

August 12, 2004

NWT Water Board  
2<sup>nd</sup> Floor Goga Cho Building  
4916 – 47th Street  
Yellowknife, NT X1A 2N9

Attention: Vicky Losier  
Executive Assistant

**RE: Application for Water License Renewal, Hamlet of Paulatuk**

Dear Ms. Losier:

On behalf of the Hamlet of Paulatuk, please find attached one (1) hard copy and one (1) electronic copy (on CD) of the *Water Licence Renewal Application for the Hamlet of Paulatuk*.

The application contains the following:

- Completed Schedule III
- Completed Municipal Questionnaire, which contains details of the Project Description
- Supporting documentation in Appendices A through H, including a description of potential environmental concerns and socio-economic issues related to the project found in Appendix G of the application package

Please provide any comments to Mr. Tom Caines, Senior Administrative Officer for the Hamlet of Paulatuk at (867) 580-3531. If you have any questions regarding the application, I can be reached at (867) 920-4555.

Yours truly,

Dillon Consulting Limited



Colin Joyal, P. Eng.  
Project Manager

cc Mr. Tom Caines, SAO Paulatuk

Enclosure



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47<sup>th</sup> Street  
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**Dillon Consulting  
Limited**

**Hamlet of Paulatuk**

**Schedule III (Subsection 6(1)) for  
Water License Application**

**Application for License, Amendment of License,  
Or Renewal of License**

**Renewal of Water License  
# N7L3-1619**

**SCHEDULE III**  
**(Subsection 6(1))**  
**APPLICATION FOR LICENCE, AMENDMENT OF LICENCE, OR RENEWAL**  
**OF LICENCE**

APPLICATION/LICENCE NO:  
(amendment or renewal only)  
#N7L3-1619

1. NAME AND MAILING ADDRESS OF APPLICANT      2. ADDRESS OF HEAD OFFICE IN CANADA IF  
INCORPORATED

Hamlet of Paulatuk  
PO Box 98  
Paulatuk, NT X0E 1N0

N/A

TELEPHONE: (867) 580-3531    FAX: (867) 580-3703    TELEPHONE: \_\_\_\_\_ FAX: \_\_\_\_\_

3. LOCATION OF UNDERTAKING (describe and attach a map, indicating watercourses and location of any proposed waste deposits)

See Appendix "D" of the attached Municipal Questionnaire for maps and locations

Latitude    69°21'N                      Longitude    124°04'W

4. DESCRIPTION OF UNDERTAKING (describe and attach plans)

Water license is required to (a) obtain water for consumption and (b) dispose of municipal sewage and solid waste.

See attached "Municipal Questionnaire" and related appendices for full details of undertaking.

5. TYPE OF UNDERTAKING

1. Industrial \_\_\_ 4. Power \_\_\_ 6. Conservation \_\_\_  
2. Mining and milling \_\_\_ 5. Agriculture \_\_\_ 7. Recreation \_\_\_  
3. **Municipal X**

8. Miscellaneous (describe) \_\_\_\_\_

6. WATER USE

**To obtain water X**      Flood control \_\_\_  
To cross a watercourse \_\_\_ To divert water \_\_\_  
To modify the bed or bank of a watercourse \_\_\_ To alter the flow of, or store, water \_\_\_

Other (describe) \_\_\_\_\_

7. QUANTITY OF WATER INVOLVED (liters per second, liters per day or cubic meters per year, including both quantity to be used and quality to be returned to source)

Currently, approximately 8,000 m<sup>3</sup> per year is withdrawn from New Water Lake for municipal use; water is trucked directly from New Water Lake to users in Paulatuk. Water usage is not expected to exceed 10,000m<sup>3</sup>/year for the next five years.

8. WASTE DEPOSITED (quantity, quality, treatment and disposal)

Currently, approximately 8000 m<sup>3</sup> per year of sewage is deposited to the lagoon. Treatment is by natural methods; there is natural outflow through an adjacent vegetated area. As water usage fluctuates in the Hamlet, sewage is expected to fluctuate in volume (roughly relative to volume of water used) as well.

9. OTHER PERSONS OR PROPERTIES AFFECTED BY THIS UNDERTAKING (give name, mailing address and location; attach list if necessary)

N/A

10. PREDICTED ENVIRONMENTAL IMPACTS OF UNDERTAKING AND PROPOSED MITIGATION

See Appendix G. "Potential Environmental Impacts", attached to the enclosed Municipal Questionnaire.

11. CONTRACTOR AND SUB-CONTRACTORS (names, addresses and functions)


Andy and Sons, Paulatuk, NT X0E 1N0 (Water Delivery Contractor)

12. STUDIES UNDERTAKEN TO DATE (attach list if necessary)

DIAND inspections, regular water quality testing by the Hamlet and Community Health Representative, as well as evaluation of the facilities by Public Works and Services (GNWT).

13. PROPOSED TIME SCHEDULE

Start date: ONGOING Completion date: Ongoing until renewal of Water License

THOMAS G. CARNES, S.A.O.  AUGUST 11/04  
NAME (Print) TITLE (Print) SIGNATURE DATE

FOR OFFICE USE ONLY

APPLICATION FEE Amount: N/A for Municipalities Receipt No.: \_\_\_\_\_

WATER USE DEPOSIT Amount: N/A for Municipalities Receipt No.: \_\_\_\_\_

**Hamlet of Paulatuk**

**Municipal Questionnaire for  
Water License Application**

**Renewal of Water License  
# N7L3-1619**

## SECTION A – GENERAL

**1. Date:** August 12, 2004

**2. Applicant:**

Hamlet of Paulatuk  
PO Box 98  
Paulatuk, NT  
X0E 1N0  
(867) 580-3531 (telephone)  
(867) 580-3703 (fax)

**3. Contacts:**

Tom Caines  
Senior Administrative Officer  
(867) 580-3531 (telephone)  
(867) 580-3703 (fax)

**4. Community Status:**

Hamlet of Paulatuk

**5. Population (according to most recent census results)**

Paulatuk's population, according to the 2001 Census, was 286.

The NWT Bureaus of Statistics also undertook a population survey in 2002, and their current population estimate for Paulatuk is 319.

**Estimated Growth Rate over next five years:**

The NWT Bureaus of Statistics estimates that Paulatuk's population will be 342 by the year 2009. Based on their current population estimate of 319, this represents a potential increase of approximately 7.2%.

**6. Indicate the Status of the municipality's license on the date of application:**

This is an Application for Renewal of Water License #N7L3-1619, recently extended and now set to expire on October 30, 2004.

**7. Has any baseline data been collected for the main water bodies in the area?**

Yes, baseline water quality testing is done.

**If yes, please attach all data gathered on the physical, biological and chemical characteristics at each sampling location.**

See Appendix A for recent data on water quality testing done.

**Attach a summary of program details indicating sampling locations, description of waste at each location, sampling frequency, and parameters analysed.**

See Appendix B for program details.

**Include an outline of Quality Assurance/Quality Control methods being applied to sampling, preservation and analysis within the program.**

See Appendix C for QA/QC methods and/or accreditation from the labs that are used for water quality sample analysis.

**8. Has any baseline data collection and evaluation been undertaken with respect to the various biophysical components of the environment potentially affected by the project (eg wildlife, soils, air quality), in addition to water related information requested in this questionnaire?**

As far as it is known, no baseline data has been collected for these components.

**9. Attach detailed maps which show the relative locations of the:**

- a. raw water intake**
- b. water treatment facilities**
- c. fuel & chemical storage**
- d. sewage treatment facilities**
- e. wastewater treatment area and discharge outlets**
- f. solid waste disposal areas and drainage patterns**
- g. hazardous waste disposal area**
- h. transportation access routes**
- i. existing water bodies/courses and any changes to these water bodies/courses which have or may occur as a result of water use or waste disposal facilities, locations of environmental monitoring sites**

See diagrams, maps, and plans, etc. in Appendix D as well as photos in Appendix E that detail this information.

**10. Attach detailed scale plan drawing(s) of the proposed (or present) sewage treatment system. The drawing(s) must be stamped by an engineer registered in the NWT and include the following:**

- a. details of pond size and elevation**
- b. precise details of all retaining structures (dimensions, materials of construction, etc.)**
- c. details of the drainage basin, and existing and proposed drainage modifications**
- d. details of all decant, siphon mechanisms etc., including sewage treatment facilities**
- e. details regarding direction and route followed by wastewater flow from the area**
- f. indications of the distance to nearby major watercourses, and fish bearing waters**
- g. location and construction of liners**
- h. leachate and groundwater collection systems, and**
- i. control structures**

N/A – The sewage lagoon is a natural lake and can be seen in the maps in Appendix D as well as photos in Appendix E.

**11. Attach detailed scale plan drawings of the proposed (or present) solid waste disposal area. The drawings must include the following:**

- a. precise details of all retaining structures (dimensions, materials of construction, etc.)**
- b. details of the drainage basin, and existing and proposed drainage modifications**
- c. details regarding direction and route followed by waste water flow from the area**
- d. indications of the distance to nearby major watercourses, and fish bearing waters**
- e. all sources of seepage presently encountered in the vicinity of these areas**
- f. the volume of each seepage flow ( $m^3$ /day), and**
- g. the direction of each flow**

See Appendix D for maps and Appendix E for photos of the location and details of the solid waste disposal site.

**12. Describe the present or proposed contingency plan which will be used for each portion of the waste control system in the event it fails to operate properly.**

A second truck is available in the event that the first truck becomes inoperable. In this way, no interruption of service will occur.



**13. Attach the present or proposed spill contingency plan which will be employed in case a spill of hazardous materials occurs. Describe courses of action, mitigative methods and equipment available for use.**

The Hamlet will report any spills, if they occur, to the Territorial 24 Hour Spill Report Line. Plans for possible spills of hazardous materials include containment and cleanup as soon as possible, as well as notification of appropriate government departments. Heavy equipment belonging to the Hamlet would aid in the containment. The local fire department and Hamlet staff would carry out these procedures.

## SECTION B – WATER SUPPLY

### 1. Volume of Water Use

There are approximately 319 people on the system. Recent water usage figures are shown below.

<u>Year</u>	<u>Volume</u>
2003	7,887,450 liters
2002	7,781,009 liters
2001	7,887,450 liters
2000	7,955,085 liters

### 2. Type of source:

Water is withdrawn from New Water Lake, approximately 2.2 km from the community. The lake is contained within a drainage basin approximately 140 hectares in size.

### 3. Name of raw water source and alternative, if any:

Raw water is withdrawn from New Water Lake. With approval of the NWT Water Board, and in an emergency, Old Water Lake may be considered as an alternative source for the Hamlet's water supply.

### 4. Usual break-up and freeze-up months:

Break-up of the lake usually occurs in mid-June, and freeze-up happens in October or November.

### 5. Please provide short descriptions for the following:

#### **Freshwater intake facility:**

There is a truck fill station located at New Water Lake. A pipe leads from the building out into New Water Lake, and a submersible pump at a depth of approximately 5 meters draws water from the lake. The line is heat-taped and is pulled periodically to check its' condition. See Appendix D for drawings of the facility and components.

**Operating capacity of the pumps used:**

The truck fill rate is approximately 1000L per minute.

**Intake screen size:**

The intake screen has an opening size of 3mm.

**6. Type of water storage facility:**

There is no water storage – water is trucked directly from New Water Lake to Hamlet residences and community buildings.

**7. What is the capacity of the storage facility? (m<sup>3</sup>)**

N/A – there is no storage.

**8. What is the rate of withdrawal from the source? (m<sup>3</sup> /day)**

Withdrawal varies, depending on demands of the community and time of year. Annual withdrawal from New Water Lake is listed above (Section B, Question 1). Approximate average withdrawal, based on 2003 volumes and based on withdrawal 5 days per week, is 30 m<sup>3</sup>/day.

**9. Water is drawn from the source:**

Water is withdrawn Monday to Friday, generally. Monday, Wednesday and Friday tend to be busier; Tuesday and Thursday are generally less busy (depending on requirements of residents). Water is withdrawn continuously throughout the year, as there is no water storage facility.

**10. What is the rate of flow of source (if river) or size (if lake)?**

New Water Lake is approximately 18m deep, and roughly 450m x 350m across. The volume of the lake is roughly estimated to be 742,201m<sup>3</sup>.

**11. At the intended rate of water usage, describe the effects on the river or lake from which water will be drawn.**

New Water Lake recharges naturally due to precipitation. The water level drops a small amount during the summer, and recharges a significant amount during the spring thaw.

**12. General condition of:**

**a. Water supply facility** – Building and intake system are in good condition.

**b. Storage Facility** – N/A

**c. Distribution System** – Good – there are two water trucks in Paulatuk now. The trucks are in good condition, and have a capacity of 1600 gallons. (~6056L)

**13. Are there any changes planned in the water supply system?**

No changes are planned at this time.

## SECTION C – WATER TREATMENT

### 1. Indicate the quality of the raw water prior to treatment and distribution.

Good       Fair       Poor

#### Describe:

In June 2004, New Water Lake had a turbidity level of below 1 NTU, which is good (Department of Public Works and Services). When water samples are taken of the raw water, they are of good quality as well.

### 2. Indicate the capacity of the treatment facility. (L/minute)

Water is treated as it is pumped (see below). The pumping capacity of the facility is approximately 1000L/minute.

### 3. Type of water treatment facility:

Chlorine solution is used to treat the Hamlet's water. The water is treated as it is pumped into the truck, prior to distribution.

### 4. Describe in detail the method of water treatment (i.e. backwash, flocculation, sedimentation, chemicals used), and provide the results of the most recent bacteriological and chemical analyses. Attach a diagram if possible.

Water treatment in the Hamlet of Paulatuk consists of chlorination, and water is treated by the addition of chlorine to the raw water when the pump is operating. When water starts flowing, a chlorine feed pump is activated and chlorine solution from a holding tank is pumped and mixed with the water.

A batch of chlorine solution is prepared twice a week, and then left to sit for 24 hours before being added to the solution tank. 400ml of chlorine powder (Calcium Hypochlorite) is added to 40L of water to make the solution. New chlorine tanks, including a chlorine injector, solution mixer and tubes were ordered last year, but the Hamlet has not yet received them.

See Appendix A for bacteriological and chemical test results on treated water. GNWT's Department of Public Works and Services did chemical testing in Paulatuk in June 2004 these samples are currently being analysed at Taiga Lab in Yellowknife.

**5. Have there been any problems or health and environmental concerns with the water treatment facilities?**

No, there have not been any such concerns.

**6. Are there any changes planned in the water treatment facilities?**

There are no changes planned at this time, other than the replacement of the chlorination equipment as described in Section 4.

## SECTION D – SEWAGE DISPOSAL

### 1. Indicate level of treatment the sewage will be receiving:

Sewage is pumped to the lagoon for primary treatment. The lagoon is locally referred to as “Dead Lake”.

### 2. Indicate the capacity of the sewage treatment facility. (m<sup>3</sup>)

Dead Lake is where sewage is pumped to – this natural lake is approximately 250m x 350m in size, and approximately 4 to 5m deep. The capacity of the lake is estimated to be 103,083m<sup>3</sup>.

### 3. Indicate the retention time of the sewage while in the treatment facility. (days)

N/A

### 4. Indicate the estimated rate of discharge of waste water.

N/A – there is natural outflow through a large vegetated area, approximately 500m long between the lake and Darnley Bay.

### 5. Indicate the location of the discharge point.

See figures in Appendix D and photos in Appendix E.

### 6. Will the discharge be seasonal or continuous?

Discharge is continuous.

### 7. Comment on the general condition of the:

**Sewage collection system:** There is a brand new (2000) sewage collection truck with a capacity of 2000 gallons (~7570L). There is also an older backup vacuum truck.

**Discharge control system:** N/A – natural outflow.

**Dams, diversions, dykes, berms:** N/A – natural outflow

**8. Have there been any problems or health and environmental concerns with the sewage disposal facilities?**

No, there have been no such problems.

**9. The average depth of the wastewater lagoon is:**

The lagoon is approximately 4-5m deep.

**10. What is the design freeboard?**

The natural freeboard of the lake is estimated to be 1 meter.

**11. Is there any harvesting of fish or shell fish in the waters where waste is discharged?**

No, there are no fish in the lagoon and therefore no harvesting.

**12. Will the municipality be using a honey bag pit?**

Paulatuk now only has one or two residences that use honey bags. These are deposited in a pit near the lagoon and solid waste site, and are buried periodically as required.

**13. Are there any sources of commercial or industrial liquid waste being discharged or deposited to the municipal system which may affect the quality of the effluent or leachate produced?**

No such waste is discharged.

**14. Have any spills occurred in the past five years?**

No, no spills have occurred in the last five years. (NWT Spills Database)

**15. Have there been any operating problems with the lagoon?**

No, there have been no such problems.



**16. Are there any changes planned in the sewage disposal facilities?**

There are no changes planned to the facilities.

## **SECTION E – SOLID WASTE DISPOSAL**

### **1. Indicate the capacity of the disposal area. (m<sup>3</sup>)**

There are three main cells for solid waste disposal. Each is approximately 15x60m, with a depth of approximately 4m. Taking into account the slope of the sides of the cells, total capacity for each is therefore approximately 1800 m<sup>3</sup>.

One of the cells has been filled; the second has now started to be filled with solid waste. The third remains empty for now. Therefore, the estimated remaining capacity of the disposal area is approximately 1200m<sup>3</sup>.

### **2. The average depth of the solid waste disposal site is:**

The cells in the solid waste disposal site are approximately 3m deep.

### **3. Are there any sources of commercial or industrial solid waste being deposited in the municipal system which may affect the quality of the effluent or leachate produced?**

No, there are no such deposits of waste.

### **4. Briefly describe how the solid waste will be picked up and delivered to the disposal area.**

Solid waste is picked up twice a week (generally Tuesday and Thursday) and then trucked to the solid waste disposal area. During busier times such as Christmas, pickup frequency is increased as required.

### **5. Is the solid waste site fenced?**

There is no fence around the solid waste disposal site. At one time, there was a plastic fence, but it is no longer in place.

### **6. Will the municipality be using a dead animal pit?**

There is no dead animal pit.

**7. Will the municipality be using a bulky metal waste disposal area?**

Yes, there is a bulky metal waste area at the solid waste disposal site.

For details, see the recently updated Operation and Maintenance Plan for the Solid Waste and Sewage Disposal facilities. This Plan is presented in Appendix H.

**8. Will the municipality be using a hazardous waste disposal area?**

There is an area designated for hazardous waste.

**9. Are there any hazardous commercial wastes entering the solid waste disposal system?**

No, there are no such wastes.

**10. If any natural watercourse may gain access to the proposed solid waste disposal area, what methods will be used to decrease the amount of runoff water entering these areas? Indicate the volume of water which may enter these areas from the source(s) in question and attach all pertinent details of proposed diversions.**

N/A - There are no watercourses in the immediate area that have access to the solid waste disposal area.

**11. Please describe the nature of any diversion of watercourses.**

N/A – there are no diversions of watercourses.

**12. Have there been any problems or health and environmental concerns with the solid waste disposal facilities?**

The only concern at this time is that as the community gets bigger and the number of vehicles etc. increase in number, there is a resulting increase in bulky metal waste. Drums make up a large part of this type of waste. At one time, the Hamlet had a crusher that could be used to reduce the bulk of this waste – this crusher was sent to another community. At this point, some bulky metal waste is shipped periodically out on barges to Hay River and then Edmonton for disposal.

Solid waste also tends to blow around the area due to a lack of a fence.

**13. Are there any planned changes to the solid waste disposal system?**

There are plans to fence the area when funds become available.

## **SECTION F – ABANDONMENT AND RESTORATION PROGRAM**

### **1. List and describe the locations of abandoned or restored water treatment facilities.**

N/A

### **2. List and describe the locations of abandoned or restored sewage treatment facilities.**

The old sewage lagoon (prior to 1993) was located approximately 3km to the North of where it currently is. (See Appendix D for a map of the location)

### **3. List and describe the locations of abandoned or restored solid waste disposal facilities.**

The old solid waste disposal area (prior to 1993) was also located approximately 3km to the North of where it currently is. (See Appendix D for a map of the location)

### **4. Do you have an abandonment and restoration plan?**

There is an Abandonment and Restoration Plan for the Paulatuk Solid Waste Disposal Site and the Sewage Lagoon. See Appendix F for a copy of this Plan.

## **SECTION G – WATER QUALITY MONITORING PROGRAM**

### **1. Briefly describe the methodology that is presently used to sample the raw water supply.**

Raw water is sampled by the Hamlet and the Community Health Representative, as well as by DIAND Water Resources Inspectors during periodic inspections. Occasionally, other Departments such as the Department of Public Works and Services may collect water samples during visits to the community. Details on the monitoring programs in place can be seen in Appendix B.

### **2. Briefly describe any monitoring that is done on wastewater effluent and leachate.**

Wastewater effluent samples are collected by DIAND inspectors near Darnley Bay, at SNP Station #1619-2.

