely manner.

- **Solid waste disposal:** The solid waste disposal facility is now essentially a landfill, as prevailing wind conditions impede periodic burns. No segregation takes place at the general dumping area (figure 4), and waste is neither compacted nor covered. Accordingly, solid waste haphazardly litters an extensive area (figure 5). Furthermore, in addition to posing a wildlife attraction concern, gaps and breaks in the surrounding fence translate into a substantial quantity of windblown waste beyond the perimeter of the facility.

This being said, the attached analytical results relating to the runoff of leachate from the solid waste disposal facility (figure 6) appear largely acceptable in terms of effluent quality standards. In addition, the Microtox sample, which constitutes a reliable indicator of biological toxicity attributed to the associated discharge, came in negative.

- **Operation and Maintenance (O&M) plan:** The Licensee has yet to submit a plan for the operation and maintenance of the sewage and solid waste disposal facilities. As the said plan was due by March 1994, this is hardly the first instance of the Licensee being reminded of the requirement. Moreover, considering the unsatisfactory state of the solid waste disposal facility, the questionable treatment and resulting effluent quality from the sewage disposal facility, and the still unapproved disposal of its sewage screenings, an O&M plan indeed appears far from a luxury. Although the Inspector acknowledges that the Licensee is not the sole owner and/or operator of the facilities, dismissal of this water licence condition is nevertheless unacceptable.

- **Records & reporting:** As of yet, neither the NWB nor this office have received the Licensee's overdue 1998 and 1999 annual reports. Further, Water licence N6L3-0779, issued by the Northwest Territories Water Board to the Hamlet of Rankin Inlet, has lapsed into expiry since August 31, 1999; a water licence renewal application has yet to be submitted. In light of this, the Inspector reiterates that a water licence is not a mere paperwork formality, but constitutes a legal requirement under the *Northwest Territories waters Act* and the *Nunavut Land Claims Agreement*. In this and various regards underlined in the present report, INAC or other implicated agencies can render further assistance should it be required.

Please feel free to contact me at (867) 975-4298 or lavalleep@inac.gc.ca should any questions/comments arise.

Sincerely,

Philippe Lavallée
Water Resources Officer
INAC, Nunavut District

c.c. - Nunavut Water Board, Gjoa Haven
- DPW&H, Rankin Inlet (Dennis Althouse)
- CG&T, Rankin Inlet (Don Forsyth)
- Environmental Health Officer, Rankin Inlet (Wanda Poirier)
- EC Environmental Protection, Yellowknife (Anne Wilson)

Indian and Northern Affairs Canada | Affaires Indiennes et du Nord Canada

MUNICIPAL WATER USE INSPECTION FORM

Date: 2000/07/27 **Licensee Rep.** (Name/Title): Noah Makayak / Foreman
Dennis Althouse / Utilidor System Manager

Licensee: **Municipality of Rankin Inlet** **Licence No.:** **N6L3-0779** (expired)

WATER SUPPLY

Source(s): Nipissak Lake **Quantity used:** 500 000 m^3 yearly allowable max.

Owner:/Operator: DPW&H

Indicate: **A** - Acceptable **U** - Unacceptable **NA** - Not Applicable **NI** - Not Inspected

Intake Facilities: A	**Storage Structure:** A	**Treatment Systems:** A	**Chemical Storage:** A
Flow Meas. Device: A	**Convey. Lines:** A	**Pumping Stations:** A	

Comments: Well-kept water supply facilities. Computerized management and database system monitors water distribution network. Chlorine and fluoride treatments in operation.

WASTE DISPOSAL

Sewage: **Sewage Treatment System** (Prim./Sec/Ter.): primary; deep water discharge to ocean

Natural Water Body: x **Continuous Discharge** (land or water): x

Seasonal Discharge: **Wetlands Treatment:** **Trench:**

Solid Waste: **Owner/Operator:** DPW&H - Municipality

Landfill: x **Burn & Landfill:** x **Other:**

Indicate: **A** - Acceptable **U** - Unacceptable **NA** - Not Applicable **NI** - Not Inspected

Discharge Quality: sampled	**Decant Structure:** NA	**Erosion:** A
Discharge Meas. Device: none	**Dyke Inspection:** NA	**Seepages:** NA
Dams, Dykes: NA	**Freeboard:** NA	**Spills:** none reported
Construction: NA	**O&M Plan:** U	**A&R Plan:** NA
Periods of Discharge: A	**Effluent Discharge Rate:** not measured	

Comments: No Operation and Maintenance (O&M) plan of the waste disposal facilities yet submitted. Solid waste is not segregated, compacted, nor covered. Substantial quantity of windblown material beyond the partly fenced perimeter of the dump. Disposal of sewage screenings not formally submitted for approval.