### **3. Recognized laboratory performing analysis of samples:**

1. Bacteriological Testing:  
Inuvik Hospital (IRHSSA) Laboratory  
Bag #2  
Inuvik, NT X0E 0T0
2. Chemical Testing:  
Taiga Environmental Laboratory  
Indian and Northern Affairs Canada  
4601 - 52nd Avenue, P.O. Box 1500  
Yellowknife, NT X1A 3M9

### **4. Are any changes planned in the water quality monitoring program?**

No changes are planned for the water quality monitoring program.

## **SECTION H – ENVIRONMENTAL ASSESSMENT AND SCREENING**

**1. Has this project ever undergone an initial environmental review, including previous owners?**

As a part of Paulatuk's initial application for a Water License in 1994, a Level 1 Environmental Screening was conducted by Indian and Northern Affairs Canada (INAC) pursuant to Section 10(1) of the Environmental Assessment and Review Process Guidelines Order (1984). This was done on behalf of the NWT Water Board.

**2. Has approval been obtained or sought from the Department of Fisheries and Oceans for using any fish bearing water bodies for containment or disposal of waste?**

No approval has been sought, as there are no fish-bearing water bodies used for disposal of wastes.

**3. Are there any environmental studies ongoing or planned?**

There are no environmental studies known of at this time.

## **Appendix A – Water Quality Results**

# Raw/Treated Water Quality Report - Paulatuk

Sample Type: Raw

Sample Source: New Water Lake

Test Date: 8/22/2000

Parameter	Value	MAC	GCDWQ		Unit Of Measure
			IMAC	AO	
Alkalinity	116	ND			mg/L
Aluminum	0.03	ND			mg/L
Arsenic	0.001		0.025		mg/L
Cadmium	0.0003	0.005			mg/L
Calcium	38.7	ND			mg/L
Chloride	5.6			<=250	mg/L
Chromium	0.003	0.05			mg/L
Cobalt	0.001	ND			mg/L
Colour	10			<=15	TCU
Conductivity	344	ND			umhos/cm
Copper	0.002			<=1.0	mg/L
Fluoride	0.1	1.5			mg/L
Iron	0.03			<=0.3	mg/L
Lab ID	201711				
Lead	0.001	0.010			mg/L
Magnesium	21.2	ND			mg/L
Manganese	0.004			<=0.05	mg/L
Mercury	0.00001	0.001			mg/L
Nickel	0.001	ND			mg/L
Nitrate + Nitrite as N	0.008				mg/L
pH	8.31			6.5 - 8.5	
Phosphorous	0.013	ND			mg/L
Potassium	0.47	ND			mg/L
Sodium	3.16			<=200	mg/L
Sulphate	34			<=500	mg/L
Total Dissolved Solids	245			<=500	mg/L
Total Hardness	184	ND			mg/L
Tot-Suspended Solids	39				mg/L
Turbidity	0.2	1		<=5	NTU
Zinc	0.01			<=5.0	mg/L

GCDWQ - Guidelines for Canadian Drinking Water Quality  
 MAC - Maximum Acceptable Concentration  
 IMAC - Interim Maximum Acceptable Concentration  
 AO - Aesthetic Objective  
 ND - Not Defined





**Taiga Environmental Laboratory**  
4601-52nd Ave., Box 1500, Yellowknife, NT. X1A 2R3

Tel: (867)-669-2788

Fax: (867)-669-2718

## - CERTIFICATE OF ANALYSIS -

Prepared For: Inuvik District Office

DIAND, Operations

Attn: Scott Gallupe

Sample ID: SNP 1619-1 Raw Water

Taiga Sample ID: 222448

Client Project: N7L3-1619

Sample Type: water

Received Date: 20-Aug-20

Location: Paulatuk, NT

Sampling Date: 19-Aug-02

Report Status: Final

Approved by: 

Test Parameter	Result	Units	Detection Limit	Analysis Date
<b>Physicals</b>				
Colour	10		5	16-Sep-02
Conductivity, Specific	351	µS/cm	0.3	30-Aug-02
pH	8.19	pH units	0.05	30-Aug-02
Solids, Total Dissolved	254	mg/L	10	06-Sep-02
Solids, Total Suspended	4	mg/L	3	06-Sep-02
Turbidity	0.3	NTU	0.1	17-Sep-02
<b>Nutrients</b>				
Ammonia as N	< 0.005	mg/L	0.005	21-Aug-02
Nitrate+Nitrite as N	< 0.008	mg/L	0.008	29-Aug-02
Phosphorous, Total	0.006	mg/L	0.004	30-Aug-02
<b>Major Ions</b>				
Calcium	36.5	mg/L	0.05	29-Aug-02
Chloride	5.6	mg/L	0.2	06-Sep-02
Fluoride	0.04	mg/L	0.03	12-Sep-02
Hardness as CaCO <sub>3</sub>	180	mg/L	0.17	29-Aug-02

Report Date: Tuesday, January 21, 2003

Indian & Northern  
Affairs  
Inuvik, N.W.T.

FEB - 3 2003

North Mackenzie  
District

Page 1 of 2



**Taiga Environmental Laboratory**  
4601-52nd Ave., Box 1500, Yellowknife, NT. X1A 2R3

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**- CERTIFICATE OF ANALYSIS -**

**Prepared For:** Inuvik District Office

DIAND, Operations

*Attn:* Scott Gallupe

**Sample ID:** SNP 1619-1 Raw Water

**Taiga Sample ID:** 222448

Magnesium	21.6	mg/L	0.02	29-Aug-02
Potassium	0.43	mg/L	0.03	28-Aug-02
Sodium	3.07	mg/L	0.02	28-Aug-02
Sulphate	60	mg/L	3	23-Aug-02

**Microbiology**

Coliforms, Fecal	<2	CFU/100mL	2	20-Aug-02
Coliforms, Total	<1	CFU/100mL	1	20-Aug-02

**Metals, Total**

Aluminum	<30	µg/L	30	02-Dec-02
Arsenic	<1.0	µg/L	1.0	05-Sep-02
Cadmium	<0.3	µg/L	0.3	04-Nov-02
Chromium	<3	µg/L	3	04-Nov-02
Cobalt	<1	µg/L	1	04-Nov-02
Copper	<2	µg/L	2	04-Nov-02
Lead	<1	µg/L	1	04-Nov-02
Manganese	4	µg/L	1	04-Nov-02
Mercury	<0.05	µg/L	0.05	24-Sep-02
Nickel	<1	µg/L	1	04-Nov-02
Zinc	<10	µg/L	10	04-Nov-02



**Taiga Environmental Laboratory**  
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Tel: (867)-669-2788  
Fax: (867)-669-2718

**- CERTIFICATE OF ANALYSIS -**

**Prepared For:** Inuvik District Office

DIAND, Operations

*Attn:* Scott Gallupe

**Sample ID:** SNP 1619-2 Sewage

**Taiga Sample ID:** 222449

**Client Project:** N7L3-1619

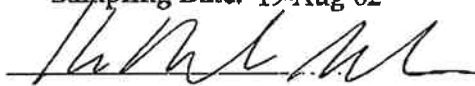
**Sample Type:** sewage

**Received Date:** 20-Aug-02

**Location:** Paulatuk, NT

**Sampling Date:** 19-Aug-02

**Report Status:** Final

**Approved by:** 

Test Parameter	Result	Units	Detection Limit	Analysis Date
<b><u>Physicals</u></b>				
pH	8.18	pH units	0.05	30-Aug-02
Solids, Total Suspended	88	mg/L	3	06-Sep-02
<b><u>Nutrients</u></b>				
Ammonia as N	0.152	mg/L	0.005	21-Aug-02
Biological Oxygen Demand	105	mg/L	2	21-Aug-02
Nitrate+Nitrite as N	<0.008	mg/L	0.008	29-Aug-02
Phosphorous, Total	2.50	mg/L	0.004	30-Aug-02
<b><u>Microbiology</u></b>				
Coliforms, Fecal	200	CFU/100mL	1	20-Aug-02

**PAULATUK WATER TEST RESULTS**

DATE	Sample IN	NO Sample	Rejected	GOOD	BAD	UNKNOWN	LOC: WTP	LOC: WT	LOC: HC	Other	LOC: Other	TC NEG	FC NEG	TC POS	FC POS
07-Jan-03	0	1	0	0	0	1	0	0	0	0	NO SAMPLES	0	0	0	0
15-Jan-03	1	0	0	1	0	0	0	0	1	0		1	1	0	0
23-Jan-03	1	0	0	1	0	0	0	0	0	1	Hamlet Office	1	1	0	0
30-Jan-03	0	1	0	0	0	1	0	0	0	0	NO SAMPLES	0	0	0	0
11-Feb-03	1	0	0	1	0	0	0	1	0	0		1	1	0	0
11-Feb-03	1	0	0	1	0	0	0	0	0	1	Kitchen Tap	1	1	0	0
18-Feb-03	1	0	0	1	0	0	0	0	1	0		1	1	0	0
25-Feb-03	1	0	0	1	0	0	0	0	1	0		1	1	0	0
07-Mar-03	0	1	0	0	0	1	0	0	0	0	NO SAMPLES	0	0	0	0
14-Mar-03	0	1	0	0	0	1	0	0	0	0	NO SAMPLE	0	0	0	0
21-Mar-03	0	1	0	0	0	1	0	0	0	0	NO SAMPLE	0	0	0	0
29-Mar-03	0	1	0	0	0	1	0	0	0	0	NO SAMPLES	0	0	0	0
01-Apr-03	1	0	0	1	0	0	0	0	1	0		1	1	0	0
07-Apr-03	0	1	0	0	0	1	0	0	0	0	NO SAMPLE	0	0	0	0
14-Apr-03	0	1	0	0	0	1	0	0	0	0	NO SMPLE	0	0	0	0
29-Apr-03	1	0	0	1	0	0	0	0	1	0		1	1	0	0
07-May-03	0	1	0	0	0	1	0	0	0	0	NO SAMPLES	0	0	0	0
14-May-03	0	1	0	0	0	1	0	0	0	0	NO SAMPLES	0	0	0	0
21-May-03	0	1	0	0	0	1	0	0	0	0	NO SAMPLES	0	0	0	0
27-May-03	0	1	0	0	0	1	0	0	0	0	NO SAMPLES	0	0	0	0
06-Jun-03	0	1	0	0	0	1	0	0	0	0	NO SAMPLES	0	0	0	0
17-Jun-03	1	0	0	1	0	0	0	0	1	0		1	1	0	0
25-Jun-03	1	0	0	1	0	0	1	0	0	0		1	1	0	0
25-Jun-03	1	0	0	1	0	0	0	1	0	0		1	1	0	0
02-Jul-03	1	0	0	1	0	0	0	1	0	0		1	1	0	0
02-Jul-03	1	0	0	1	0	0	0	1	0	0		1	1	0	0
09-Jul-03	1	0	0	1	0	0	0	0	1	0		1	1	0	0
15-Jul-03	1	0	0	1	0	0	0	0	1	0		1	1	0	0
22-Jul-03	1	0	0	1	0	0	0	0	1	0		1	1	0	0
29-Jul-03	1	0	0	1	0	0	0	0	1	0		1	1	0	0
05-Aug-03	1	0	0	1	0	0	0	0	1	0		1	1	0	0
10-Aug-03	1	0	0	1	0	0	0	0	1	0		1	1	0	0
18-Aug-03	0	1	0	0	0	1	0	0	0	0	NO SAMPLE	0	0	0	0
28-Aug-03	0	1	0	0	0	1	0	0	0	0	NO SAMPLE	0	0	0	0
03-Sep-03	1	0	0	1	0	0	0	0	1	0		1	1	0	0
10-Sep-03	0	1	0	0	0	1	0	0	0	0	NO SAMPLE	0	0	0	0
17-Sep-03	0	1	0	0	0	1	0	0	0	0	NO SAMPLE	0	0	0	0

DATE	Sample IN	NO Sample	Rejected	GOOD	BAD	UNKNOWN	LOC: WTP	LOC: WT	LOC: HC	Other	LOC: Other	TC NEG	FC NEG	TC POS	FC POS
23-Sep-03	1	0	0	1	0	0	0	0	1	0		1	1	0	0
15-Oct-03	1	0	0	1	0	0	0	0	1	0		1	1	0	0
21-Oct-03	1	0	0	1	0	0	0	1	0	0		1	1	0	0
21-Oct-03	1	0	0	1	0	0	0	0	0	1	Head Start Centre	1	1	0	0
21-Oct-03	1	0	0	1	0	0	0	0	0	1	School	1	1	0	0
03-Nov-03	1	0	0	1	0	0	1	0	0	0		1	1	0	0
03-Nov-03	1	0	0	1	0	0	0	1	0	0		1	1	0	0
05-Nov-03	1	0	0	1	0	0	0	0	0	1	Paulatuk Centre	1	1	0	0
05-Nov-03	1	0	0	1	0	0	0	0	0	1	Paulatuk Centre	1	1	0	0
21-Nov-03	1	0	0	1	0	0	0	0	1	0		1	1	0	0
21-Nov-03	1	0	0	1	0	0	0	0	0	0	School	1	1	0	0
02-Dec-03	1	0	0	1	0	0	0	1	0	0		1	1	0	0
02-Dec-03	1	0	0	1	0	0	0	0	1	0		1	1	0	0
02-Dec-03	1	0	0	1	0	0	0	0	0	1	Private Residence	1	1	0	0
02-Dec-03	1	0	0	1	0	0	0	0	0	1	School	1	1	0	0
<b>TOTAL</b>	<b>35</b>	<b>17</b>	<b>0</b>	<b>35</b>	<b>0</b>	<b>17</b>	<b>2</b>	<b>7</b>	<b>17</b>	<b>8</b>		<b>35</b>	<b>35</b>	<b>0</b>	<b>0</b>
48	73%		0%	100%	0%	49%	6%	20%	49%	23%		100%	100%	0%	0%

**COMMENTS:**  
A. Four samples should be submitted on a monthly basis. Therefore, a minimum of 48 samples should be submitted for testing each year.  
B. Thirty-five samples were submitted this year.  
C. Of all the samples submitted for testing, all were observed as satisfactory

This data was obtained from IRHSSA, Inuvik Office

## **Appendix B – Water Quality Program Details**

## Water Quality Program Details

### Section A Question 7, Municipal Questionnaire

**Attach a summary of program details indicating sampling locations, description of waste at each location, sampling frequency, and parameters analysed.**

Several agencies collect water quality data to fulfill legislative and health requirements in the Hamlet of Paulatuk.

The Community Health Representative (IRHSSA) obtains water samples for *bacteriological testing* from the Water Treatment Plant, the water truck, the Health Centre and various other community buildings such as the school and the Hamlet Office. These samples are sent to the Inuvik Hospital for analysis; 4 samples are meant to be taken monthly (total of 48 annually), but for the year 2003 there were some instances where samples were not submitted (35 were submitted during the course of the year). Samples are tested for Coliforms and E.coli. All samples submitted in 2003 were satisfactory in quality. (See appendix A)

The Hamlet (truck fill station operator) takes samples as well; these are taken daily from the water in the truck after chlorine is added and prior to delivery of the water. A sample is taken from the truck immediately after filling, and allowed to sit for 20 minutes. Chlorine concentrations must be 0.2mg/L; if they are not, the pump stroke rate is adjusted up or down until the concentration is at the proper level.

The Department of Public Works and Services has also done water quality testing in the past, during visits to Paulatuk. Chemical testing is performed (parameters such as alkalinity, pH, metals, and hardness) as well as turbidity measurements.

The Department of Indian and Northern Affairs Canada (INAC) performs regular inspections of the water supply facilities. They do testing for physical, nutrient, ion, bacteriological, and metal parameters. The inspections are meant to be annual, and samples are taken at the various Surveillance Network Program (SNP) stations. SNP Station #1619-1 is located at New Water Lake (raw water) and #1619-2 is located near Darnley Bay where the outlet of the lagoon exists.

## **Appendix C – QA/QC Methods**



## **SCOPE OF ACCREDITATION**

**Department of Indian & Northern Affairs Canada**  
**TAIGA ENVIRONMENTAL LABORATORY**  
**P.O. Box 1500 4601-52nd Avenue**  
**Yellowknife, NT**  
**X1A 2R3**

Accredited Laboratory No. 187

(Conforms with requirements of CAN-P-4D (ISO/IEC 17025), and CAN-P-1598)

CONTACT: Mr. Shane Harnish  
TEL: (867) 669-2781  
FAX: (867) 669-2718  
EMAIL: [harnishs@inac.gc.ca](mailto:harnishs@inac.gc.ca)

CLIENTS  
SERVED: All interested parties

FIELDS OF  
TESTING: Biological, Chemical/Physical

PROGRAM  
SPECIALTY  
AREA: Environmental

ISSUED ON: 2004-05-21

VALID TO: 2006-03-06

### **ENVIRONMENTAL AND OCCUPATIONAL HEALTH AND SAFETY**

#### **Environmental**

**Soil/Sediment**

**Standards Council of Canada Accredited Laboratory No. 187**

**(Arsenic - Soil [023])**

TEL032; based on APHA 3113B,  
EPA 200.8                      AA GRAPHITE - DIGESTION  
Arsenic

**(Moisture - Soil [030])**

TEL007; based on CCME  
REVISION 5.0                      GRAVIMETRIC  
Moisture

**Water (Inorganic)**

**(Ammonia - Water [022])**

TEL013; APHA 4500-NH3/G                      AUTO COLOR  
Ammonia

**(Arsenic - Water [024])**

TEL032; based on APHA 3113B                      AA GRAPHITE  
Dissolved Arsenic  
Total Arsenic

**(BOD (5 Day) - Water [004])**

TEL 019; APHA 5210 B                      D.O. METER  
BOD (5 day)

**(Chloride - Water [002])**

TEL010; APHA 4500-CL/E                      AUTOCOLOR  
Chloride

**(Colour - Water [039])**

TEL005; APHA 2120B                      PT-CO COLOUR SCALE VISUAL  
COMPARISON  
True Colour

**(Conductivity (25°C) - Water [003])**

TEL002; APHA 2510-B                      CONDUCTIVITY METER  
Conductivity (25°C)

**Standards Council of Canada Accredited Laboratory No. 187**

**(Dissolved Metals - Water [013])**

TEL035; based on US EPA 200.8	ICP/MS Dissolved Aluminum Dissolved Antimony Dissolved Arsenic Dissolved Barium Dissolved Beryllium Dissolved Boron Dissolved Cadmium Dissolved Cesium Dissolved Chromium Dissolved Cobalt Dissolved Copper Dissolved Lead Dissolved Lithium Dissolved Manganese Dissolved Molybdenum Dissolved Nickel Dissolved Rubidium Dissolved Selenium Dissolved Silver Dissolved Strontium Dissolved Thallium Dissolved Tin Dissolved Titanium Dissolved Uranium Dissolved Vanadium Dissolved Zinc
-------------------------------	---

**(Fluoride - Water [005])**

TEL004; based on APHA 4500-F-C	SELECTIVE ION ELECTRODE Fluoride
--------------------------------	-------------------------------------

**(Iron - Water [010])**

TEL031; based on APHA 3111B	AA FLAME Dissolved Iron Total Iron
-----------------------------	--

**(Nitrate/Nitrite - Water [006])**

TEL014; APHA 4500-NO3/I	FLOW INJECTION ANALYSIS Nitrate
-------------------------	------------------------------------

**Standards Council of Canada Accredited Laboratory No. 187**

Nitrate plus Nitrite  
Nitrite

**(Organic Carbon - Water [029])**

TEL033; based on APHA 5310B      INFRARED  
DOC  
TOC

**(Orthophosphate - Water [040])**

TEL015; based on EPA 365.1      AUTO COLOR  
Orthophosphate (SRP)

**(pH - Water [015])**

TEL001; APHA 4500-H, EPA 335.4      pH METER  
(1993)      pH

**(Phosphorus - Water [009])**

TEL015; based on US EPA 365.1      AUTO COLOR - DIGESTION  
Dissolved Phosphorus  
Total Phosphorus

**(Silica - Reactive - Water [007])**

TEL012; APHA 4500-Si/F      AUTOCOLOR  
Reactive Silica

**(Solids - Water [011])**

TEL008; based on APHA 2540D      GRAVIMETRIC  
Total Dissolved Solids  
Total Suspended Solids

**(Sulfate - Water [008])**

TEL011; based on US EPA 375.2;      AUTOCOLOR  
APHA 4500-SO4-F      Sulfate

**(Total Metals - Water [054])**

TEL035; based on US EPA 200.8      ICP/MS  
Total Aluminum  
Total Antimony

**Standards Council of Canada Accredited Laboratory No. 187**

Total Arsenic  
Total Barium  
Total Beryllium  
Total Boron  
Total Cadmium  
Total Cesium  
Total Chromium  
Total Cobalt  
Total Copper  
Total Lead  
Total Lithium  
Total Manganese  
Total Mercury  
Total Molybdenum  
Total Nickel  
Total Rubidium  
Total Silver  
Total Strontium  
Total Thallium  
Total Tin  
Total Titanium  
Total Uranium  
Total Vanadium  
Total Zinc