FUEL STORAGE

Owner/Operator:

Indicate: **A** - Acceptable **U** - Unacceptable **NA** - Not Applicable **NI** - Not Inspected

Berms & Liners:	**Water within Berms:**	**Evidence of Leaks:**
Drainage Pipes:	**Pump Station & Catchment Berm:**	
Pipeline Condition:	**Not Applicable:** x	**Condition of Tanks:**

SURVEILLANCE NETWORK PROGRAM (SNP)

Samples Collected **Hamlet:** to be collected later in the summer

INAC: sewage discharge (0779-3), dump leachate (0779-4)

Signs Posted **SNP:** yes **Warning:** yes

Records & Reporting: no 1998 and 1999 Annual Reports, no Water licence renewal application

Geotechnical Inspection: none required

Non-Compliance of Act or Licence: O&M Plan, 1998 and 1999 Annual Reports not yet submitted. Overdue Water licence renewal application. Disposal of sewage screenings not duly approved. SNP station 0779-3 effluent quality standards exceeded.

Philippe Lavallée

Inspector's Name **Inspector's Signature**

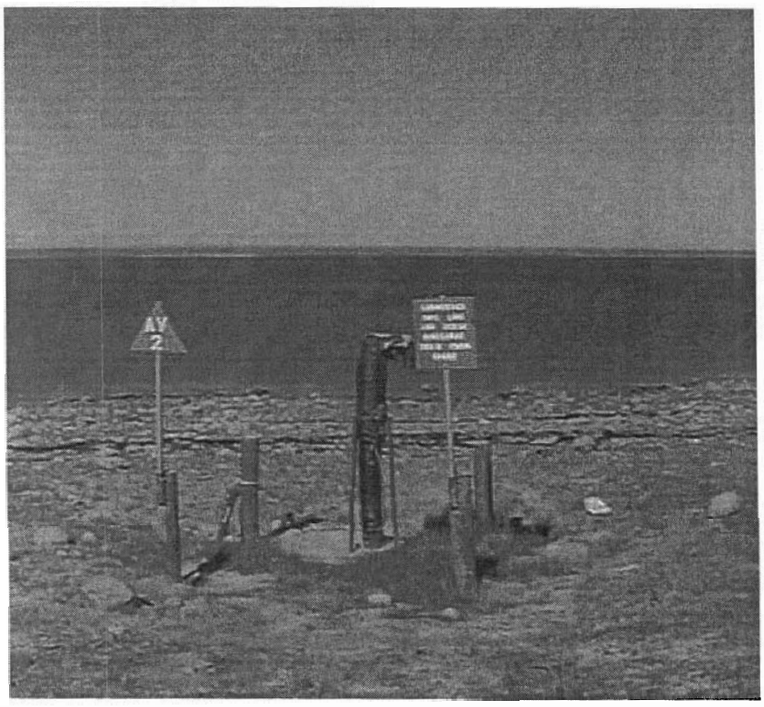

figure 1. Final station along deep-water sewage discharge line; 2000/07/27.

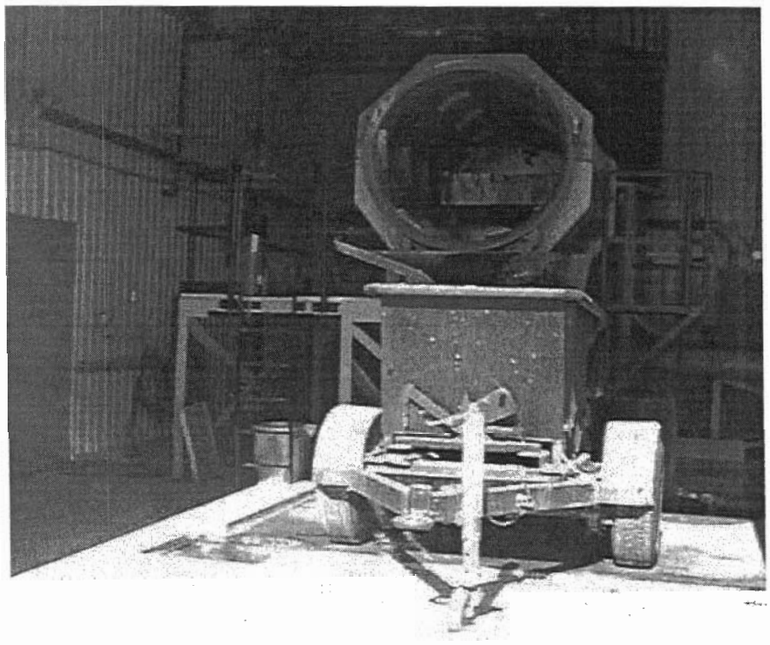

figure 2. Rotating screen acting as sewage treatment plant; 2000/07/27.