**(Turbidity - Water [028])**

TEL006; based on APHA 2130-B  
NEPHELOMETRY  
Turbidity

**Water (Microbiology)**

**(Coliforms - Water [012])**

TEL017; based on APHA 9222B  
(TOTAL); APHA 9223 (E.COLI)  
MEMBRANE FILTRATION  
Escherichia coli (E. coli)  
*Suspended: 2004-04-28 Total Coliforms*

**(Fecal Coliforms - Water [041])**

TEL017; based on APHA 9222D  
MEMBRANE FILTRATION  
Fecal Coliforms

**Water (Organic)**

**Standards Council of Canada Accredited Laboratory No. 187**

**(BTEX - Water [027])**

TEL037; based on EPA 502.2

GC - PURGE AND TRAP

Benzene

Ethylbenzene

m/p-xylene

o-xylene

*Suspended: 2004-03-09 Toluene*

**(Oil and Grease - Water [038])**

TEL024; based on EPA 1664

GRAVIMETRIC

Oil and Grease - Water

**(Trihalomethanes - Water [026])**

TEL039; based on EPA 502.2

GC - PURGE AND TRAP

Bromodichloromethane

Bromoform

Chlorodibromomethane

Chloroform

**Notes:**

**CAN-P-4D (ISO/IEC 17025):** General Requirements for the Competence of Testing and Calibration Laboratories ISO/IEC 17025-1999)

**CAN-P-1598** Guidelines for Accreditation of Environmental Testing Laboratories

Taiga Environmental Laboratory In-House Test Methods: TEL #

P. Paladino, P. Eng., Director, Conformity  
Assessment

Date: 2004-05-21

SCC 1003-15/257

CAEAL #2635

Partner: CAEAL

Standards Council  
of Canada



Conseil canadien  
des normes

Certificate of accreditation

Certificat d'accréditation

Indian & Northern Affairs Canada

TAIGA ENVIRONMENTAL LABORATORY  
4601 – 52nd Avenue, Yellowknife, Northwest Territories

having been assessed by the Canadian Association for Environmental Analytical Laboratories (CAEAL) Inc., under the authority of the Standards Council of Canada (SCC), and found to comply with the requirements of ISO/IEC 17025, the conditions established by the SCC and the CAEAL proficiency testing program, is hereby recognized as an



ayant été soumis à une évaluation par l'Association canadienne des laboratoires d'analyse environnementale (ACLAE) Inc., sous l'autorité du Conseil canadien des normes (CCN), et ayant été trouvé conforme aux prescriptions d'ISO/CEI 17025, ainsi qu'aux conditions établies par le CCN et par le programme d'essais d'aptitude de l'ACLAE, est de fait reconnu comme étant un

ACCREDITED ENVIRONMENTAL LABORATORY

LABORATOIRE ENVIRONNEMENTAL ACCRÉDITÉ

for specific tests or types of tests listed in the scope of accreditation approved by the Standards Council of Canada.

pour les essais ou types d'essais déterminés inscrits dans la portée d'accréditation approuvée par le Conseil canadien des normes.



Accreditation date:  
Date d'accréditation : 1995-03-06

Issued on:  
Délivré le : 2002-04-15

Expiry date:  
Date d'expiration : 2006-03-06

Accredited Laboratory No.  
Numéro de laboratoire accrédité : 187

Chair (SCC) / Président (CCN)

Assessment performed according to CAN P-4 (ISO/IEC 17025), Requirements for the Competence of Environmental Analytical Laboratories (CAEAL) and the conditions of the PALCAN Handbook D02.6. Laboratories that comply with the requirements of ISO/IEC 17025 operate a Quality Management System for testing and calibration activities that meet the requirements of ISO 9001:1994 when designing/developing new methods and/or developing test programs that combine standard and non-standard test and calibration methods, or meet ISO 9002 when only standard methods are used. The scope of accreditation is available from the accredited laboratory or SCC to verify the validity of the certificate; please see the listing of Accredited Laboratories on [www.scc.ca](http://www.scc.ca).

Évaluation effectuée conformément au CAN P-4 (ISO/CEI 17025), aux Exigences visant les compétences des laboratoires d'analyse de l'environnement (CAEAL) et aux conditions du Guide PALCAN D02.6. Pour conserver et développer des méthodes nouvelles et établir des programmes de qualité fondés sur ces méthodes, d'essai et de diagnostic normés et non normés, les laboratoires respectant la norme ISO/CEI 17025 ont, dans leurs essais et leur développement, recours à un système de management de la qualité conforme aux exigences d'ISO 9001:1994 et à celles d'ISO 9002 dans le seul cas des méthodes normalisées. Pour connaître le champ d'accréditation, l'adresseur est au laboratoire accrédité, soit au CCN. Pour vérifier la validité du présent certificat, consultez la liste des Laboratoires accrédités à l'adresse [www.scc.ca](http://www.scc.ca).

## **Quality Assurance/Quality Control Methodology for the Inuvik (IRSHSSA) Hospital Laboratory**

The water testing that is done in Inuvik (Hospital Laboratory) is Colilert testing for Coliforms and E.coli. It is a qualitative testing method only (positive or negative). Quality control is done each time a new box is opened and we do four bottles:

1. Negative control with distilled water from our tap (ensures that the water that we are using is negative).
2. Negative control with *Pseudomonas aeruginosa* (not a coliform, so it should not be detected by this system).
3. Positive control for total coliforms with *Klebsiella pneumoniae* (a coliform, so should be positive for total coliforms but negative for E.coli).
4. Positive control with E.coli (should be positive for both total coliforms and E.coli).

Water tests are sent in from the communities in testing bottles with a requisition attached identifying collection date/time, site and contact name and number for results. Waters are added to our worksheet, and labeled with site, worksheet number, and time set up before being incubated. They are labeled both on the lid and on the bottle themselves, to avoid any mix-up when lids are removed to add testing reagent. They are incubated for 24 hours, and then read. The result is recorded on the requisition that was attached to the bottle initially, as well as in our worksheets.

The initial requisition, containing the result and all collection information, is then sent to Environmental Health Department, who issue reports to the Health Centers. All positive reports are phoned immediately to Environmental Health upon reading, and they follow up (usually requesting a repeat sample ASAP for confirmation) as soon as possible.

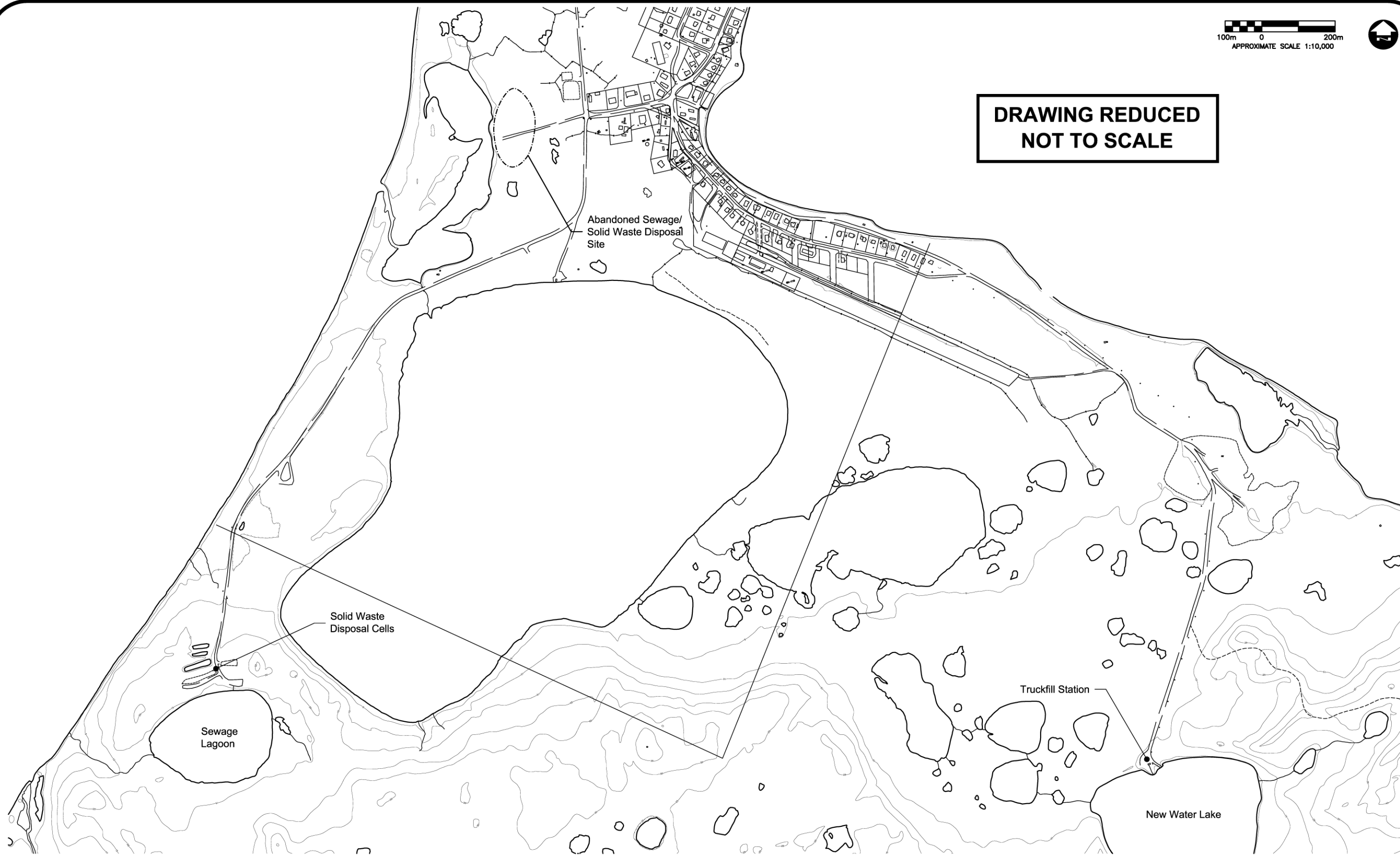


## **Appendix D – Maps and Figures**

100m 0 200m  
APPROXIMATE SCALE 1:10,000



**DRAWING REDUCED  
NOT TO SCALE**



EDIT DATE: 07/16/04 ACAD FILE: 4:1tpw.qr:\cad\043332\paulatuk.dwg



PROJECT	Hamlet of Paulatuk Current & Abandoned Water Supply Facilities and Waste Disposal Sites
TITLE	Site Plan

PROJECT NUMBER	043332
DATE	July 2004
FIGURE NUMBER	FIG 1

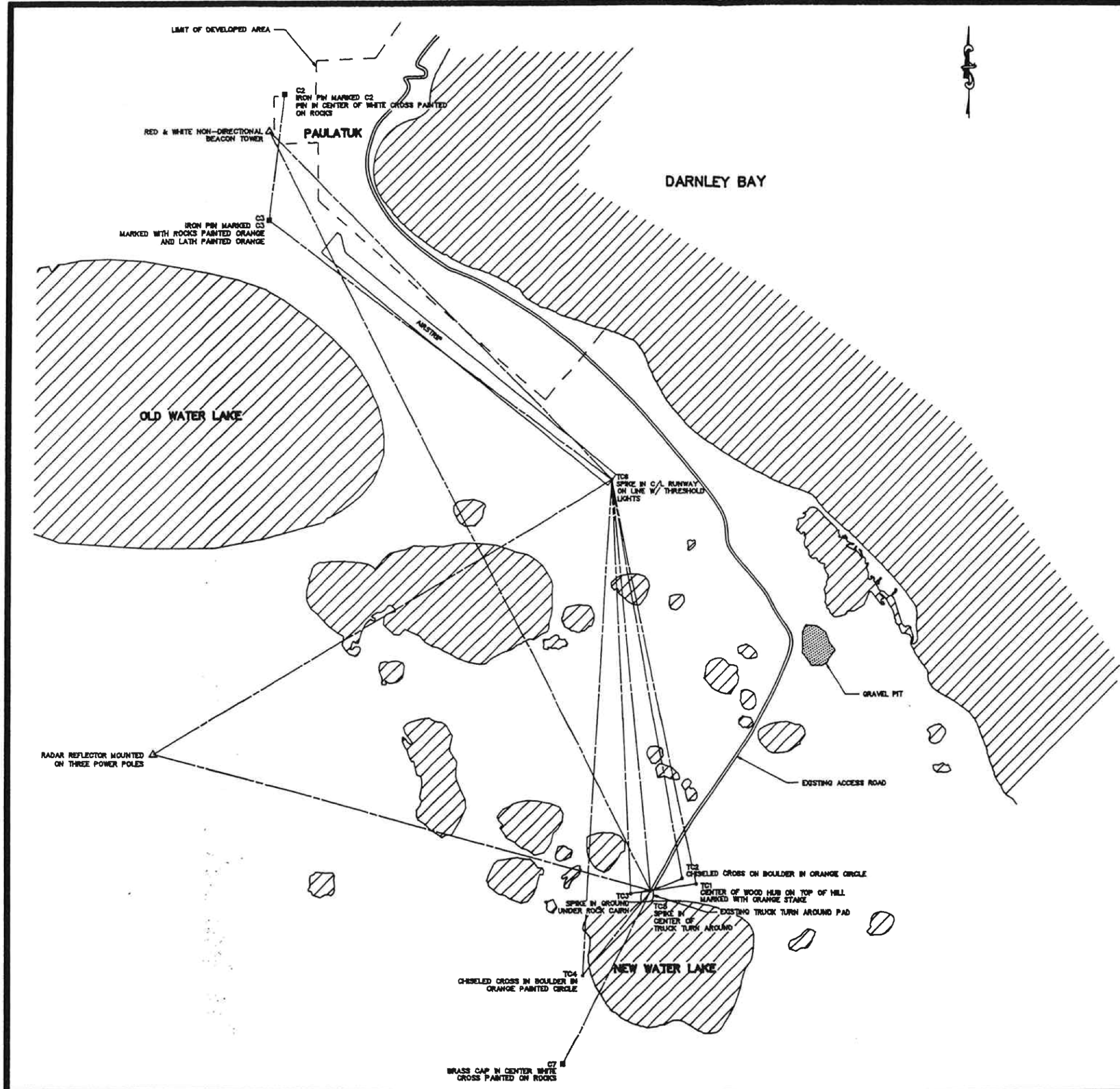


TABLE OF COORDINATES

STA	NORTHING	EASTING	ELEV
C2	10 048.819	9 787.472	4.771
C3	9 703.845	9 717.878	4.601
C7	7 446.834	10 883.824	46.289
TD1	7 868.389	10 898.379	88.39
TD2	7 943.214	10 854.878	13.87
TD3	7 898.486	10 887.148	11.89
TD4	7 884.883	10 884.888	22.07
TD5	7 918.878	10 748.488	11.84
TD8	8 018.886	10 838.813	

TABLE OF OBSERVATIONS

STA	TO	ANGLE/BEARING	DISTANCE
C2	C3	8°44'08"	336.248
	TD8	127°02'30"	1148.248
TD8	C3	302°04'30"	1148.248
	TD1	168°14'30"	
	TD2	168°05'15"	
	TD3	177°18'30"	
	TD4	183°27'15"	
	TD5	174°21'30"	1104.837
	RADAR REF	238°04'30"	3157.430"
TD5	C3	338°04'08"	918.888
	C7	80°00'30"	121.288
	TD1	81°00'30"	88.888
	TD2	80°00'30"	88.888
	TD3	80°15'45"	83.872
	TD4	81°25'00"	88.888
TD8	384°21'30"	1104.841	
RADAR REF	288°00'30"	3371.630"	

**LEGEND**

- CLS OR POINTS FROM PHOTO OR SURVEY. SHWT PLAN 88
- TEMPORARY CONTROL STATIONS ESTABLISHED DURING CONTROL
- △ TRANSLATION STATION

**NOTES**

1. LOCATION & ELEV DATA FOR EGS SURVEY CONTROL POINTS FROM PHOTO CONTROL SURVEY PLAN I AUGUST 23, 1988
2. FOR CONSTRUCTION REFERENCE
3. CO-ORDINATES BASED ON 16,000 N 10,800 E AT MONMIE 1:5 AS SHOWN ON PHOTO CONTROL SURVEY, SHWT PLAN 88
4. FEATURES DERIVED FROM DOTS 1:5000 TOPO MAP

FORM NO. 91181

DEPARTMENT OF PUBLIC WORKS

3	CONSTRUCTION RECORD	83-01
1	CONSTRUCTION RECORD	81-11
1	TENDER BIBLE	81-08
88		88-01

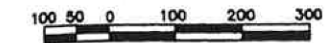
FERGUSON, SMITH, & GUNN  
CONSULTING ENGINEERS & ARCHITECTS  
S.L.P.L.E. INC.

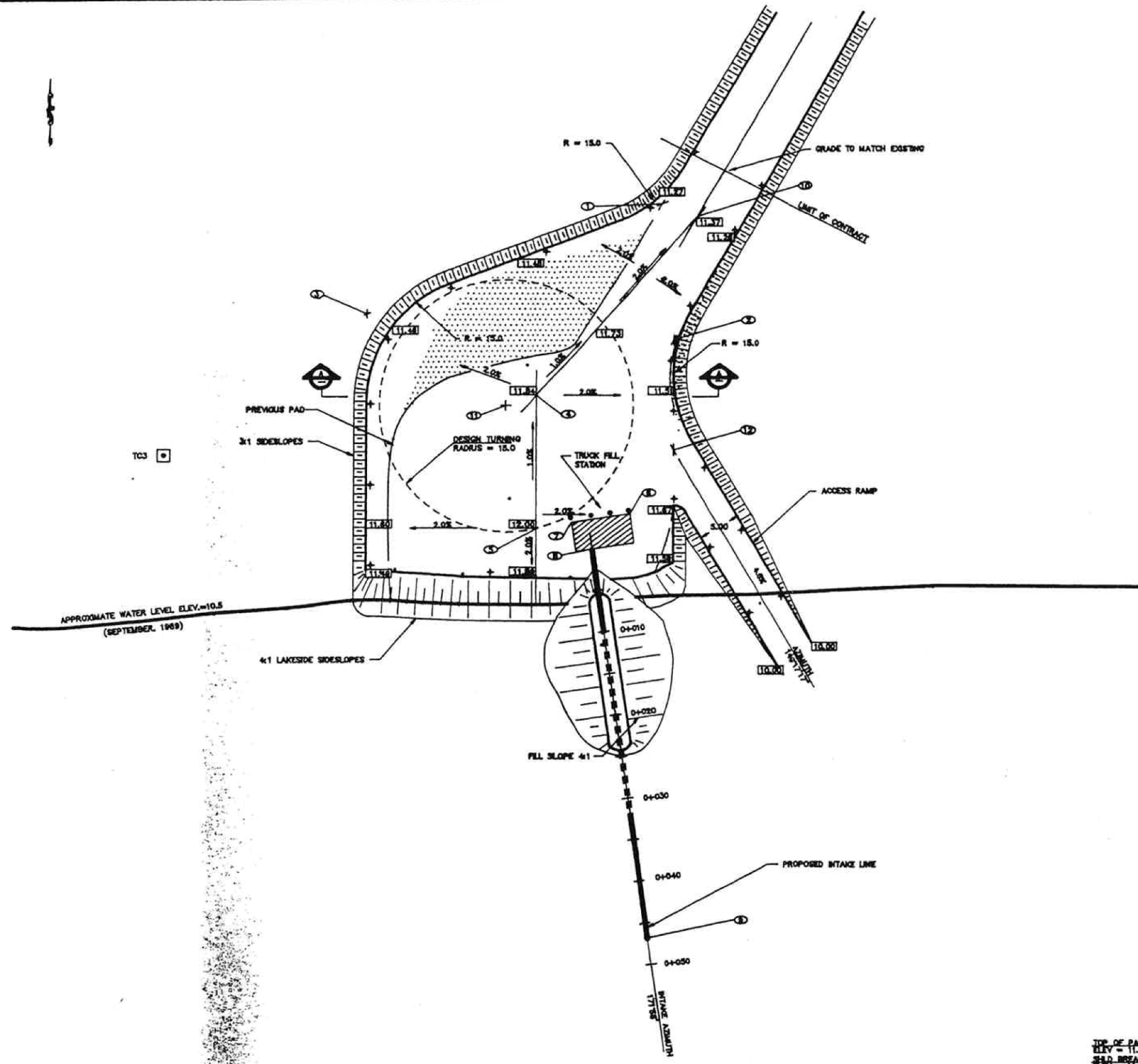
**WATER SUPPLY IMPROVEMENTS**

PAULATUK, N.W.T.  
CONTROL SURVEY FIELD NOTES

SCALE OF WQA	1:5000
DATE OF PLAN	NOV. 1991
PROJECT NO.	DPW 87-3048

**DRAWING REDUCED NOT TO SCALE**





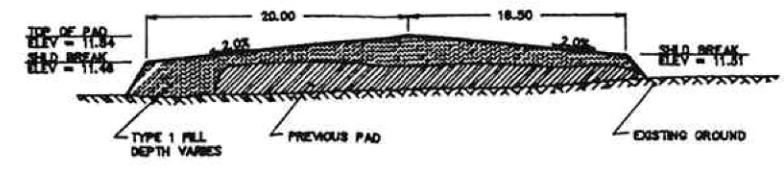
TC2

TC3

SETTING COORDINATE TABLE

POINT	NORTHING	EASTING	ELEV.
TC1	7 828.328	10 880.370	20.30
TC2	7 843.314	10 824.876	13.57
TC3	7 802.480	10 887.142	11.00
1	7 832.48	10 748.33	
2	7 818.32	10 747.83	
3	7 818.41	10 711.372	
4	7 808.74	10 731.48	
5	7 883.94	10 731.51	
6	7 897.06	10 740.58	
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8	7 881.51	10 738.08	
9	7 851.28	10 781.98	
10	7 830.83	10 780.57	
11	7 908.80	10 730.57	
12	7 903.25	10 747.83	