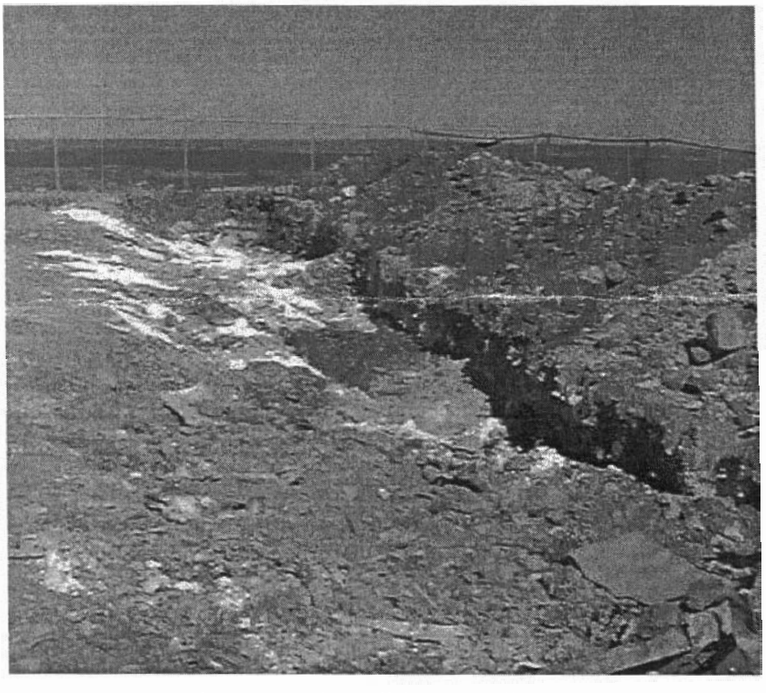

figure 3. Sewage screenings trench, solid waste disposal facility; 2000/07/27.

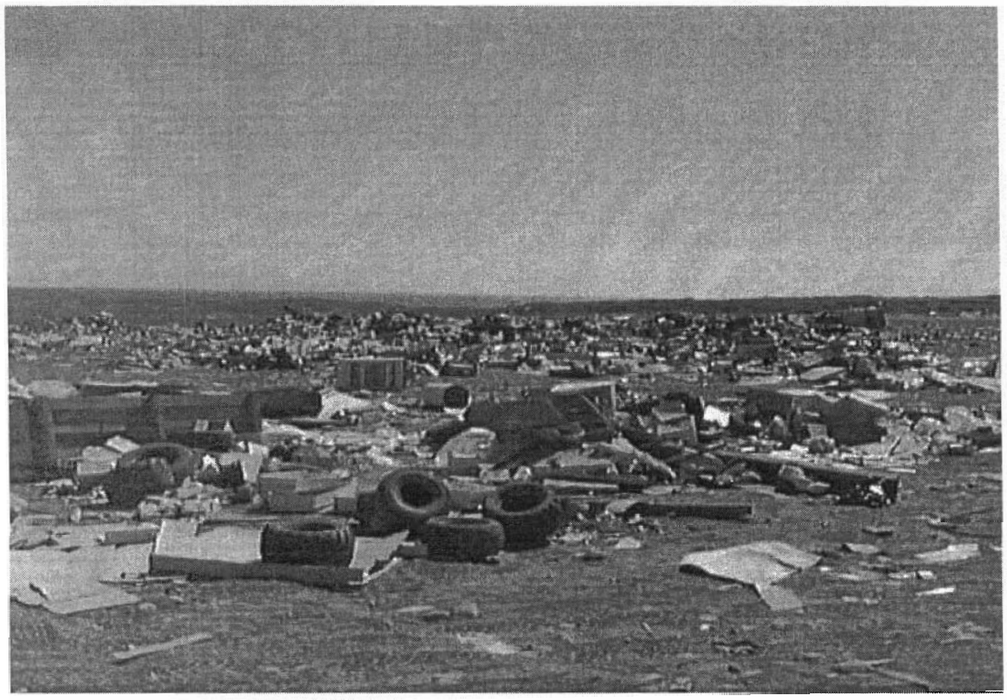

figure 4. Dumping area, solid waste disposal facility; 2000/07/27.