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NOT TO SCALE**



SECTION  
WEST ELEV - BE



- LEGEND:
- TC1 [Symbol] TEMPORARY SURVEY CONTROL MONUMENT
  - [Symbol] FILL SLOPE
  - [Symbol] EXISTING GRADE CONTOUR
  - [Symbol] FINISHED GRADE ELEVATION AT NODE
  - [Symbol] SETTING COORDINATE
  - [Symbol] BOLLARD
  - [Symbol] MARKER POST

NOTES:  
1. REFER TO STRUCTURAL DRAWINGS FOR BOLLARD DETAIL

91184 C191184



DEPARTMENT OF PUBLIC WORKS

2	CONSTRUCTION RECORD	91-11	94
2	RE TENDER ISSUE	91/98	94
1	TENDER ISSUE	91/98	94

PERKINS, SMITH & GIBSON  
CONSULTING ENGINEERS & ARCHITECTS  
MULTI-CITY

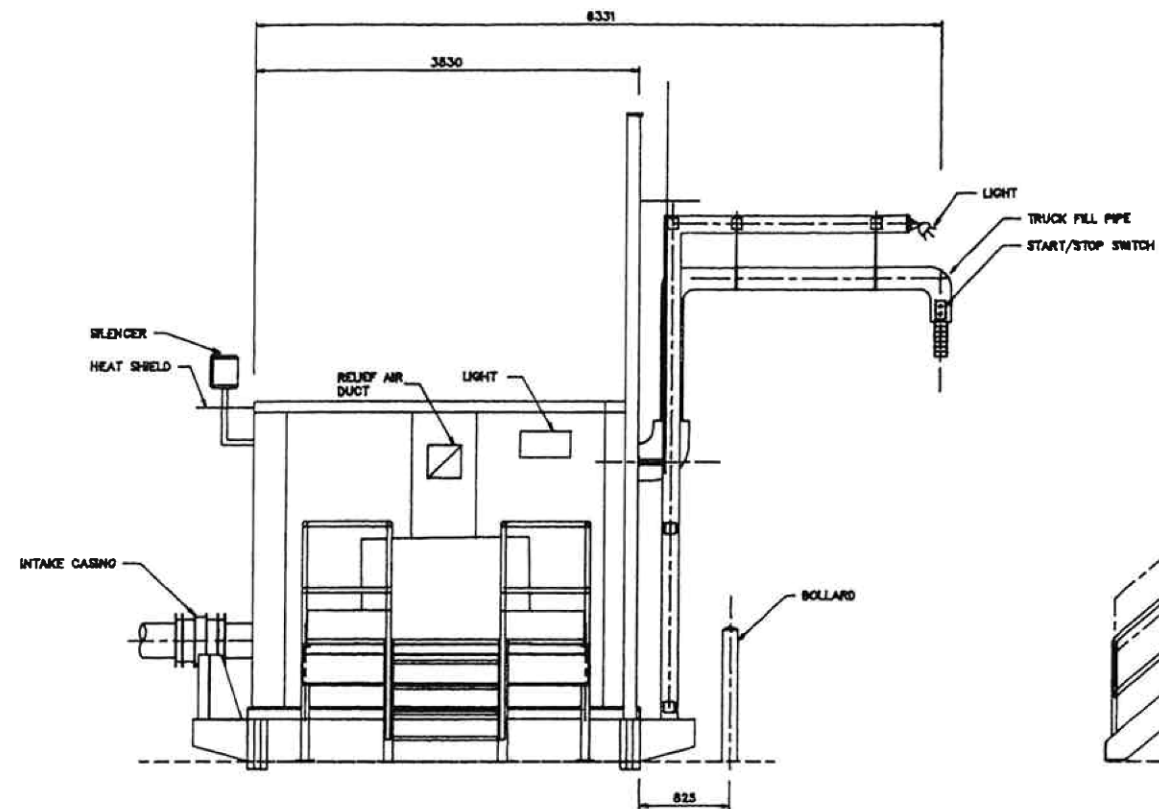
WATER SUPPLY IMPROVEMENTS

PAULATUK, N.W.T.

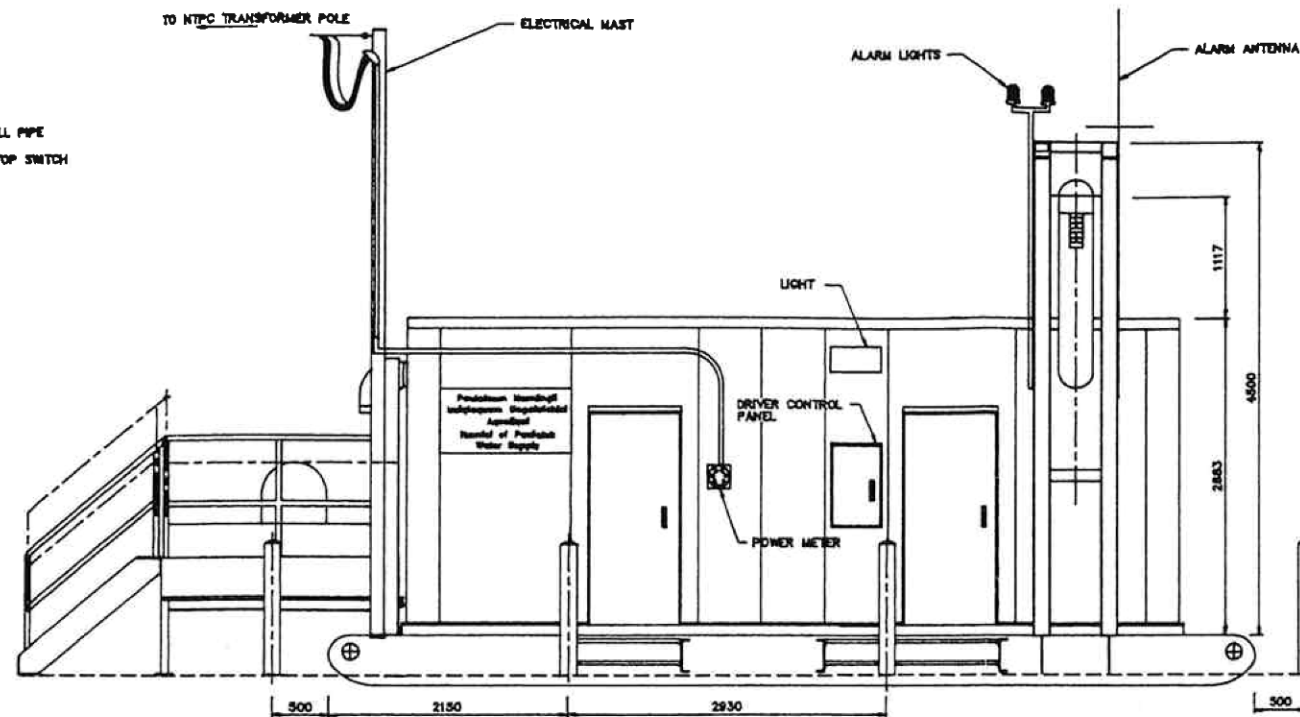
SITE LAYOUT AND GRADING PLAN

DATE OF VM	1:250
DATE OF VM	NOV. 1991
DATE OF VM	DPW 87-3048



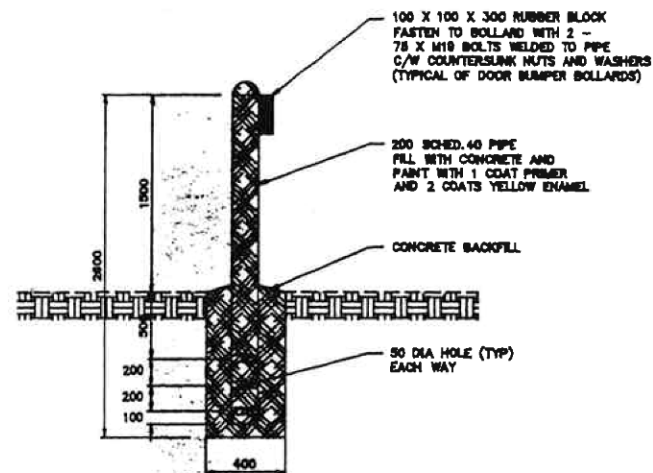


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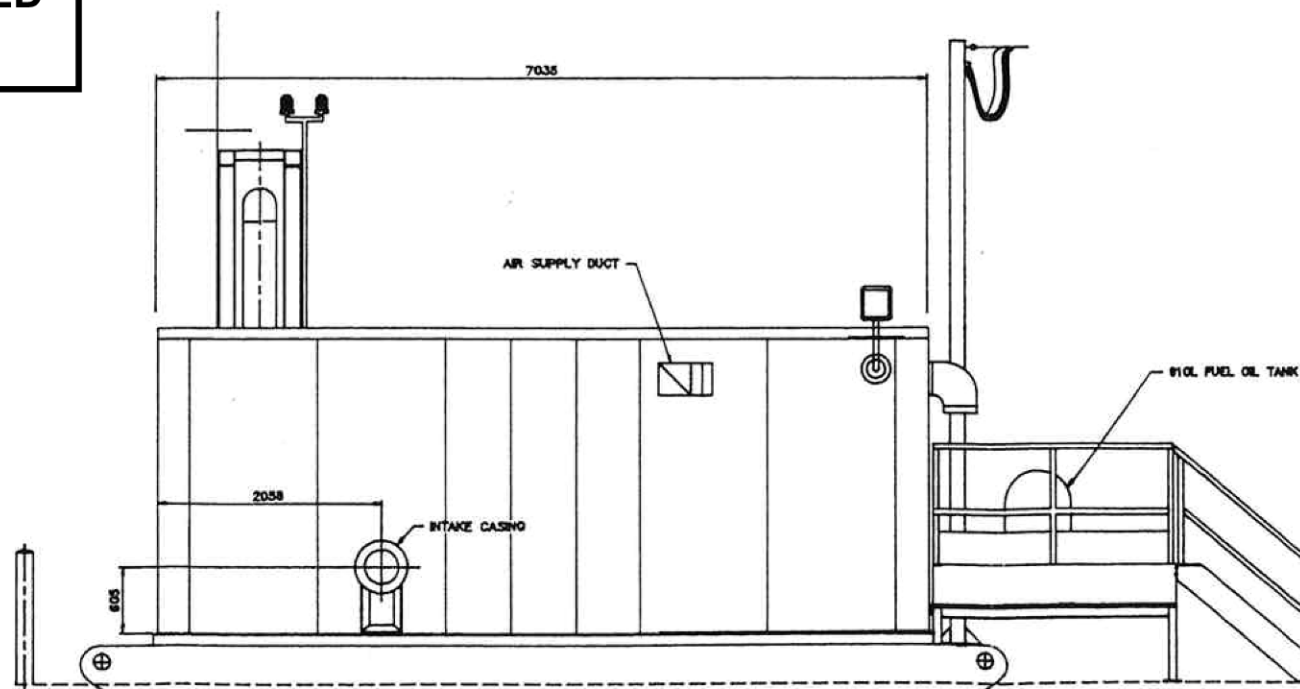


**NORTH ELEVATION**  
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**BOLLARD DETAIL**



**SOUTH ELEVATION**  
SCALE 1:30

Proj. No. 91184 5191184



DEPARTMENT OF PUBLIC WORKS

2	CONSTRUCTION RECORD	01-11-91
1	TENDER ISSUE	01-11-91

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CONSULTING ENGINEERS & ARCHITECTS

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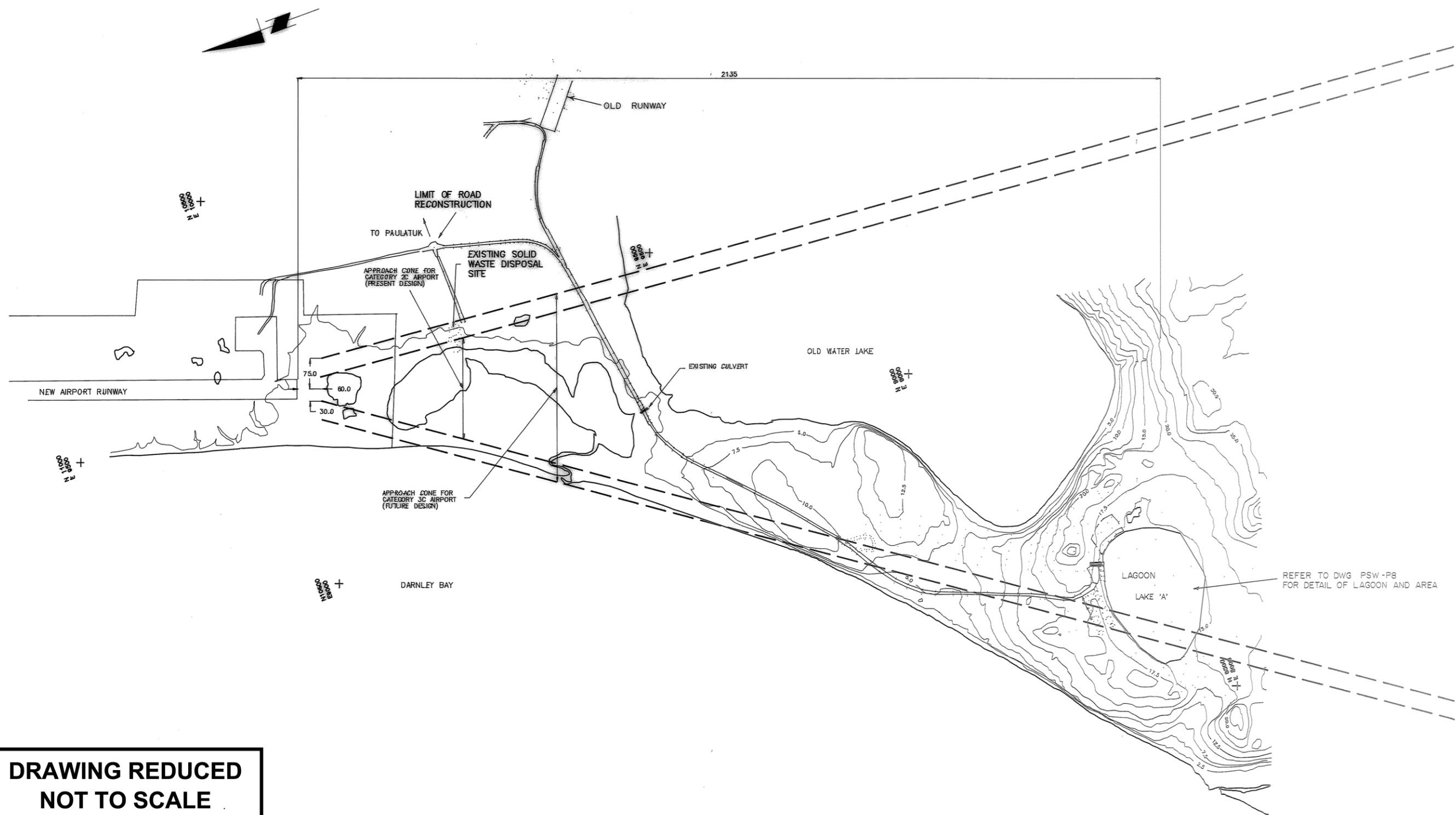
**WATER SUPPLY  
IMPROVEMENTS**

**PAULATUK, N.W.T.**

**BUILDING ELEVATIONS**

Drawn by JC	Scale AS SHOWN
Check by RM	Date NOV. 1991
Project No. DPW 87-3048	

**5 - 17 91181S1**



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5					5	PLAN OF RECORD			
4					4	APPROVAL FOR CONSTRUCTION			
3					3	FOR TENDER			
2					2	FOR APPROVAL			
1					1	PRELIMINARY			
NO.	DATE	DESCRIPTION	BY	APPROVED	NO.	DESCRIPTION	DATE	APPROVED	
REVISIONS					DRAWING STATUS				

PERMIT

THE ASSOCIATION OF PROFESSIONAL ENGINEERS, GEODISTIS and GEOPHYSICISTS OF NORTHWEST TERRITORIES

PERMIT NUMBER 493

*[Signature]* 7/94

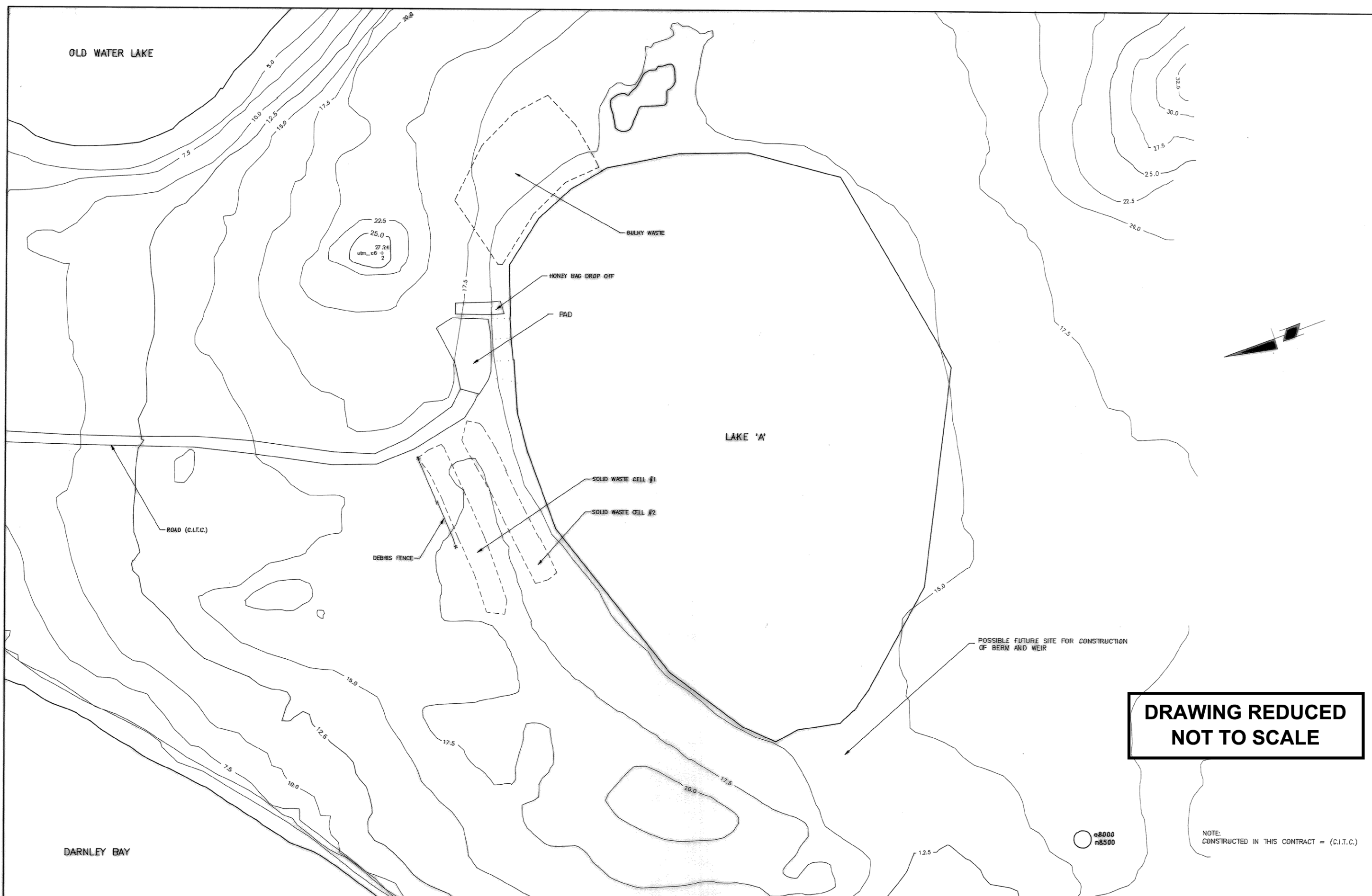
SEAL

**LEE MAHER**  
ENGINEERING ASSOCIATES LTD.

DESIGNED BY	DRAWN BY	CHECKED BY
	RDC	
SCALE		
1:5000		

CLIENT	DEPARTMENT of PUBLIC WORKS, INUVIK
TITLE	PAULATUK SOLID WASTE DISPOSAL SITE AND SEWAGE LAGOON LOCATION PLAN

DATE	Mar 15/94
SHEET NO.	1 OF 9
ALL DIMENSIONS ARE METERS UNLESS OTHERWISE NOTED	
JOB NO.	349-01-1
DRAWING NO.	PSW-P1



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NOTE:  
CONSTRUCTED IN THIS CONTRACT = (C.I.T.C.)

N.O.	DATE	DESCRIPTION	BY	APPROVED	N.O.	DESCRIPTION	DATE	APPROVED
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5					5	PLAN OF RECORD		
4					4	APPROVAL FOR CONSTRUCTION		
3					3	FOR TENDER		
2					2	FOR APPROVAL		
1					1	PRELIMINARY		
REVISIONS				DRAWING STATUS				

PERMIT

THE ASSOCIATION OF  
PROFESSIONAL ENGINEERS,  
GEOMETRISTS and GEOPHYSICISTS  
OF THE NORTHWEST TERRITORIES  
PERMIT NUMBER

SEAL

**LEE MAHER**  
ENGINEERING ASSOCIATES LTD.

DESIGNED BY	DRAWN BY RDC	CHECKED BY
SCALE 1:1000		

CLIENT DEPARTMENT OF PUBLIC WORKS, INUVIK	DATE Mar 11/94
TITLE PAULATUK SOLID WASTE DISPOSAL SITE AND SEWAGE LAGOON LAGOON	SHEET NO. 8 OF 9
DRAWING NO. PSW - P8	JOB NO. 349-01-1

**METRIC**

ALL DIMENSIONS ARE METERS  
UNLESS OTHERWISE NOTED



## **Appendix E – Photos**

A28469-198



Truck Fill Station

"New Water" Lake

06/01



Lagoon

Solid Waste  
Disposal Site



**Pump House**



**Truck Fill Arm**



**Fresh Water Intake**



**New Water Lake**



**Inside Pump House**



**Inside Pump House**



**Filling the Water Truck**



**New Water Lake and Pumphouse**



**Solid Waste Disposal Area – Bulky Metal in foreground,  
Refuse Cells in background**



**Old waste disposal cell ploughed over**





**Solid Waste collection truck**



**Waste disposal cell currently being filled**



**Sewage Truck – discharge through chute**



**Sewage Discharge to lagoon**



**Sewage Lagoon**



**Lagoon and Solid Waste Disposal Site with Darnley Bay in background**

**Appendix F – Abandonment and Restoration Plan  
Sewage and Solid Waste Facility**

<b>COPY</b>	
<b>BOARD</b>	6
<b>G.W.</b>	1
<b>E.A.</b>	1
<b>W. REC.</b>	1
<b>File -</b>	1619

MAR 3 0 95  
Yellowknife, N.T.

INDIAN AND NORTHERN AFFAIRS — CANADA N.W.T. REGION
MAR 28 1995
WATER RESOURCES DIVISION YELLOWKNIFE, NT

ABANDONMENT AND RESTORATION PLAN  
PAULATUK SEWAGE AND SOLID WASTE FACILITY  
PAULATUK, N.W.T.

Submitted by:  
Hamlet of Paulatuk  
August 1994

## 1.0 BACKGROUND

Paulatuk did not have an adequate disposal site for sewage and solid waste. The original sites were too close to the community, about 350m from existing development which was not in compliance with Municipal and Community Affairs Standards (MACA) or the Public Health Act. In addition, in 1993 a new airstrip was opened to the immediate north of the existing sewage and solid waste sites.

In 1993 construction began on relocating the sewage/solid waste sites to a location in the area of "Lake A" about 3km south of the existing site. The new site consists of a bulky metal waste area, honeybag pit, solid waste trenches and a natural sewage lagoon at Lake A. Construction was complete on the solid waste trenches in September 1993 and the community has been using the new site for solid waste disposal since that time.

Construction is currently being completed on the sewage lagoon portion of the project and it is expected that the community will begin using the new facility by September 1994.

## 2.0 ABANDONMENT OF EXISTING SITE

This section of the plan has been completed using Part F of the Paulatuk Water Licence as a guideline.

### 2.1 Contaminated site remediation

Paulatuk is a community of approximately 350 people. There has never been any heavy industry in the area therefore the primary source of solid waste has been from municipal type waste. For this reason it is not believed that there are any wastes on the site which would cause this site to be classified as "contaminated". No specific remediation of contaminated waste is planned.

With regard to the sewage lagoon, there is a steady flow of water through the lagoon system with the ocean as the final receiving body. The specific objective as stated in section 1.3 of "Guidelines For The Abandonment and Restoration of Sewage Lagoons in The NWT" are as follows:

#### 1. minimize future effects on public health and safety

After the lake ceases to be used as a natural lagoon it is expected that natural biological processes active in natural lagoons will return this lake in time to its original state. There is no evidence of any sludge build-up. Only municipal waste water has been treated in the lagoon therefore there is not expected to be any great amount of heavy metal contamination. No specific treatment of sludge is planned.

2. minimize public exposure to odours, noise, etc., during restoration

Restoration will consist of removing structures on site. Natural biological processes will restore site.

3. ensure that effluent quality meets the licence requirements

Effluent from this site will be analyzed on an annual basis to ensure that it is in compliance with water board guidelines. The regional water resource officer (DIAND) has established an SNP site at the mouth of the stream where effluent enters Darnely Bay (ocean receiving body).

4. ensure proper protection of the environment

During and abandonment there is not expected to be much heavy equipment activity in the vicinity of the lagoon. After abandonment the site is to be left with no further development planned for the area.

5. minimize long term maintenance and monitoring

Signage will be place in the abandoned lagoon area restricting further disposal of any waste materials. It is expected that annual monitoring of effluent will be sufficient to ensure compliance with Waterboard guidelines.

6. prevent leaching of contaminants through ground water system

This natural lagoon is at sea level. The entire area is underlain with permafrost. For these reasons it is not expected that leaching from contaminants migrates to any extent through ground water flow.

7. return the site to an appropriate level of contamination and aesthetic appearance, which will vary depending on the final use of the site.

The perimeter of the site will be clear of debris and the chute structure removed. It is recommended that the site be left with no further development plans.

## 2.2 Leachate Prevention

Regular operation and maintenance of the solid waste site has included trenching and burning of waste material. Solid waste remaining on the site will be levelled into low areas on the site and covered with sand, graded, capped with gravel and seeded. This will restrict moisture from entering waste media and thus limit leachate production. The site is underlain with permafrost which will act a barrier in the transport of any leachate. It is expected that after covering the site the permafrost will move up into the buried waste and further act to prevent any liquid transport through the waste media.

## 2.3 Scope of Work and Implementation Schedule

### 1. Removal of Metal Debris from perimeter of Lagoon

This work will include removing various metal debris including empty oil drums from the perimeter of the abandoned sewage lagoon. The metal will be hauled to the new Bulky Metal Waste Site. This work will be done during the summer of 1994.

### 2. Removal of the old Sewage Chute

The new sewage chute at Lake A will be installed by September 1994. At this time the new facility will be commissioned and the existing lagoon abandoned. The old sewage lagoon chute will be removed during the fall of 1994.

### 3. Covering of Site

The new site in the area of Lake A is currently being used for waste disposal. The existing site is now ready for abandonment. Abandonment will consist of levelling the remaining solid waste on site into low areas. The entire site will then be capped with .3m to .5m of sand and graded so as to promote drainage away from buried waste. The sand will be excavated from new solid waste pits in the area of the new sewage/solid waste site. The sand will be overlain with .1m of granular material to hold down the sand cover. This work will occur during the summer of 1994.

Finally the site will be fertilized and seeded with an appropriate mix of northern grasses. This work will occur during the spring/summer of 1995.



#### 4. Construct Levee

A levee will be constructed along the face of buried solid waste adjacent to the old sewage lagoon. The levee will be constructed using pit run gravel as per attachment A. The levee will protect the buried waste from any shore erosion. No significant erosion is expected at this site as it is protected from the direct influence of storm surges coming off Darnley Bay. Construction of levee will commence after old waste site has been capped. Construction of levee should be complete by fall 1994.

#### 2.4 Maps

A sketch map delineating all disturbed areas, borrow material locations, and site facilities is included in Appendix B.

#### 2.5 Altered Drainage Patterns

The surface run-off from the reclaimed site will be graded toward the old sewage lagoon and away from buried wastes. This was the original drainage pass, therefore there will be no alterations.

#### 2.6 Type and Source of Cover Material

The sand cover for the reclaimed solid waste site will come from excavated material from new trenches in the area of the new solid waste site.

#### 2.7 Future Area Use

The reclaimed site should be left and no development planned for it as it lays directly on the approach way of the new airstrip.

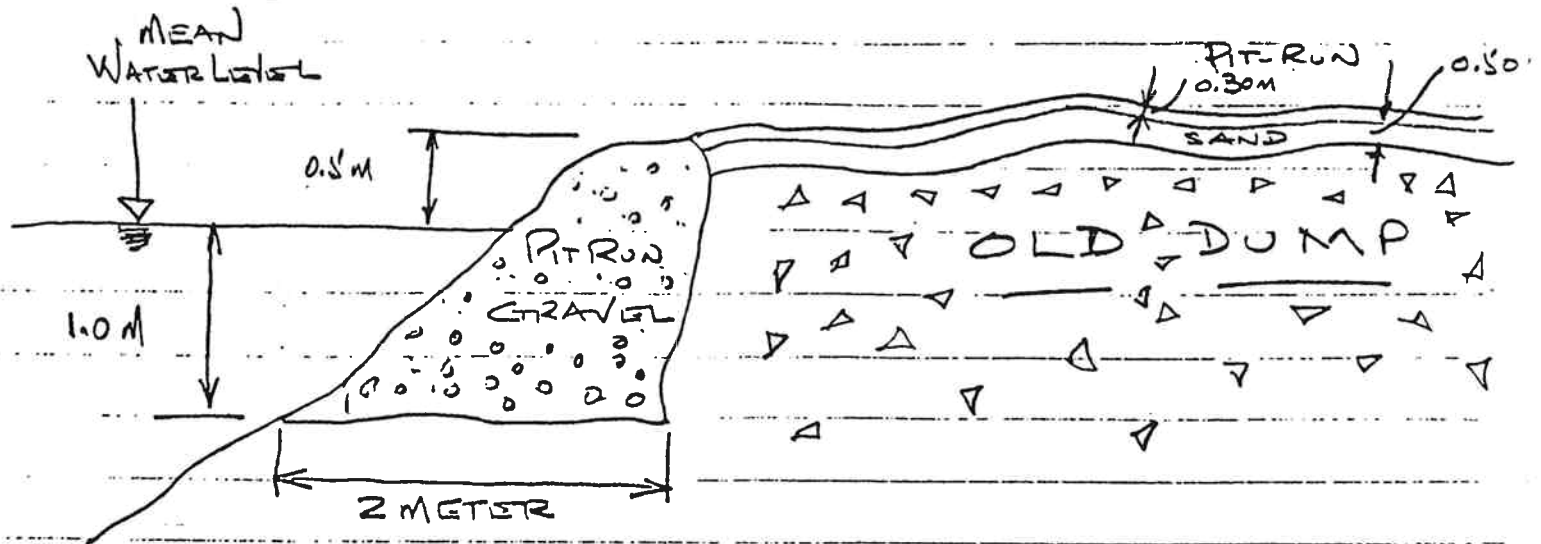
#### 2.8 Hazardous Wastes

As mentioned previously, the waste material at the old site consists almost entirely of municipal waste. Due to the absence of industrial activity in there is minimal risks from hazardous wastes. The community has restricted disposal of petroleum wastes at the site.

#### Attachments:

1. Sketch of levee construction
2. Map of Old and New Sites

# LEVEE DESIGN TIDAL POND - PAULATUK DUMP COVER - BURYING OLD DUMP.



NOTE: LEVEE 30 METERS LONG  
N.T.S.

## QUANTITIES.

① PIT-RUN GRAVEL (DPW & S) — 135 m<sup>3</sup>, (LEVEE)

② SAND (LOCAL) — 1,232 m<sup>3</sup>, (DUMP)

③ GRAVEL (PIT-RUN) (LOCAL) — 660 m<sup>3</sup>, (✓)

ABAND  
SIT

W/L  
0.20'

3.4

2.1

2.8

3.2

1.1

1.1

+

+

0.8

2.8

10.4

11.1

9.2

5.0

W/L 2.35'

+

PILE

14.4

PIT

12.5

+

NEW  
SEWAGE/SOLID WASTE  
SITE

19.5

12.3

21.3

17.5

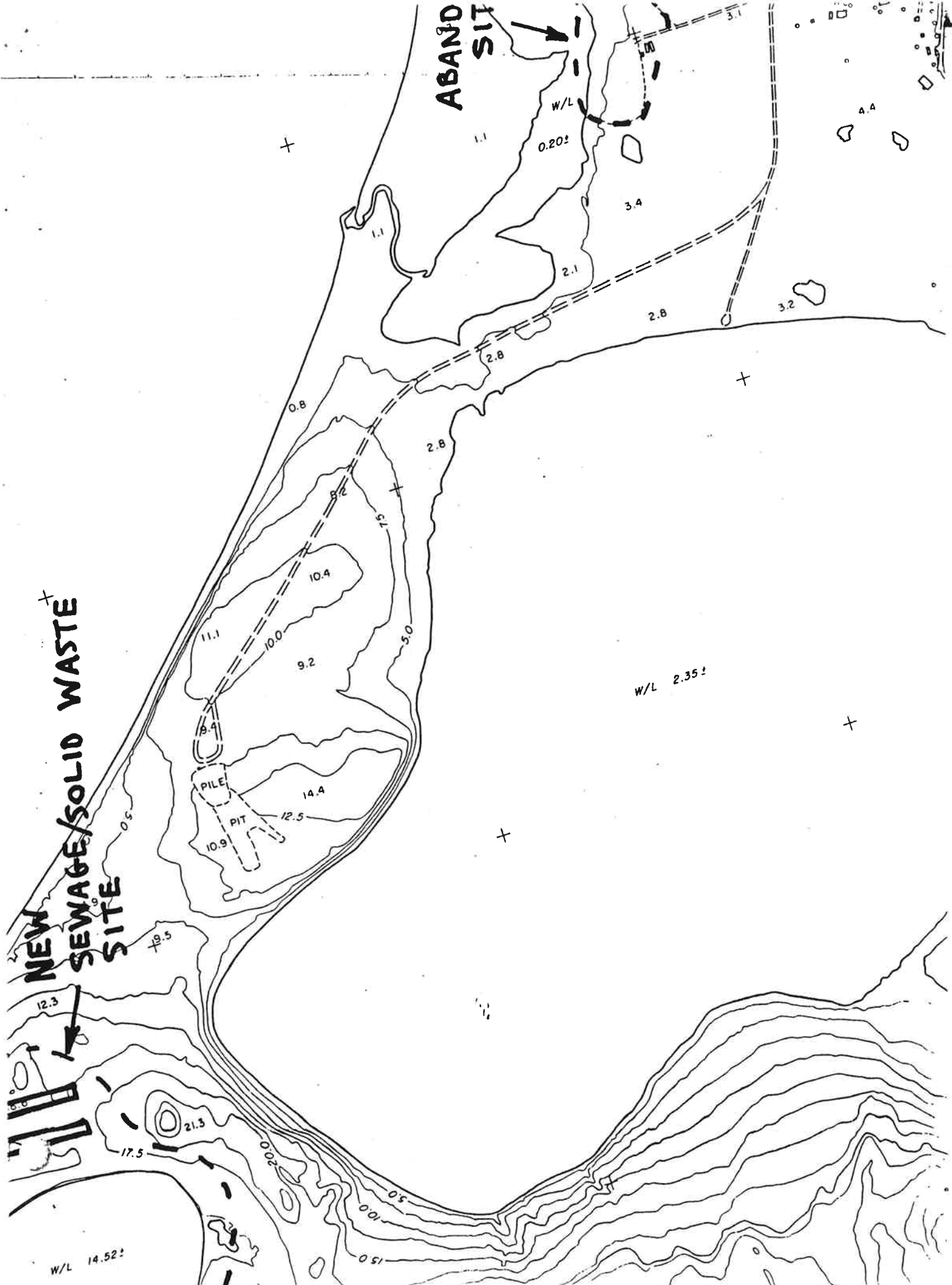
20.0

10.0

5.0

15.0

W/L 14.52'



# Hamlet of Paulatuk Water License Renewal Application

## Potential Environmental Impacts

### Operation and Maintenance of Water Supply Facilities

IMPACT	MITIGATION/RECLAMATION/RESTORATION
Draw down effect on New Water Lake	<ul style="list-style-type: none"> <li>• This lake recharges naturally due to precipitation. Spring melt brings levels back to normal annually.</li> </ul>
Drawing debris into piping system	<ul style="list-style-type: none"> <li>• An intake screen is in place, to reduce any possible impact of water intake.</li> <li>• Screen prevents uptake of material from lake, including fish or plant life if present.</li> </ul>
Chlorine spills	<ul style="list-style-type: none"> <li>• Operators should be trained in proper handling of chemicals</li> <li>• Seal containers when chemicals are not in use</li> </ul>
Aerial emissions from vehicles	<ul style="list-style-type: none"> <li>• Use of trucks will be kept to a minimum, and they are turned off when not in use, when practical</li> </ul>
Fuel spills from trucks, pumps	<ul style="list-style-type: none"> <li>• Spill contingency plan is to contain and clean up any possible spills as soon as possible.</li> <li>• Trucks and pumps will be serviced regularly, to ensure they are in proper working order</li> </ul>

### Operation and Maintenance of Sewage Disposal System

IMPACT	MITIGATION/RECLAMATION/RESTORATION
Use of “Dead Lake” as sewage lagoon	<ul style="list-style-type: none"> <li>• Data is collected from SNP monitoring stations by DIAND inspectors and will be used to monitor water quality at Darnley Bay</li> </ul>
Aerial emissions from vehicles	<ul style="list-style-type: none"> <li>• Use of trucks will be kept to a minimum, however this is an integral step in sewage collection and cannot be avoided</li> <li>• Trucks will be kept in good condition and maintenance will be carried out</li> </ul>
Fuel spills from trucks	<ul style="list-style-type: none"> <li>• Spill contingency plan is to contain and clean up possible spills as soon as possible.</li> <li>• Trucks will be serviced regularly, to ensure they are in proper working order</li> </ul>

## Operation and Maintenance of Solid Waste Disposal Facility

IMPACT	MITIGATION/RECLAMATION/RESTORATION
Litter blowing into surrounding environment	<ul style="list-style-type: none"> <li>• Fence will be installed around the solid waste facility when funding becomes available, in an effort to contain litter</li> <li>• Windblown litter will be removed from fences on a regular basis.</li> </ul>
Soil excavation and erosion	<ul style="list-style-type: none"> <li>• Contain excavations to designated areas</li> <li>• Excavated soils will be stockpiled for covering over cells as they become full</li> </ul>
Abandoned or full waste cells	<ul style="list-style-type: none"> <li>• Cells are covered over when full; if and when a site is abandoned, it is reclaimed by covering and seeding to natural vegetation</li> </ul>
Aerial emissions from vehicles	<ul style="list-style-type: none"> <li>• Use of trucks will be kept to a minimum, however this is an integral step in solid waste collection and cannot be avoided</li> <li>• Trucks will be kept in good working condition</li> </ul>
Fuel spills from trucks	<ul style="list-style-type: none"> <li>• Spill contingency plan is to contain and clean up as soon as possible.</li> <li>• Trucks will be kept in good working condition</li> </ul>
Attraction of Wildlife/birds	<ul style="list-style-type: none"> <li>• A fence around the solid waste disposal site will, when erected, help to prevent wildlife from entering. Covering of waste will aid in reducing the attraction for birds and wildlife</li> </ul>

### Potential Cumulative Effects

- **Waste Accumulation:** Waste will accumulate at the current solid waste disposal site, until the site has reached its' capacity. At that point, a new waste disposal site will need to be chosen and the current site will be closed. Adverse effects will be reduced through proper management of the waste disposal facilities, consistent with current regulatory requirements and standards.
- **Habitat Reduction:** Continued operation of the current water treatment facility and the solid waste disposal facility should have little effect on natural habitat reduction. When the current sites reach capacity, new sites will need to be chosen, and the current sites will be closed. There should be limited net loss in habitat.