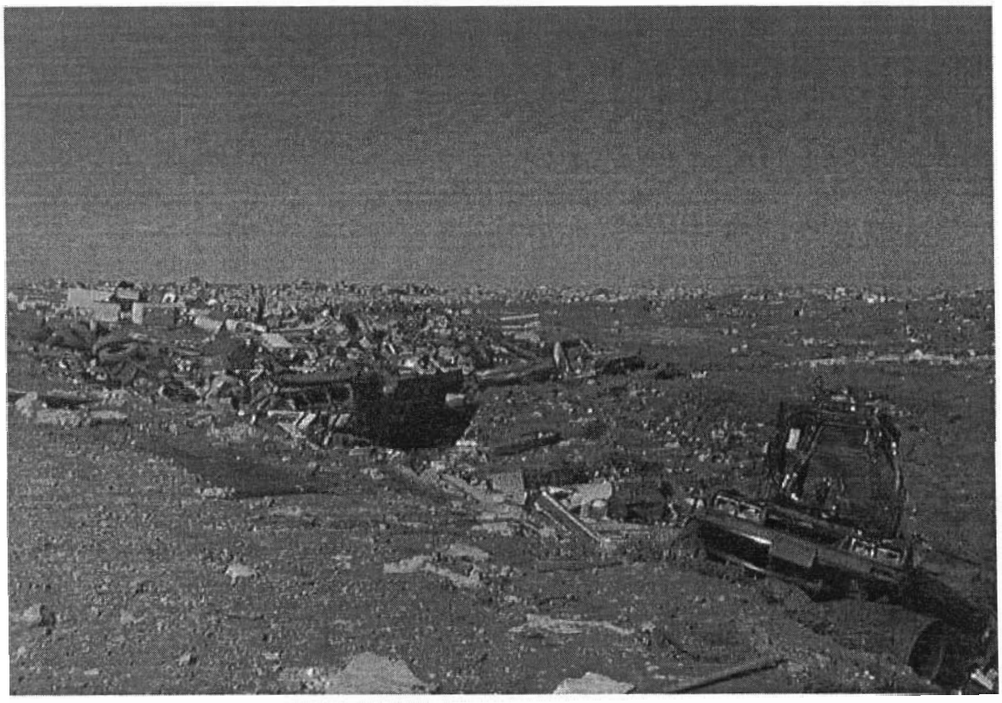

figure 5. Solid waste disposal facility from perimeter; 2000/07/27.

figure 6. Leachate from the solid waste disposal facility; 2000/07/27.

TAIGA ENVIRONMENTAL LABORATORY
Dept. Indian Affairs & Northern Development
4601-52 nd Ave., Box 1500
Yellowknife, NT. X1A 2R3
Tel. (867) 669-2788
Fax: (867) 669-2718

To: NUNAVUT
Operations Directorate, DIAND
BOX 100
IQALUIT X0A 0H0
Att'n: Philippe Lavallee

LAB# 201469

SAMPLE INFORMATION

Our Lab#: 201469
Your Sample ID: 779-3
Sample Matrix: sewage effluent

PROJECT: Rankin SNP

Collection:
Location: Rankin Inlet SNP
Date: 7/27/00
By: P.Lavallee

Received Date: 7/28/00
Report Date: 28-Aug-00
Approved By:

- SAMPLE ANALYSIS REPORT -

Lab#	Test	Result	Units	Detection Limit	Analysis Date	Analytical Method
201469						
	Bio-Oxy-Demand	161	mg/L	2	7/28/2000	08208
	Faecal_Coliform	7400000	CFU/dL	1	7/28/2000	036014
	Ammonia-N	40.6	mg/L	0.005	8/10/2000	EC7557
	T-Phosphorous	7.83	mg/L	0.004	8/22/2000	EC15411
	Tot-Suspended-Solids	286	mg/L	3	7/31/2000	EC10406

Field Data (00/07/27) Sewage
Temperature: 14.5 °C
Conductivity: 620 µS
pH: 7.1 **Time:** 16:02

RECEIVED
SEP 05 2000
D.I.A.N.D.
IQALUIT, NT

TAIGA ENVIRONMENTAL LABORATORY
Dept. Indian Affairs & Northern Development
4601-52 nd Ave., Box 1500
Yellowknife, NT. X1A 2R3
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Fax: (867) 669-2718