## **Socio-Economic Issues**

The operation of the water treatment facility, the solid waste disposal facility and the sewage lagoon creates jobs for Paulatuk community members. Positions such as the following will always be needed:

- Truck drivers (water, sewage and solid waste)
- Plant operators
- Supervisors for the facilities
- Contractors

In addition, there may be opportunities for community members to receive further training to help with their jobs. As an example, training to upgrade mathematical skills was suggested during a Department of Public Works and Services visit in 2002 and then during the visit in 2004, they advised that training might be available for a Small Systems Certification course. These types of training opportunities provide benefits that extend beyond the immediate job situation and benefit others in the community as well.

Opportunities exist for small enterprise in Paulatuk as well; for example, a local contractor is able to secure work for several years at a time by winning the bid to supply trucked water to the community.

Due to the small scale, non-industrial nature of the operation in Paulatuk, the water supply facility and waste disposal sites do not result in other potential social effects such as health effects. There are not likely to be effects on traditional land uses, though during seasons when residents are out on the land it means a less busy time for operators of the facilities mentioned.

Public consultation regarding potential changes to the water supply system or the waste disposal system may need to occur occasionally due to legislative requirements, Water Board Hearings (if requested) or due to community concern regarding a particular issue. If it takes place, this consultation may provide an opportunity for residents to voice opinions or concerns in a meaningful way and to interact with regulators or other agencies that may not always hear community feedback. This may foster a sense of empowerment within the community.

Similarly, information such as Traditional Knowledge may be required to make decisions regarding changes to any of the water or waste facilities. If this were the case, the sharing of this knowledge would provide excellent, valuable insight into the decision-making process and would recognize the contribution of local community members while giving them a chance to be a part of a solution or change.

**Appendix H – Operations and Maintenance  
Manual, Sewage and Solid Waste Facility**

# **Hamlet of Paulatuk**

## **Operation and Maintenance Manual**

### *Sewage and Solid Waste Disposal Facilities*

**DILLON CONSULTING LIMITED**  
**04-3332**  
**August 2004**





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Appendix A           Photos

Appendix B           Bear Safety

Appendix C           Environmental Guidelines

## 1.0 INTRODUCTION

### 1.1 Purpose

This manual has been produced to assist the Hamlet of Paulatuk personnel in the proper operation and maintenance of the Hamlet's sewage and solid waste disposal facilities. The "Guidelines for the Preparation of an Operation and Maintenance Manual for Sewage and Solid Waste Disposal Facilities" (MACA, 1996) and the "Guidelines for the Planning, Design, Operations and Maintenance of Modified Solid Waste Sites in the Northwest Territories" (MACA, 2003) were referred to during the preparation of this manual.

At the end of this manual, several photos have been included to portray various components of the solid waste and sewage disposal systems in Paulatuk. These photos are found in Appendix A.

### 1.2 Site Setting

The community of Paulatuk, Northwest Territories is located at the south end of Darnley Bay on the Arctic Coast. It is located at 69°21'N and 124°04'W, and is situated approximately 400km east of Inuvik and 855km northwest of Yellowknife. The mean temperature is 18.8°C in July and -29.4°C in January. Precipitation in the community averages 224mm annually. Paulatuk is located in an area of continuous permafrost with soils that are predominantly sandy, glacial till and marine sands and silts. The community has an airport, but no road access. Supplies are shipped in annually via barge on the ocean, or by plane.

### 1.3 Population Projection

The population projection for the Hamlet up to the year 2019 was obtained from the GNWT Bureau of Statistics ([www.stats.gov.nt.ca](http://www.stats.gov.nt.ca)). This information is displayed in Table 1; the figures were revised in July 2000, so the population noted up to and including the year 2000 was the actual population.

**Table 1: Paulatuk Population Projection**

Year	1991	1996	1997	1998	1999	2000	2004	2009	2014	2019
Population	271	297	299	307	309	323	318	342	375	411

### 1.4 Contact List

The individuals responsible for the operation of the sewage waste disposal facilities in Paulatuk are the following:

Tom Caines	Senior Administrative Officer	(867) 580-3531
Keith Dodge	Municipal Foreman	(867) 580-3039
Gilbert Ruben	Municipal Employee	(867) 580-3039

## **2.0 BACKGROUND**

### **2.1 General**

#### ***Water use***

The Hamlet of Paulatuk currently obtains its drinking water from New Water Lake, approximately 2km from the Hamlet at the base of the hills behind the community. New Water Lake is fed by a drainage basin approximately 140 hectares in size. The water supply facility and truck fill station is located near the lake, and the intake pipe leads out into the lake where water is withdrawn.

Chlorination is required for disinfection of the raw water, and treated drinking water is delivered by water truck to homes and facilities in Paulatuk.

#### ***Sewage Disposal***

The community sewage lagoon is a natural lake (locally referred to as 'Dead Lake' or 'Lake "A"') located approximately 2 km from the Hamlet. The lagoon is approximately 250 x 350m, and is not connected to the drainage basin that the water supply (New Water Lake) is located within. The Hamlet's solid waste facility is located at the same site. The community has used this particular lake for the treatment of its' municipal sewage since the early 1990's.

Sewage is collected from the community by vacuum truck five days a week and disposed at the sewage lagoon. The trucks discharge the sewage using the chute at the facility.

#### ***Solid Waste Disposal***

Solid waste is collected from the community by a truck twice weekly, with increased pickup as required during peak times such as near Christmas holidays. The waste is transported to the solid waste disposal site; there is one public access road to the disposal site. Separate disposal areas are used for refuse, hazardous materials, and bulky metal waste. Refuse is disposed of in cells (trenches) and covered with overburden as required.

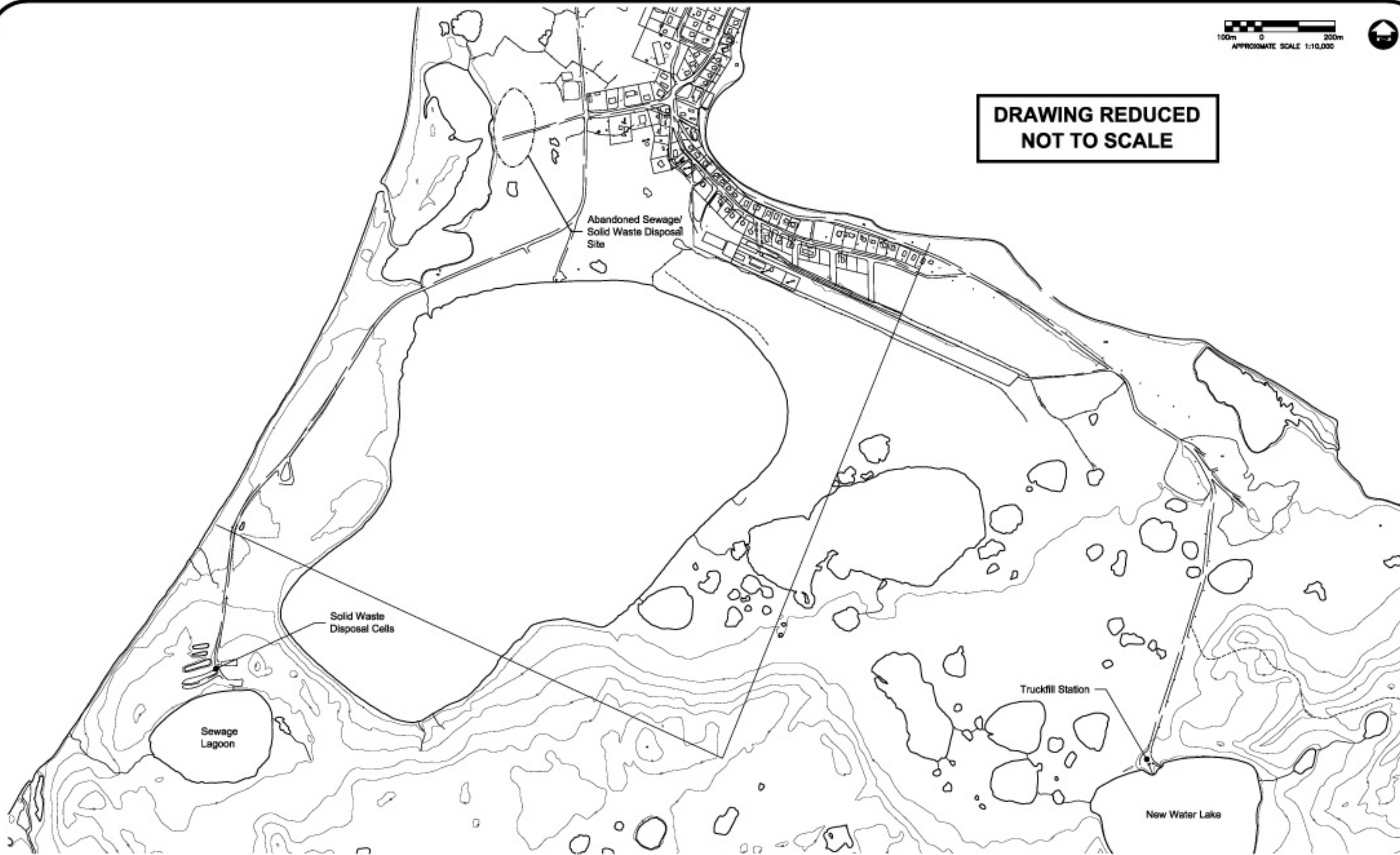
A preliminary study of options for a new sewage and solid waste disposal site for the Hamlet was done in 1986 by Reid Crowther & Partners Ltd. prior to the sites being relocated to where they are now. This study mentioned that the community residents preferred a location for the lagoon that was further from town; the old location was only 400m away, and upwind of the community. In addition, the old solid waste facility was a dump rather than a landfill or modified landfill, and was unaesthetic and odiferous near the community.

Figure 1 on the next page illustrates the locations of the sewage lagoon and the solid waste disposal facility in relation to the Hamlet of Paulatuk.

100m 0 200m  
APPROXIMATE SCALE 1:10,000



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PROJECT	Hamlet of Paulatuk Current & Abandoned Water Supply Facilities and Waste Disposal Sites
TITLE	Site Plan

PROJECT NUMBER	043332
DATE	July 2004
FIGURE NUMBER	FIG 1

### **3.0 SEWAGE DISPOSAL SYSTEM**

#### **3.1 Manual Organization**

This section of the manual was developed to present operational and maintenance procedures to designated operators of the wastewater treatment facility in Paulatuk. Each set of procedures is explained individually. The final section of the manual provides a summary of operational and maintenance procedures broken down into daily, weekly, monthly and annual tasks.

#### **3.2 Equipment**

The equipment used to operate the Paulatuk sewage treatment system consists of the following:

- Year 2000 Freightliner FL80 Vacuum Truck (see Appendix A, Figure 1 for photo)
- Year 1991 Ford F700 Vacuum Truck

#### **3.3 Site Personnel**

The Senior Administrative Officer (SAO) has the overall responsibility for the waste disposal site, and oversees the employees working at the site. The day-to-day operation and maintenance of the facility is the responsibility of the Hamlet Foreman. One or two people are employed by the Hamlet to operate the sewage collection vehicle.

#### **3.4 Operational Procedures**

These procedures must be carried out frequently to ensure smooth operation of the treatment system.

##### *3.4.1 Basic Operations*

1. Wastewater in Paulatuk is collected from holding tanks at each residence or commercial building.
2. Suction trucks pump the wastewater out of the holding tanks and transport it to the sewage treatment area.
3. There are a very small number of homes still using honeybags; these are collected as required and deposited in a designated pit near the lagoon. They are covered over with dirt as often as required.
4. Each time it is collected, the wastewater is trucked out and discharged into the lagoon. The sewage truck backs up to a chute on the gravel pad at the lagoon, and the valve is opened. Wastewater is discharged through the chute into the lagoon. (See Appendix A, Figure 2 and Figure 3)
5. Discharge from the lagoon is at a natural rate, as there is a natural outflow from the lagoon through a wide vegetated corridor before it reaches Darnley Bay.

### 3.4.2 Sampling Procedures and Requirements

Monitoring the wastewater effluent is an important step in the efficient operation of the wastewater treatment system in Paulatuk and is required by the NWT Water Board. Six factors are particularly important to producing meaningful results:

1. Collecting the samples at the designated time
2. Using the correct clean sampling container for the parameter being tested
3. Collecting the samples from the correct location and completing any necessary field tests at that time
4. Labeling the samples correctly and filling out a record sheet
5. Using the correct procedure for field tested parameters
6. Shipping the samples quickly and in the correct containers to the analytical laboratory

A “Surveillance Network Program” (SNP) sampling protocol has been developed and SNP station locations are outlined in the Hamlet’s Water License as well as below.

<u>Station Number</u>	<u>Description</u>
1619-1	Raw water supply from New Water Lake
1619-2	Outlet of sewage lagoon before entering Darnley Bay

### *Record Keeping*

Records should be kept to assist in planning for yearly operations and to assist in the evaluation of the effectiveness of the sewage treatment facility. The records should be stored in the Hamlet Office and be maintained by the Hamlet Foreman. As a minimum, the following information should be recorded:

- The approximate volume of sewage discharged to the system (this may be calculated as a percentage of the fresh water trucked to each residence or facility in the Hamlet; those records are kept by the Hamlet for water billing purposes)
- The dates any monitoring is conducted
- The results of the monitoring program
- Any maintenance activities carried out on the facility

### 3.4.3 Health and Safety

Due to the potential health hazards associated with sewage handling and treatment, the following safety precautions should be taken by sewage treatment personnel:

- Equipment is to be kept clean
- Hands are to be washed frequently, as a minimum after work and before eating
- Work clothes should not be worn home, and work gloves and boots should be worn at all times
- Personnel should receive appropriate vaccinations and ensure they are kept up to date

### 3.4.4 Bear Safety

Brown bears are known to frequent the area, and precautions should be taken. Bear safety information can be found in Appendix B, as well as on the GNWT's Resources, Wildlife and Economic Development website under Bear Safety:

<http://www.nwtwildlife.rwed.gov.nt.ca/Publications/safetyinbearcountry/safety.htm>

## 3.5 Maintenance Procedures

The following maintenance procedures should be carried out to ensure that wastewater treatment infrastructure operates efficiently.

### 3.5.1 Sewage Trucks and Holding Tanks

The transport of sewage to the treatment facility is critical to the whole process. As such, it is important that the sewage trucks be kept in good repair.

- Repairs to sewage trucks should be completed as a priority
- Sewage trucks should not sit full for long periods in the winter
- Holding tanks must be kept in good working order and prevented from freezing during the winter

### 3.5.2 Access Road and Truck Pad

The access road is constructed of gravel and is approximately 2km long. Basic road maintenance is to be conducted as follows:

- At least twice a year (spring and fall), the road and truck pad is to be graded to smooth and the surface is to be reshaped if required. The road should be graded more frequently if required. The sewage discharge point should also be inspected for erosion and maintained as required.
- As necessary during the winter, snow is to be removed to ensure unrestricted access to the sewage discharge point is maintained.
- Any spilled and frozen wastewater should be removed during snow removal and dumped to the lagoon.

### 3.5.3 *Drainage*

The truck pad at the sewage discharge point should be graded such that any wastewater spilled during the off-loading procedure will flow into the sewage system.

## **Operational and Maintenance Summary**

### ***Daily***

- Collect wastewater from the holding tanks and transport it to the sewage truck discharge point
- Clean up any spills immediately
- Clear snow from road and truck pads as required
- Record O&M information as required

### ***Weekly***

- Remove non-sewage floating materials (i.e. plastic bags) from the lagoon
- Ensure significant erosion is not occurring at the truck discharge location
- Record O&M information as required

### ***Monthly***

- Grade and maintain the access road if required
- Conduct the monitoring program as required
- Record O&M information as required



*Yearly*

- Conduct the annual monitoring program
- Review the O&M records to evaluate the effectiveness of the sewage treatment system and plan for the upcoming year

## **4.0 SOLID WASTE FACILITY**

### **4.1 Manual Organization**

This section of the manual was developed to present operational and maintenance procedures to designated operators of the landfill facility in Paulatuk. Each set of procedures is explained individually. The final section provides a summary of operational and maintenance procedures broken down into daily, weekly, monthly and annual tasks.

### **4.2 Waste Disposal Site**

The disposal site is organized into three separate disposal areas:

#### *Refuse Disposal Area:*

This is the main disposal area at the landfill; general wastes are placed here. The disposal area is located on the west side of the access road, near the sewage disposal lagoon. (See Appendix A, Figure 4)

#### *Bulky Metal Waste Area:*

Large non-combustible items such as automobiles, snowmobiles, etc. are placed in the bulky metal waste disposal area. It is located across the access road from the regular waste disposal area. (See Appendix A, Figure 5)

#### *Hazardous Materials Area:*

Hazardous materials such as paint, household hazardous wastes and old fuel drums are disposed of in the hazardous materials area. It is located near the bulky metal waste area. Waste oil generated by the Hamlet is stored in sealed drums until such time that it may be transported out of the community on the barge. Other generators of waste oil generally ship theirs out as well.

### **4.3 Equipment List**

The following equipment is required to operate the Paulatuk solid waste disposal site:

- 1996 Ford F350 Truck for collection of waste (See Appendix A, Figure 6)
- 1997 CAT D6H Tractor
- 1991 Case W14 Loader
- 1985 Kubota Backdigger
- 2001 Komatsu Loader

#### 4.4 Site Personnel

The Senior Administrative Officer is responsible for the overall operation of the landfill facility. The daily operation and maintenance of the landfill is the responsibility of the Hamlet Foreman. One or two people are employed by the Hamlet to operate the garbage collection vehicle.

#### 4.5 Operation Procedures

These procedures must be carried out on a regular basis to ensure the landfill operates safely and efficiently.

##### 4.5.1 Basic Operations

1. All wastes are to be dumped in the appropriate area
2. Dumping should be restricted to a manageable portion of each area at a time
3. Waste should be covered over with overburden as required
4. Each layer of solid waste and cover material should be sloped to allow drainage

##### 4.5.2 Hazardous Waste Area Operation

The hazardous materials storage area is a small area located near the bulky metal waste disposal area. Specific information on handling hazardous waste materials, including final disposal requirements, can be found in the following GNWT Department of Resources, Wildlife and Economic Development Guidelines, present in Appendix C:

- Guideline for Waste Asbestos
- Guideline for Waste Lead and Lead Paint
- Guideline for Industrial Waste Discharges
- Guideline for the General Management of Hazardous Waste
- Guideline for Ozone Depleting Substances
- Guideline for Waste Solvents
- Guideline for Waste Antifreeze
- Guideline for Waste Paint
- Guideline for Waste Batteries

Further information on other relevant legislation (such as the *Environmental Protection Act*, the *Used Oil and Waste Fuel Management Regulations*, and the *Spill Contingency Planning and Reporting Regulations*) may also be found on RWED's website at this location:

<http://www.gov.nt.ca/RWED/eps/leg.htm>

#### 4.5.3 Bulky Waste Area Operation

The bulky waste disposal area is the open area located across the access road from the regular household solid waste cells. To ensure effective operation:

- Place bulky wastes in an organized manner, starting from the back and working towards the front
- Stack bulky wastes whenever possible to conserve space
- Ensure that waste is stacked in such a way that it is safe to walk through the site

#### 4.5.4 Special Considerations

**Winter Operation**      Covering of partially-full or full areas of the cell being used should be completed in the late summer to prepare for the onset of winter.

**Wind**                      A fence should be constructed around the solid waste disposal area to help control the movement of wind driven material off the landfill site, as well as to reduce access to the area by wildlife. Waste should be collected off the fence on a regular basis and deposited in the landfill.

**Spring Clean-up**      A spring clean-up should be conducted after the snow has melted to collect waste that has accumulated around the Hamlet over the winter.