To: NUNAVUT
Operations Directorate, DIAND
BOX 100
IQALUIT X0A 0H0
Att'n: Philippe Lavallee

LAB# 201470

SAMPLE INFORMATION

Our Lab#: 201470
Your Sample ID: 779-4
Sample Matrix: water

PROJECT: Rankin SNP

Collection:
Location: Rankin Inlet SNP
Date: 7/27/00
By: P.Lavallee

Received Date: 7/28/00
Report Date: 28-Aug-00
Approved By: WCook

- SAMPLE ANALYSIS REPORT -

Lab#	Test		Result	Units	Detection Limit	Analysis Date	Analytical Method
201470							
	T-Phosphorous		0.032	mg/L	0.004	8/22/2000	EC15411
	Tot-Suspended-Solids		9	mg/L	3	7/31/2000	EC10406
	Potassium		0.30	mg/L	0.03	8/04/2000	EC19102
	Magnesium			mg/L	0.01	8/04/2000	012102
	Sodium		1.74	mg/L	0.02	8/04/2000	011102
	Sulphate		741	mg/L	3	8/01/2000	016306
	Phenols		25.1	ug/L	2.00	8/14/2000	006536
	Oil&Grease		NO SAMPLE	mg/L	0.2	7/31/2000	006524
	Tot-Mercury(water)	<	0.01	ug/L	0.01	8/09/2000	080314
	Tot-Cadmium(ICP-MS)		1.4	ug/L	0.3	8/03/2000	ICP-MS
	Tot-Cobalt(ICP-MS)		9	ug/L	1	8/03/2000	ICP-MS
	Tot-Chromium(ICP-MS)	<	3	ug/L	3	8/03/2000	ICP-MS
	Tot-Copper(ICP/MS)		77	ug/L	2	8/03/2000	ICP-MS
	Tot-Iron(AA)		0.49	mg/L	0.03	8/04/2000	ICP-MS

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To: NUNAVUT
Operations Directorate, DIAND
BOX 100
IQALUIT X0A 0H0
Att'n: Philippe Lavallee

LAB# 201470

Tot-Manganese(ICP-MS)	3010	ug/L	1	8/03/2000	ICP-MS
Tot-Nickel(ICP-MS)	48	ug/L	1	8/03/2000	ICP-MS
Tot-Lead(ICP-MS)	1	ug/L	1	8/03/2000	ICP-MS
Tot-Zinc(ICP-MS)	243	ug/L	10	8/03/2000	ICP-MS

Field Data (00/07/27) **Dump**
Temperature: 4.5 °C
Conductivity: >1990 µS
pH: 7.1 **Time:** 14:38

MICROTOX DATA REPORT
Basic Test

FILE: 00080103.K15
Rankin Inlet Sample - Collected July 27/00 @ 14:26

Test Time: 15 minutes Osmotic Adjustment:y

NUMBER	IO/IT	CONC.	CR/GAMMA	% EFFECT
Control	93.61/ 77.42	0.0	0.8270 #	
1	89.67/ 80.38	5.6250	-0.077 *	
2	89.62/ 80.12	11.2500	-0.075 *	
3	84.87/ 75.17	22.5000	-0.066 *	
4	94.49/ 75.81	45.0000	0.031 *	

CR = Control Ratio CORRECTION FACTOR = 0.8270
* Invalid data or controls

EC50 IS GREATER THAN HIGHEST CONCENTRATION

Signature [signature] TEST DATE: Aug 01/00
TIME: _____

pH 6.9

N624-0779

RECEIVED
MAR 0 3 1997
D.I.A.N.D.
IQALUIT, NT

3

R
3/3

Memorandum

To: Paul Smith
Water Resources Officer
Northern Affairs Program
DIAND

From: Don Forsyth
MACA

Date: Feb. 20, 1997

Subject: **Rankin Inlet Sewage Screenings Landfill Site**

Paul, as per your telephoned request of last week, I am enclosing with this memo the following :

- A drawing of the proposed Sewage Screenings Landfill Site
- A plan showing its location inside Rankin Inlet's Solid Waste Landfill Site
- A diagram of the Dump Trailer used to transport the screenings from the Wastewater Treatment Plant to the site.

Leachate from the Site should be minimal as it is located near the high point of the Solid Waste Site. Any leachate from the Site will undergo wetlands treatment along the 270 m flowpath inside the solid waste site and additional wetlands treatment along the 600 m flowpath from the solid waste berm to the Ocean.

The method of construction chosen was to bring all the granular material to the Site and then fence the entire Site. A cell would be excavated when required, used until full, and then covered. Meanwhile a new cell would be excavated.

The Site has not yet been completed. Granular material for the cells was brought to the site last summer but the perimeter fence was not erected.

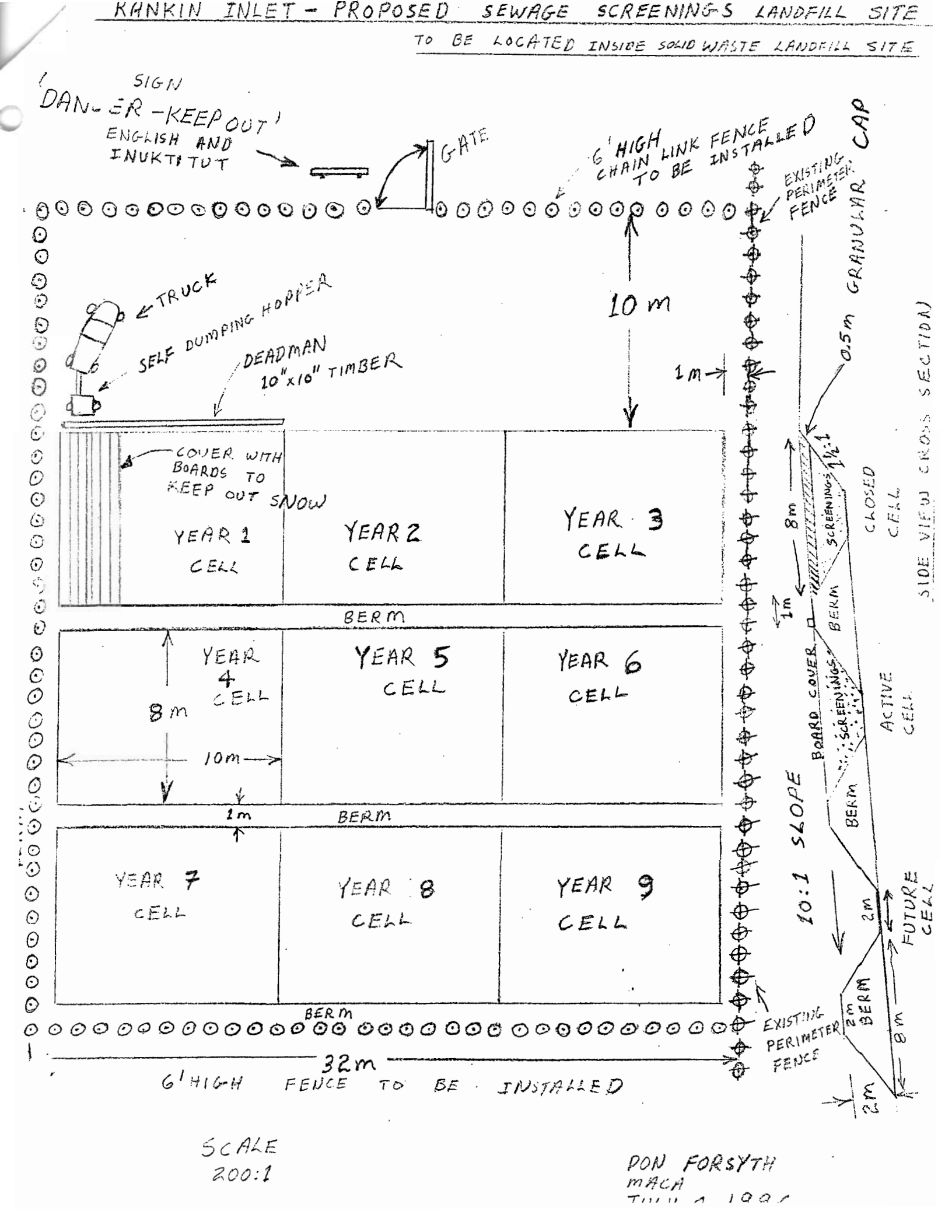
The Site has been in operation since early January of this year. So far two cells have been excavated from the granular material. The first cell was used only one month before it was full, mostly with snow. A second cell is now in use. Temporary fencing has been erected around the active cell.