**Health and Safety**      Due to the nature of the facility, safety precautions should be taken by those personnel involved in the operation and maintenance of the landfill:

- Water and puncture proof gloves and safety boots are to be worn at all times, and work clothes should not be worn home
- Hands are to be washed frequently, as a minimum after work and before eating
- Personnel should receive appropriate vaccinations and ensure they are kept up to date
- Only personnel trained to handle hazardous materials should do so
- Reflective safety vests should be worn when working around heavy equipment

**Bear Safety**              Brown bears are known to frequent the area, and precautions should be taken. Bear safety information can be found in Appendix B, as well as on the GNWT's Resources, Wildlife and Economic Development website under Bear Safety:

<http://www.nwtwildlife.rwed.gov.nt.ca/Publications/safetyinbearcountry/safety.htm>

#### 4.5.5 *Site Records*

Records should be kept to assist in planning for yearly operations and future expansion. The information should be reviewed yearly to evaluate the effectiveness of the operation and to forecast future operational requirements. The records should be kept in the Hamlet Office and maintained by the Senior Administrative Officer. As a minimum, the following information should be recorded:

##### *Refuse*

- The number of loads per day
- The dates of cover placement in waste cells

##### *Bulky Metal Wastes*

- Itemize the site contents
- The number of trips to the site and the dates
- The date when the site is full

##### *Hazardous Materials*

- The number of trips to the site and dates
- The type of hazardous material placed there and method of storage
- The party using the site
- The date when the site is full

## **4.6 Maintenance Procedures**

Proper maintenance of a landfill facility is crucial to ensuring the efficient operation of all the components. Activities can be divided into the following categories:

### *4.6.1 Storage Maintenance*

As the first step in the waste collection process, residential and commercial storage containers should be adequately maintained. The following points should be considered:

- Garbage containers should be covered to prevent wind blown debris from littering the community and to prevent animals from getting into the garbage
- Bulky wastes should not be left in residential areas for long periods due to aesthetic and safety concerns

#### 4.6.2 *Collection Maintenance*

The waste collection vehicle should be maintained in good operating condition to ensure the collection service is not interrupted for extended periods. Other maintenance considerations include the following:

- The collection vehicle should be equipped with a shovel to clean up accidental spills during collection
- The collection vehicle should be cleaned periodically

#### 4.6.3 *Access Road Maintenance*

The access road is gravel and approximately 2km long. Basic road maintenance is to be conducted as follows:

- At least twice a year (spring and fall), the road and truck pad is to be graded to smooth and the surface is to be reshaped. This should occur more often if required.
- As necessary during the winter, snow is to be removed to ensure unrestricted access to the site for the garbage collection vehicles

### **4.7 Operational and Maintenance Summary**

#### ***Daily***

- Collect waste from the Hamlet and transport it to the landfill
- Ensure all wastes stay in designated areas
- Clean up any spills immediately
- Clear snow from roads and disposal areas as required
- Record O&M information as required

#### ***Weekly***

- Pick-up wind blown materials which have migrated past the disposal area
- Record O&M information as required

***Monthly***

- Grade and maintain access roads, if required
- Cover waste with overburden as required
- Record O&M information as required

***Yearly***

- Review O&M records to assist in planning for the upcoming year

## 5.0 EMERGENCY RESPONSE

Due to the nature of these types of facilities, uncontrolled fires and spills of unknown or hazardous materials should be treated with extreme caution. Hamlet personnel responsible for the solid waste and sewage disposal facilities should be trained in Workplace Hazardous Materials Information System (WHMIS), Transportation of Dangerous Goods Act and Regulations (TDGA and TDGR) and First Aid. Appropriate vaccinations of employees should be kept current.

### 5.1 Fire

A contingency plan should be developed by the Hamlet of Paulatuk's Volunteer Fire Department for responding to a fire at the solid waste disposal site. Special precautions should be implemented, as burning of waste can produce poisonous vapors. The following procedures should be used in case of uncontrolled fire:

- Evacuate area around landfill immediately
- Keep all personnel up-wind of the site
- Notify the Hamlet Volunteer Fire Department at 580-2222.

### 5.2 Spills

A spill is defined as the discharge of a contaminant in contravention of the Environmental Protection Act.

Spills of unknown or hazardous substances at the landfill should be treated with extreme caution. Spilled materials should only be handled by properly trained and equipped personnel. The following actions should be undertaken by personnel in the event of a hazardous materials spill at the landfill:

- **Be alert and consider your personal safety first**
- Assess the hazard to persons near the spill and where possible take action to control danger to human life. If possible, identify the material or products spilled
- If the spill creates a fire, explosion or other hazard to human life, remove all potential ignition sources, if possible, evacuate the area and contact the RCMP (580-1111) and the Hamlet's Volunteer Fire Department (580-2222)
- If safe and practical, try to take appropriate action to stop the release of material
- Contact the Hamlet Foreman and the SAO, and report the spill
- Mark the spill scene to warn the public and prevent access



Once contacted, the Hamlet Foreman shall:

- Proceed to the spill location,
- Make the necessary arrangements for first aid and removal of injured personnel. Take the necessary action, where possible, to secure the site to protect human safety
- If not already done and it is safe to do so, take the appropriate action to stop the flow or release of material. If at all possible, take the necessary action to contain or prevent the spread of the spilled material
- **Contact the 24-hour Spill Line at (867) 920-8130**
- Contact the Hamlet Senior Administrative Officer
- Contact the Fire Department if required

Throughout the spill response, personnel should place their personal safety as the highest priority.

The *Spill Contingency Planning and Reporting Regulations* should be referred to for more information. These Regulations are found in Appendix C, and may also be found at

<http://www.gov.nt.ca/RWED/eps/pdfs/spillreg90.pdf>

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“A Preliminary Assessment of Alternatives for Water Supply, Sewage Disposal and Solid Waste Disposal at Paulatuk, NWT” Prepared by Reid Crowther & Partners Ltd. 1986.

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“Operations and Maintenance Manual for Solid Waste and Sewage Disposal – Community of Paulatuk” Prepared by Lee Maher Engineering Associates Ltd. March 1994.

“Paulatuk Community Conservation Plan” Prepared by the Community of Paulatuk, the Wildlife Management Advisory Council (NWT) and the Joint Secretariat. June 2000.

# APPENDIX A

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## Photos



**Figure 1 - Sewage Truck**



**Figure 2 - Sewage Discharge to Lagoon**



**Figure 3 - Discharge of Sewage to Lagoon**



**Figure 4 - Solid Waste Disposal Area, Cells in Background**



**Figure 5 - Bulky Metal Area**



**Figure 6 - Solid Waste Collection Truck**

# APPENDIX B

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## Bear Safety



## Avoiding Problems

### Problem Bears

Problems can occur whenever bears and people occupy the same area. You can encounter a bear by chance, or because the bear is attracted to your activity. Bears are curious, and often investigate a strange object, smell, or noise. They also have a tremendous and constant drive to find as much nutritious food as they can during their time out of the den. These two traits, coupled with a bear's remarkable sense of smell, often lead bears to areas of human activity. The outcome of a bear's visit to a camp or community will influence its future behaviour. If it does not find food, it may not return once its curiosity has been satisfied. If it successfully obtains food from a human source - such as a garbage dump, backpack, or unclean camp - it begins to associate food with anything human, and investigate areas used by humans whether or not food is actually detected. A bear will gradually lose its tendency to avoid people as it learns to associate them with food. It may become bold and aggressive.

Once started, the habits of problem bears are difficult to break. It is your responsibility as a visitor in bear country to ensure that your actions do not encourage those habits. It is unfortunate, but a problem bear is often destroyed.

### General Conduct

Safety is everyone's responsibility - it is not a job that can be delegated to someone else and then forgotten about. The actions of each individual affect the safety of everyone else.

Remember these simple rules:

- 🐾 Be alert at all times.
- 🐾 Respect all bears - they can be dangerous.
- 🐾 Never approach a bear for any reason. Photographs should be taken from a safe distance with a telephoto lens.
- 🐾 Never feed bears or other wildlife.
- 🐾 Have a plan of action for dealing with bears and be sure everyone understands it.
- 🐾 If you are travelling with small children, make sure you know where they are at all times.

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## Encountering a Bear

### The Bear's Behaviour

A bear's reaction to you will be influenced by many factors, and is therefore never entirely predictable. Given the opportunity, bears usually avoid people. Some bears are more dangerous or aggressive than others. Old or wounded bears may be in pain or starving. They may aggressively seek food from people if they are unable to obtain enough on their own. Any bear that has become accustomed to people and shows no fear of them is dangerous.

Every bear defends a critical space. The size of the space varies with each bear and each situation: it may be a few metres or a hundred metres. Intrusion into this space is considered a threat and may provoke an attack. All female bears aggressively defend their cubs. If a female with cubs is surprised at close range, or separated from her cubs she is likely to charge.



Bears also aggressively defend their food, and are often reluctant to leave it until it is all eaten. In some cases, a bear that is threatened may engage in displays intended to scare away an opponent.

These may include huffing, panting, hissing or growling; looking directly at you, sometimes with lowered head or ears laid back; slapping one or both feet on the ground; jawpopping; or charging to within several metres, then stopping suddenly or veering to the side. Threat displays may be followed by an attack, but may end with the bear walking or running away.

A bear standing on its hind legs is probably trying to pick up your scent and figure out what you are. It may sniff the air or swing its head from side to side. Bears do not charge on their hind legs.



Most grizzlies avoid contact with humans if possible. However, there is good reason for their reputation for ferocity. If cornered, threatened, or surprised, the grizzly can be very aggressive, and will usually stand its ground or charge.

Black bears are often less aggressive and flee from danger. However, because they are more curious and adaptable than grizzlies, they quickly become accustomed to human activity, and may develop aggressive food-seeking habits which make them dangerous. Therefore, treat all black bears with caution. In a very few cases, a bear has stalked a person that it apparently considered potential prey. Although such incidents are rare, you should know the difference between the behaviour of a hunting bear, and the behaviour of a threatened bear.

A hunting bear does not bother with displays and shows no signs of annoyance or fear. It may approach you directly at a fast walk or turn, follow you, or circle carefully, making cautious approaches.



## Your Behaviour

The thought of facing a bear can be frightening. However, bears rarely attack a person on sight, and only a very small percentage of charges result in serious injury or death. You are more likely to be injured in a car accident than by a bear.

There is always a possibility you may surprise a bear at close range, or encounter a problem bear which is not afraid of people. There is no guaranteed formula for reacting to a bear encounter because every encounter is unique. There are, however, guidelines which may help. Most are based on good judgment, common sense, and familiarity with bear behaviour.

- 🐾 Stop, stand still, and stay calm.
- 🐾 If the bear is aware of you, help it identify you as a person. It may leave. Staying upwind will help it to smell you. Talk in low tones and slowly wave your arms.
- 🐾 Do not run from a bear unless you are sure you can reach a safe place before the bear catches up. Running may cause the bear to chase you, and a bear is faster than you are.
- 🐾 Always leave a bear an open avenue of escape.
- 🐾 If you see a bear at a distance, alert the bear to your presence. Quietly walk back the way you came or make a wide detour around the bear. Do not come between a bear and its cubs.
- 🐾 If time, distance and circumstances permit, try to scare the bear away by firing warning shots, flare cartridges or noisemakers.
- 🐾 In a close encounter, stand still and assess the situation. Do not shout or make sudden movements which might provoke the bear, and avoid direct eye contact. At 50 metres, even if the bear is displaying threat behaviour, there is probably still time for you to avoid an encounter.
- 🐾 Back away slowly. Only leave behind an article of clothing or gear if the bear is still trying to identify you. This will not work if the bear is following you. Leave food or an article of clothing only as a last resort.
- 🐾 Climb a tree if one is available. You will have to climb higher than four metres - grizzlies can reach that high. Remember that black bears can also climb trees.
- 🐾 If the bear is very close (30 metres), it is usually best to stand your ground. Be prepared to shoot if you are carrying a firearm.

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# APPENDIX C

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## Environmental Guidelines

# **Guideline for the General Management of Hazardous Waste in the NWT**

## **1 Introduction**

### **1.1 Definitions**

## **2 Roles and Responsibilities**

### **2.1 Environmental Protection Service**

### **2.2 Generators of Hazardous Waste**

### **2.3 Carriers of Hazardous Waste**

### **2.4 Receivers of Hazardous Waste**

### **2.5 Other Regulatory Agencies**

## **3 Storage and Management of Hazardous Waste**

### **3.1 General**

### **3.2 General Requirements for Storage Containers**

### **3.3 General Requirements for Storage Facilities**

### **3.4 Registering a Hazardous Waste Management Facility**

### **3.5 Registering Hazardous Waste Generators, Carriers and Receivers**

### **3.6 Waste Manifest Requirements**

## **4 Waste Management**

### **4.1 Pollution Prevention**

### **4.2 Treatment or Disposal**

### **4.3 Disposal Outside of the Northwest Territories**

### **4.4 Alternative Management Methods**

## **5 Conclusion**

Schedule I: Registration Volumes

## **6 Bibliography**

## **Appendices**

February 1998

# Guideline for the General Management of Hazardous Waste in the NWT

## 1 Introduction

Waste is produced in the normal course of operation of any industrial, commercial or institutional operation. Because of their chemical, physical or biological properties, some wastes are more dangerous than others. These are known as a hazardous waste and require special handling and disposal to prevent impact on human health and the environment.

This guideline has been developed by the Environmental Protection Service of the Department of Resources, Wildlife and Economic Development. Its intent is to:

- ? provide information for the proper management of hazardous waste in the Northwest Territories,
- ? increase awareness of hazardous waste in the Northwest Territories, and
- ? establish a "cradle to grave" monitoring system for hazardous waste from generation to final disposal.

Section 2.2 of the *Environmental Protection Act* (EPA) gives the Minister of Resources, Wildlife and Economic Development of the Government of the Northwest Territories (GNWT) the authority to develop, coordinate and administer guidelines. This guideline complements existing acts and regulations concerning hazardous waste which should be consulted for interpretation and application. Section 2.5 of the guideline provides additional information on regulatory roles and responsibilities.

This guideline is for the general management of hazardous waste and should be read in conjunction with applicable specific hazardous waste guidelines. Contact the Environmental Protection Service for a listing of these guidelines.

### 1.1 Definitions

<i>Carrier</i>	Any person engaged in the transport of hazardous waste whether or not for hire or reward.
<i>Commercial</i>	Actions undertaken for hire or reward.
<i>Commissioner's Land</i>	Lands in the Northwest Territories that have been transferred by Order-in-Council to the Government of the Northwest Territories. This includes highways, block land transfers and most lands within municipalities.
<i>Consignor</i>	A person who offers a consignment of hazardous waste for transport.
<i>Contaminant</i>	Any noise, heat, vibration or substance and includes such other substances as the Minister may prescribe that, where discharged into the environment, (a) endangers the health, safety or welfare of persons,

- (b) interferes or is likely to interfere with normal enjoyment of life or property,
- (c) endangers the health of animal life, or
- (d) causes or is likely to cause damage to plant life or property.

**Environmental Protection Act**

<i>Dangerous goods</i>	Any product, substance or organism included by its nature or by the <i>Transportation of Dangerous Goods Regulations</i> (TDGR) in any of the classes listed in the schedule provided in the <i>Transportation of Dangerous Goods Act</i> (TDGA).
	<b>Transportation of Dangerous Goods Act (Canada)</b>
<i>Empty container</i>	A container that has been emptied, to the greatest extent possible, using regular handling procedures, but its contents shall not exceed 1% of the container's original capacity or 2 litres, whichever is less. This does not include containers which previously contained mercury or class 2.3, 5.1, or 6.1 materials of TDGR.
<i>Generator</i>	The owner or person in charge, management or control of a hazardous waste at the time it is generated or a facility that generates hazardous waste.
<i>Hazardous waste</i>	<p>A contaminant which is a dangerous good that is no longer used for its original purpose and is intended for recycling, treatment, disposal or storage.</p> <p>A hazardous waste does not include a contaminant that is:</p> <ul style="list-style-type: none"> <li>(a) household in origin;</li> <li>(b) included in class 1, Explosives or class 7, Radioactive materials of TDGR;</li> <li>(c) exempted as a small quantity;</li> <li>(d) an empty container; or</li> <li>(e) intended for disposal in a sewage system or by landfilling that meet the applicable standards set out in schedules I, III or IV of the <u>Guideline for Industrial Waste Discharges in the NWT.</u></li> </ul>
<i>Hazardous waste management facility</i>	A facility which is used for the collection, storage, treatment, recycling or disposal of hazardous waste.
<i>Incompatible waste</i>	Hazardous wastes which, when in contact with one another or other substances under normal conditions of storage or transportation, could react to produce heat, gas, fire, explosion, corrosive substances or toxic substances.
<i>Landfilling</i>	The deposit of waste, on land, as described in the GNWT Department of Municipal and Community Affairs' document <u>Guidelines for the Planning, Design, Operation &amp; Maintenance of Solid Waste Modified Landfill Sites in the Northwest Territories.</u>

<i>Long term storage</i>	The storage of hazardous waste for a period of 180 days or more but does not include materials in transit.
<i>Manage</i>	To handle, transport, store, recycle, treat, destroy or dispose of hazardous waste.
<i>Receiver</i>	A person to whom a quantity of hazardous waste is being or intended to be transported. Also referred to as a consignee.
<i>Sewage system</i>	A system for the collection, transmission, treatment or disposal of any liquid waste containing animal, vegetable, mineral, human or chemical matter in solution or in suspension.
<i>Small quantity</i>	Hazardous waste that is generated in an amount that is less than 5 kilograms per month if a solid or 5 litres per month if a liquid; and where the total quantity accumulated at any one time does not exceed 5 kilograms or 5 litres. This does not apply to wastes that are mercury or in classes 2.3, 5.1 or 6.1 of TDGR. These wastes must be generated in an amount less than 1 kilogram per month if a solid or 1 litre per month if a liquid; and where the total quantity accumulated at any one time does not exceed 1 kilogram or 1 litre.
<i>Transport authority</i>	The regulations controlling the management of hazardous waste under that mode of transport. These include:  Road and rail - <i>Transportation of Dangerous Goods Act (TDGA) and Regulations (TDGR)</i> .  Air - <i>International Civil Aviation Organization Technical Instructions (ICAO)</i> .  Marine - <i>International Maritime Dangerous Goods Code (IMDG)</i> .
<i>TDGA/TDGR</i>	The <i>Transportation of Dangerous Goods Act and Regulations (Canada)</i> .
<i>Treatment or Treat</i>	The handling or processing of a hazardous waste in such a manner as to change the physical, chemical or biological character or composition of the hazardous waste in order to eliminate or reduce: (a) one or more environmental hazard of the waste; and/or (b) the volume.

## 2 Roles and Responsibilities

### 2.1 Environmental Protection Service

The Environmental Protection Service (EPS) of the Department of Resources, Wildlife and Economic Development is the Government of the Northwest Territories' (GNWT) agency responsible for initiatives which control the discharge of contaminants and their impact on the natural environment. EPS is responsible for ensuring that environmentally acceptable management procedures, emission levels and disposal methods are maintained. By practise EPS programs are applied primarily to Commissioner's Land, lands administered by municipal governments or GNWT undertakings. Legislative authority is provided by the *Environmental Protection Act* (EPA) and *Pesticide Act*. Contact EPS for a listing of relevant regulations and guidelines.

EPS monitors the movement of hazardous waste from the generator to final disposal through use of a tracking document called a waste manifest. A waste manifest form must accompany all hazardous waste in transit regardless of the means of transport. In order to complete the manifesting requirements, all parties (the generator, carrier, receiver) must be registered by EPS and the registration number entered in the appropriate location on the waste manifest form. Registration numbers and waste manifest forms are available from EPS.

Under the EPA, the *Spill Contingency Planning and Reporting Regulations* set the standards for reporting spills of contaminants and preparing spill contingency plans.

### 2.2 Generators of Hazardous Waste

**The responsibility for proper waste management rests with the generator and should be considered part of the cost of doing business.**

The generator is ultimately responsible for ensuring hazardous waste will be properly managed from the time it is generated to final disposal. Waste must be properly stored, transported, treated and disposed. Contractors can manage waste on behalf of the generator however, the generator is responsible for ensuring, in advance, that the waste management method is acceptable.

In general, the generator is responsible for the following:

- ? Classifying, labelling and storing the hazardous waste properly.
- ? If waste is to be transported off site the generator should:
  - register as a generator of hazardous waste;
  - ensure a waste manifest is properly completed and accompanies the shipment; and
  - ensure the waste is transported by a registered hazardous waste carrier to a registered receiver.
- ? Registering their hazardous waste management facility, if required.
- ? Ensuring the proper disposal of hazardous waste by an acceptable method.



- ? Ensuring workers are trained in the management of hazardous waste including emergency response in the event of a discharge.
- ? Complying with all other regulatory requirements for hazardous waste management including transportation, occupational health and public health.

### **2.3 Carriers of Hazardous Waste**

Carriers must be registered with EPS prior to transporting hazardous waste. Hazardous waste must be transported in accordance with the appropriate transport authority: *Transportation of Dangerous Goods Regulations* (TDGR); *International Civil Aviation Organization* (ICAO) or *International Maritime Dangerous Goods Code* (IMDG). TDGR requires that drivers be trained in the aspects of transporting dangerous goods related to their assigned duties.

### **2.4 Receivers of Hazardous Waste**

Receivers (consignees) of hazardous waste in the NWT must be registered with EPS as a receiver. The operator of a hazardous waste management facility in the NWT may be required to register the facility with EPS. Section 3.4 provides information on registering a hazardous waste management facility.

### **2.5 Other Regulatory Agencies**

The following agencies are involved in activities relevant to hazardous waste management in the NWT:

The Motor Carrier Services of the GNWT Department of Transportation is responsible for administering the *Transportation of Dangerous Goods Act and Regulations* (NWT). The Department is also responsible for driver, vehicle and load safety under additional transport legislation.