Keeping drifting snow out of the active cell has proven to be a major problem. The proposed use of boards as shown on the drawing did not work. To cover the active cell, the Hamlet is now planning to build a small shack with doors that will open to permit the Dump Trailer to be backed in. The shack will be moved to the new cell when the old one is closed out.

This is just a temporary facility as we expect to be moving the waste disposal sites to a new location in a few years.

KANKIN INLET - PROPOSED SEWAGE SCREENINGS LANDFILL SITE

TO BE LOCATED INSIDE SOLID WASTE LANDFILL SITE



SCALE
200:1

DON FORSYTH
MACA
JULY 1, 1996

RANKIN INLET

PROPOSED SEWAGE SCREENINGS

LANDFILL SITE

LOCATION PLAN

LEGEND

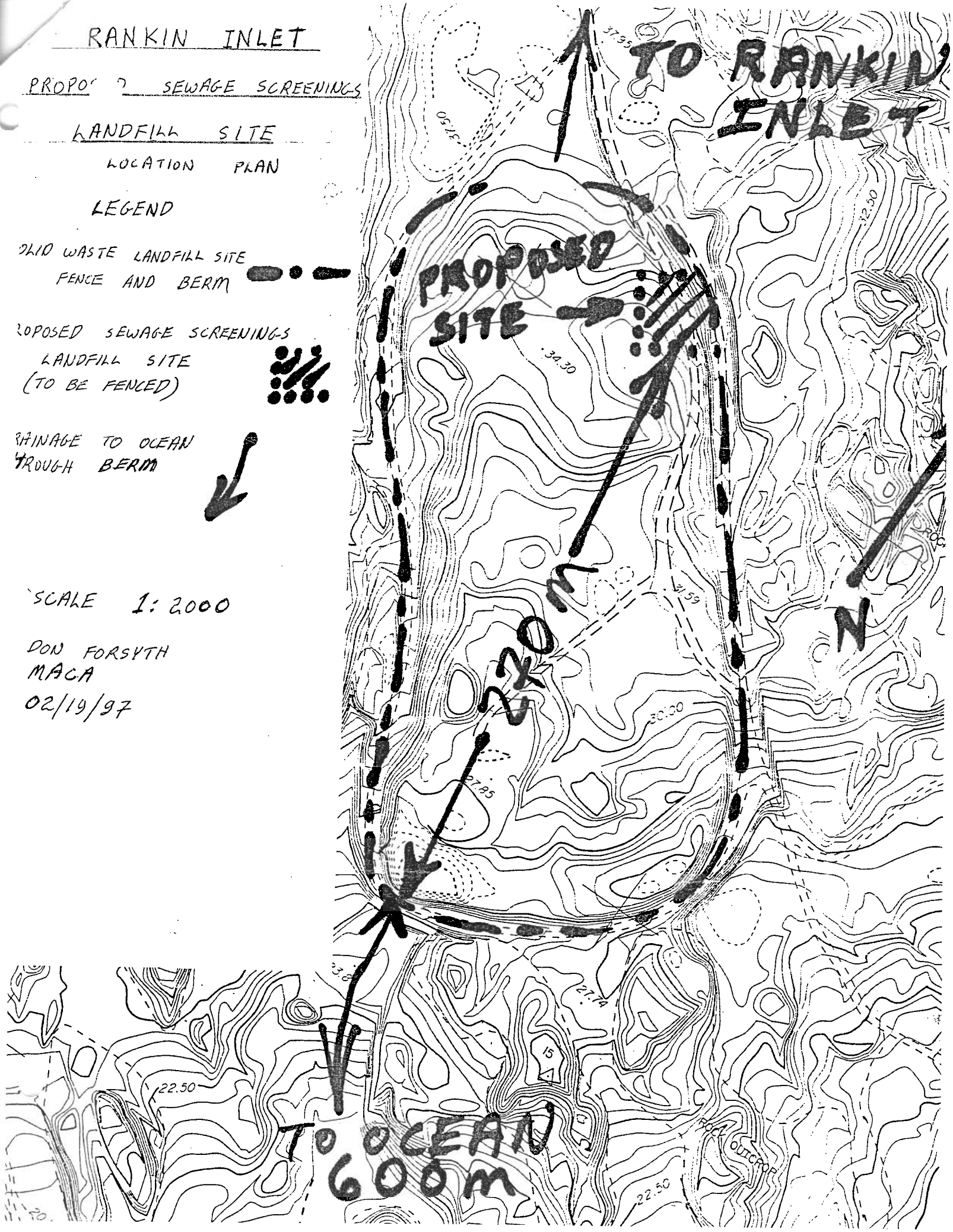
SOLID WASTE LANDFILL SITE FENCE AND BERM

PROPOSED SEWAGE SCREENINGS LANDFILL SITE (TO BE FENCED)

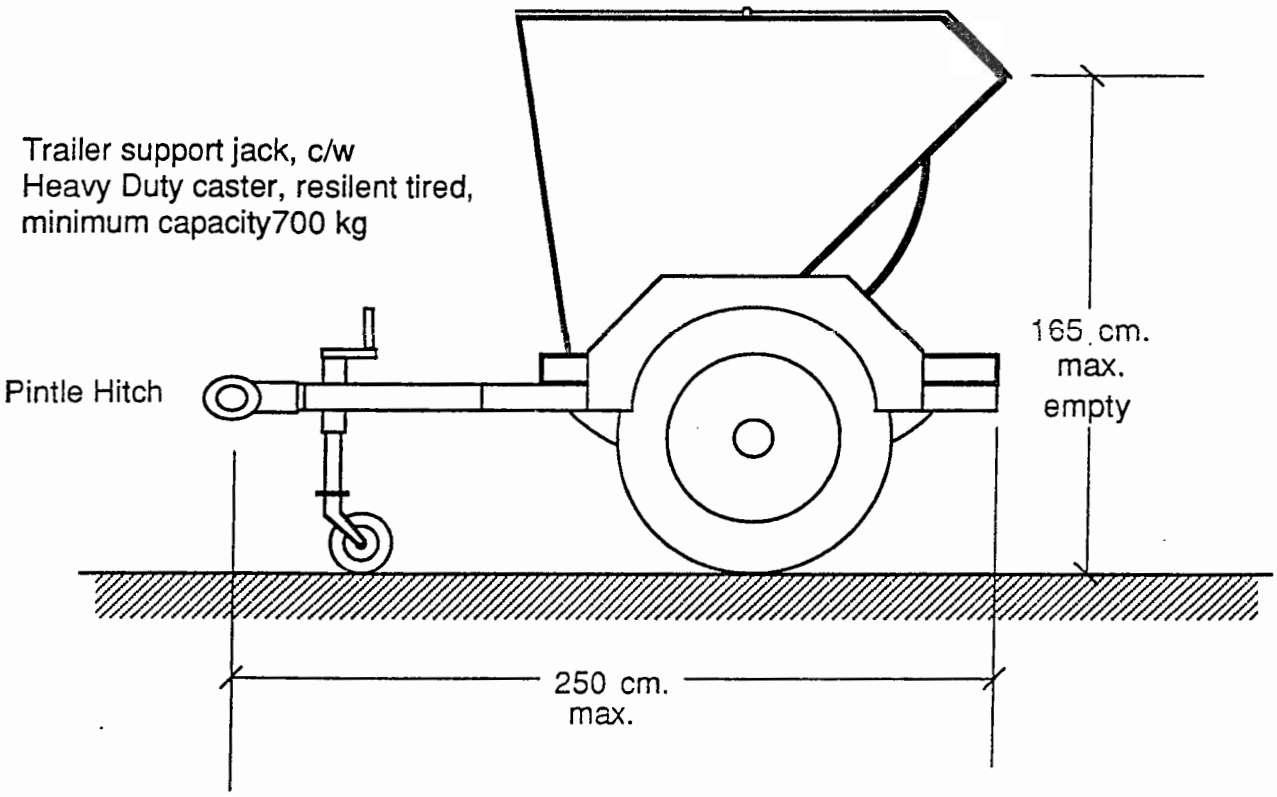
DRAINAGE TO OCEAN THROUGH BERM

SCALE 1: 2000

DON FORSYTH
MACA
02/19/97



1 Cu. Yd Self Dumping
Hopper c/w lid, by
Universal Handling Equipment
Company Ltd., or approved equal



Single Axle trailer, Axle Tires, and Frame to be minimum 2000 kg capacity

Trailer to be sized to fit bin. Bin to be located on trailer frame in such a way as to always maintain a positive trailer tongue weight, with the bin empty or full. Max tongue weight to be 250 kg.

Bin to be permanently welded to trailer frame.

Trailer to be complete with fenders, all required lights for over the road use, and license plate holder.

Trailer Fenders and other horizontal surfaces to be constructed of heavy gauge material and finished on top with non-skid paint, to allow them to be used as steps by the operator.

SCREENING COLLECTOR BINS	FIGURE 11170-1