Under the NWT *Safety Act*, *Occupational Health and Safety Regulations* address the safety of workers and the work place. The Act states that the employer shall maintain their establishment and take all reasonable precautions to ensure the safety and health of every person in the establishment. The Regulations also prescribe standards for protective clothing and equipment to be used by workers. *Work Site Hazardous Materials Information System Regulations* (WHMIS) were adopted to ensure employee training and safe storage and handling of controlled products at the employer's work site. Consultation with a Safety Officer from the Prevention Services Division of the Workers' Compensation Board is the responsibility of every waste generator or employer.

The Office of the Fire Marshal has authority over the storage of flammable, combustible and hazardous materials under the National Fire Code. Consult with the GNWT Department of Municipal and Community Affairs' regional Fire Marshal or your community Fire Chief.

Waste management activities may affect public health. Environmental Health Officers of the regional Public Health Boards should be consulted regarding requirements under the *Public Health Act*.

The GNWT Department of Municipal and Community Affairs (MACA) administers Commissioner's Lands. MACA's responsibility includes the granting of leases, licences and land use permits on these lands and is also involved in the planning, funding, operation and maintenance of municipal infrastructure such as landfills and sewage treatment systems.

Indian and Northern Affairs Canada is responsible for hazardous waste management on federal lands through the *Territorial Lands Act* and *Northwest Territories Waters Act*.

Environment Canada is responsible for the management of hazardous waste from federal facilities and lands under the *Canadian Environmental Protection Act* (CEPA). CEPA regulates the release to the environment and storage of polychlorinated biphenyls (PCBs) under the *Chlorobiphenyls Regulations* and *Storage of PCB Material Regulations*. Because they regulate these areas, sections 3.2, 3.3, 3.4 and 4.4 of this guideline do not apply to PCBs. International shipments of waste dangerous goods are monitored under the *Export and Import of Hazardous Waste Regulations*.

The National Energy Board regulates frontier exploration, drilling, production and inter-jurisdictional transmission in the oil and gas industry. The management of land based drill sumps is in conjunction with the appropriate land regulator.

Natural Resources Canada has the authority to administer explosives under the *Explosive Act*. Atomic Energy Control Ltd. (AECL) administers the handling and disposal of radioactive materials in Canada. The Atomic Energy Control Board (AECB) licenses institutions and companies to possess and use radioactive materials.

Under land claim agreements, renewable resource management institutions have been given broad authority for land use planning, impact assessment, and administration of land and water activities in settlement areas outside municipal boundaries. Through the setting of terms and conditions in licensing and permitting procedures, such institutions will have authority over waste disposal.

Figure 1 provides a flow chart to assist in determining the primary regulatory contact for hazardous waste management. Contact the Environmental Protection Service if assistance is required.

### **3 Storage and Management of Hazardous Waste**

#### **3.1 General**

The definition of hazardous waste in this guideline incorporates the term "dangerous goods" which is defined in the *Transportation of Dangerous Goods Act (Canada)*. The Transportation of Dangerous Goods Regulations (TDGR) has a system for classifying dangerous goods. Because the term "dangerous goods" is used in the definition of hazardous waste, the classification system used in TDGR can be applied to hazardous waste. Appendix A indicates the 9 chemical classes used.

Hazardous waste must not be mixed or diluted with any substance or divided into smaller quantities to avoid meeting the definition of a hazardous waste.

Figure 2 is a flow chart illustrating the decision process for managing a hazardous waste under this guideline.

#### **3.2 General Requirements for Storage Containers**

Hazardous waste should be stored in containers according to the following:

- ? In the original containers, where possible, or in containers manufactured for the purpose of storing hazardous waste. The containers must be sound, sealable and not damaged or leaking. The Transport Authority regulates container specifications.
- ? Clearly labelled according to the requirements of the Work Site Hazardous Materials Information System (WHMIS) of the *Safety Act* or the relevant Transport Authority, if transport is planned.

- ? Bulked into 16 gauge or equivalent metal or plastic 205 litre drums, as appropriate.
- ? The containers should be sealed or closed at all times, unless in use.

### **3.3 General Requirements for Storage Facilities**

**The storage of hazardous waste is not an acceptable long term waste management solution.**

Hazardous waste must be stored in a safe and secure manner. In general, hazardous waste should be stored according to the following:

- ? Drainage into and from the site is controlled to prevent spills or leaks from leaving the site and to prevent run off from entering the site.
- ? Incompatible wastes are segregated by chemical compatibility to ensure safety of the public, workers and facility.
- ? In a secure area with controlled access. Only persons authorized to enter and trained in waste handling procedures should have access to the storage site.
- ? Regular inspections are performed and recorded. Containers are placed so that each container can be inspected for signs of leaks or deterioration. Leaking or deteriorated containers should be removed and their contents transferred to a sound container.
- ? Maintain a record of the type and amount of waste in storage.
- ? Storage sites have emergency response equipment appropriate for the hazardous waste stored on site.
- ? Where the site is to be used for long term storage and the amount of waste in storage exceeds the quantity requirements set out in Schedule I, the site should be registered in accordance with Section 3.4 of this guideline.
- ? Storage sites are expected to meet all local bylaw and zoning requirements. It is recommended that the local Fire Chief be advised of the storage facility and its content for emergency planning and response purposes.

### **3.4 Registering a Hazardous Waste Management Facility**

Hazardous waste management facilities may require registration with the Environmental Protection Service.

#### Storage Facility:

A storage facility can be a building, locker, compound or area used to store hazardous waste. A storage facility should be registered with EPS if:

- ? The facility is used or is intended for the storage of hazardous waste for a period of 180 days or more, and
- ? quantities to be stored exceed the quantities set out in Schedule I for individual waste classes or if the aggregate quantity for all classes of waste stored exceed 5000 Kg/L.

When registering a storage facility the following information should be provided:

- ? Company name, address, phone number and contact person, including position.
- ? Location and description of the facility.
- ? Expected types, quantities and method of storage of the hazardous waste.
- ? Approvals required to operate and occupy the land for that purpose.

This information should also be provided to the local Fire Chief for emergency planning and response purposes.

#### Management Facility other than Storage:

Hazardous waste management facilities, other than a storage facility, which manage hazardous waste for commercial purposes require registration with EPS prior to operation. These include facilities which treat, reprocess, consolidate, destroy or recycle hazardous waste. When registering a facility the following information should be provided:

- ? Company name, address, phone number and contact person, including position.
- ? Location and description of the facility.
- ? A description of the waste management activities to be conducted.
- ? Expected types, quantities and method of storage of the hazardous waste.
- ? Approvals required to operate and occupy the land for that purpose.

The information requirements for an environmental review of a hazardous waste management facility may be found in the Environmental Information Guide For Industrial Projects on Commissioners Lands. The Guide provides the information requirements for relevant GNWT agencies to review the environmental impacts of a project. A proponent should review the Guide and contact EPS before making a submission.

### **3.5 Registering Hazardous Waste Generators, Carriers and Receivers**

If hazardous waste is to be transported off site, the generator, carrier and receiver must be registered with EPS. Once registered, an identification number will be assigned which is required to complete the waste manifest under TDGR. A carrier or receiver may either be registered in the NWT or in the province or territory in which the company is based.

The following information should be provided when applying for a registration number:

Generator:

- ? Company name, address, phone number and contact person, including position.
- ? Location and description of the activity taking place which results in the generation of the hazardous waste.
- ? Expected type, quantity and method of storage of hazardous waste.

Carrier:

- ? Company name, address, phone number and contact person, including position.
- ? Proof of transport liability insurance.
- ? Operating authority for transport in the NWT.
- ? Confirmation that the company meets the training requirements of the transport authority.

Receiver:

- ? Company name, address, phone number and contact person, including position.
- ? Location and description of the management facilities and activities for hazardous waste.
- ? Expected type, quantity and method of storage of hazardous waste.

### **3.6 Waste Manifest Requirements**

The *Transportation of Dangerous Goods Regulations* require that a completed hazardous waste manifest form accompany shipments of hazardous waste. Manifests are available from EPS.

The completed manifest form provides:

- ? Detailed information on the types and amounts of hazardous waste shipped;
- ? A record of the firms or individuals involved in the shipment; and
- ? Information on the storage, treatment or disposal of the waste and confirmation that they reached their intended final destination.

The Generator (Consignor), Carrier and Receiver (Consignee) must each complete their portion of the manifest. The information provided on the manifest as well as other TDGR requirements (ie: labelling and placarding) are also intended to assist first responders (police, ambulance, fire fighters) with hazard information should a transportation accident occur.

Waste manifest completion instructions are provided on the reverse side of each manifest. Further assistance in completing a waste manifest may be obtained by referring to the User's Guide for the Hazardous Waste Manifest produced by Environment Canada or by contacting the Motor Carrier Services of the GNWT Department of Transportation.

## **4 Waste Management**

Waste management is intended to reduce or eliminate the effects of waste on the environment, to provide for public and worker safety and to maximize the efficient use of resources. Once hazardous waste has been created the proper treatment and disposal can be expensive. While it is the responsibility of the waste generator to pay for all disposal costs, various waste management options are available to reduce the cost and volume of waste requiring treatment.

A more effective and proactive management practise is to eliminate or reduce the generation of the waste. This is referred to as pollution prevention.

**Minimizing or avoiding the creation of pollutants and waste can be more effective in protecting the environment than treating them, or cleaning them up after they have been created.**

Canadian Council of Ministers of the Environment

#### **4.1 Pollution Prevention**

Pollution prevention methods are designed to eliminate the creation of waste. Whereas pollution control options treat waste after it has been created, pollution prevention measures avoid the creation of waste.

Waste generators in the NWT can reduce costs and prevent pollution by implementing reduction, reuse and recycling programs through changes in operational procedures, maintenance practices and raw material usage. An overall waste management plan should incorporate these ideas.

##### **1. Reduce**

The aim of reduction is to eliminate the production of a hazardous waste by using raw materials more efficiently. Methods of reduction include substitution or reduction of a raw material, production redesign, process changes, and improved maintenance activities. Methods which are technically and economically practical in any given situation should be used to reduce or eliminate waste streams.

##### **2. Reuse and Recycle**

Reusing or recycling hazardous waste in operating processes within the generating facility is another means of pollution prevention. Alternatively other users may be found to reuse the material that would otherwise require treatment or disposal. The Department of Resources, Wildlife and Economic Development encourages the reuse and recycling of hazardous waste in the following ways:

- (a) Waste exchanges and associations offer some opportunity for the reuse or recycle of waste. Waste exchanges put potential users of waste materials in contact with waste generators. Appendix B lists a number of waste material exchanges and management associations.
- (b) Recycle programs are in place for some hazardous wastes such as waste oil, waste fuels and solvents. For information on recycling programs, contact the waste management associations in Appendix B or EPS.

## 4.2 Treatment or Disposal

**It is not acceptable for hazardous waste to be abandoned, poured down sewers, dumped on land or discarded at a landfill.**

Treating hazardous waste to reduce or eliminate their hazard is the final option after implementing appropriate pollution prevention options. It is the responsibility of the generator to treat or dispose of their hazardous waste properly. Although a discussion of treatment and disposal methods is beyond the scope of this guideline, the following are general points for consideration:

- ? The generator is required to determine and follow the proper management method for their waste. Sources of assistance include:
  - the manufacturers Material Safety Data Sheet (MSDS) provided with the raw materials.
  - the manufacturer.
  - complying with this guideline and other relevant legislation.
  - waste management consultants and associations.
  
- ? **Open burning of hazardous waste is not acceptable.**
  
- ? Treated hazardous waste may be directed for landfilling or to a municipal sewage system providing that the standards outlined in the Guideline for Industrial Waste Discharges in the NWT are met. The municipal authority and the facility's water licence should also be consulted.
  
- ? Different types of hazardous wastes should not be mixed together in the same container. It is important to control the quality of any waste to ensure it can be recycled or disposed of properly. Contaminating wastes with other wastes may prevent reuse/recycling options and increase disposal costs.
  
- ? Hazardous waste containers must be properly managed. Containers should be emptied, to the greatest extent possible, using regular handling procedures, or by triple rinsing with an appropriate cleaning agent. They should be rendered unusable by puncturing or crushing prior to disposal. This is especially of concern for containers which could eventually be used for water or food storage. Rinsings must be managed according to their waste characteristics.

## 4.3 Disposal Outside of the Northwest Territories

Hazardous waste can be sent to a hazardous waste management facility outside of the NWT if the receiving facility is registered in the receiving province or territory and is approved to manage that waste.

Environment Canada monitors international shipments through the *Export and Import of Hazardous Waste Regulations* (EIHW) of CEPA. The International Basel Convention on the Control of Transboundary Movements of Hazardous Waste and their Disposal controls the shipment of hazardous waste across international borders. Contact Environment Canada when considering international shipments.



A list of Canadian waste management facilities is available by contacting the associations representing the waste industries. These associations are listed in Appendix B.

#### **4.4 Alternative Management Methods**

EPS will give consideration to proposals for alternate management methods that provide an equivalent level of environmental protection to those identified in this guideline.

## **5 Conclusion**

This guideline presents a brief introduction into the management of hazardous waste. It is intended as a source of basic information about the issues involved in the management of hazardous waste. It does not replace the existing legislation which is referenced in the guideline. Please contact the appropriate agency before proceeding. For more information contact:

1. Environmental Protection Service  
Department of Resources, Wildlife and Economic Development  
600, 5102-50 Avenue  
Yellowknife, NT, X1A 3S8  
Phone: (867) 873-7654 Fax: (867) 873-0221
2. Motor Vehicles  
Department of Transportation  
76 Capital Drive, Suite 201  
Hay River, NT, X0E 1G2  
Phone: (867) 874-5000 Fax: (867) 874-6088
3. Prevention Services Division  
Workers' Compensation Board  
Box 8888  
Yellowknife, NT, X1A 2R3  
Phone: (867) 920-3888  
(867) 669-4403 (accident report)  
1-800-661-0792 Fax: (867) 873-4596  
(867) 873-0262 (accident report)
4. Office of the Fire Marshal  
Department of Municipal and Community Affairs  
600, 5201-50th Avenue  
Yellowknife, NT, X1A 2S9  
Phone: (867) 873-7469 Fax: (867) 873-0260
5. Lands Administration  
Department of Municipal and Community Affairs  
500, 5201-50th Avenue  
Yellowknife, NT, X1A 3S9  
Phone: (867) 920-8038 Fax: (867) 873-0609

6. Population Health  
Department of Health and Social Services  
Box 1320  
Yellowknife, NT, X1A 2L9  
Phone: (867) 920-8877 Fax: (867) 873-0122
7. Indian and Northern Affairs Canada  
Box 1500  
Yellowknife, NT, X1A 2R3  
Phone: (867) 669-2589 Fax: (867) 669-2716
8. Environmental Protection Branch  
Environment Canada  
Box 2970  
Yellowknife, NT, X1A 2R2  
Phone: (867) 669-4700 Fax: (867) 873-8185
9. Environment Branch  
National Energy Board  
444 Seventh Ave. S.W.  
Calgary, AB, T2P 0X8  
Phone: (403) 299-3676 Fax: (403) 292-5503
10. Explosives Division, Western Region  
Natural Resources Canada  
Unit 244, 755 Lake Bonavista Dr. S.E.  
Calgary, AB, T2P 0N3  
Phone: (403) 292-4766 Fax: (403) 292-4689
11. Western Regional Office  
Canadian Nuclear Safety Commission  
850, 220 - 4th Avenue SE  
Calgary, AB, T2G 4X3  
Phone: (403) 292-5181 Fax: (403) 292-6985  
Nuclear Emergency (24 Hour) (613) 995-0479

## Schedule I: Registration Volumes

Minimum quantity of hazardous waste<sup>1</sup> necessary for registration as a Hazardous Waste Storage Facility.

<u>Waste Classification TDG</u>		<u>Quantity</u> <sup>2</sup> (Kg or L)
1	Explosives	50 <sup>3</sup>
2.1	Compressed Gas (flammable)	500 <sup>4</sup>
2.2	Compressed Gas (non-corrosive, non-flammable non-toxic)	5000 <sup>4</sup>
2.3	Compressed Gas (toxic)	200 <sup>4</sup>
2.4	Compressed Gas (corrosive)	500 <sup>4</sup>
3.1	Flammable Liquids (flash-point < -18°C)	1000
3.2	Flammable Liquids (flash-point > -18°C < 23°C)	2000
3.3	Flammable Liquids (flash-point > 23°C < 61°C)	4000
4.1	Flammable Solids	5000
4.2	Spontaneously Combustible Solids	1000
4.3	Solids which React Violently with Water	500
5.1	Oxidizing Substances	1000
5.2	Organic Peroxides	50
6.1	Poisonous Substances	1000
6.2	Infectious Substances	500 <sup>4</sup>
7	Radioactive	any amount <sup>3</sup>
8	Corrosive Substances	1000
9.1	Miscellaneous	1000
9.2	Environmentally Hazardous	50 <sup>5</sup>
9.3	Dangerous Waste	5000
Total Aggregate Quantity of Hazardous Waste		5000

<sup>1</sup> This applies to hazardous waste and not dangerous goods.

<sup>2</sup> Quantity refers to liquids when the amount is expressed in litres (L) and solids when expressed in kilograms (Kg).

<sup>3</sup> Controlled under the authority of the Federal *Explosives Act* or *Atomic Energy Control Act*.

<sup>4</sup> Total liquid volume capacity of the container.

<sup>5</sup> PCB storage is regulated by Environment Canada under the *Canadian Environmental Protection Act*.

## 6 Bibliography

Government of Alberta, Alberta Environmental Protection - Alberta User Guide for Waste Managers, Edmonton, (1995).

Government of Northwest Territories, Department of Renewable Resources - Guideline for Industrial Waste Discharge, Yellowknife, (1995).

Government of Northwest Territories, Department of Renewable Resources - Environmental Information Guide For Industrial Projects, Yellowknife, (1995).

Heinke, G. and Wong, J., Guidelines for the Planning, Design, Operation & Maintenance of Solid Waste Modified Landfill Sites in the NWT, Volume 1 & 2. Department of Municipal and Community Affairs, Yellowknife, (1990).

NWT Water Board, Northwest Territories Waters Act, Canadian Gazette Part II, Vol.127, No.13, (1993).

## **Appendix A: Dangerous Goods Classifications**

### **Class 1: Explosives<sup>1</sup>**

### **Class 2: Compressed Gases**

- Division 2.1: Flammable Gases
- Division 2.2: Non-Flammable Gases
- Division 2.3: Poison Gases
- Division 2.4: Corrosive Gases

### **Class 3: Flammable Liquids**

- Division 3.1: Flash Point < -18°C
- Division 3.2: Flash Point > -18°C and < 23°C
- Division 3.3: Flash Point > 23°C and < 61°C

### **Class 4: Flammable Solids, Substances Liable To Spontaneous Combustion, Dangerous When Wet**

- Division 4.1: Flammable Solids
- Division 4.2: Spontaneously Combustible
- Division 4.3: Dangerous When Wet

### **Class 5: Oxidizers, Organic Peroxides**

- Division 5.1: Oxidizers
- Division 5.2: Organic Peroxides

### **Class 6: Poisonous, Infectious Substances**

- Division 6.1: Poisonous
- Division 6.2: Infectious Substances

### **Class 7: Radioactive Materials<sup>1</sup>**

### **Class 8: Corrosives**

### **Class 9: Miscellaneous Dangerous Goods**

- Division 9.1: Miscellaneous Dangerous Goods
- Division 9.2: Hazardous to the Environment
- Division 9.3: Dangerous Wastes

<sup>1</sup> - Class 1 and 7 are regulated under federal legislation and not subject to this guideline.

## **Appendix B: Waste Exchanges and Associations**

### Exchanges

Alberta Waste Materials Exchange	(403) 450-5000
British Columbia Waste Exchange	(604) 731-7222
Canadian Waste Materials Exchange	(905) 822-4111 ext 265
Canadian Chemical Exchange	(514) 229-6511 (514) 229-5344 Fax
Manitoba Waste Exchange	(204) 942-7781
Ontario Waste Exchange	(905) 822-4111 ext 656
Quebec Waste Materials Exchange	1-800-668-6686 (514) 762-9012
Saskatchewan Waste Materials Exchange	(306) 931-3242

### Associations

Assn. Québécoise des Techniques de L'eau	(514) 874-3700
Canadian Chemical Producers Association - Chemical Referral Centre	1-800-267-6666
Canadian Water & Wastewater Association	(613) 238-5692
Environmental Services Association of Alberta	1-800-661-9278 (403) 439-6363
Northwest Territories Water and Waste Association	(867) 873-4058 Fax
Ontario Waste Management Association	(416) 236-0172
Water Environment Association of Ontario	(416) 502-1440
Western Canada Water & Wastewater Association	(403) 259-4041

ENVIRONMENTAL PROTECTION ACT

**CONSOLIDATION OF SPILL  
CONTINGENCY PLANNING AND  
REPORTING REGULATIONS**

R.R.N.W.T. 1990,c.

LOI SUR LA PROTECTION DE  
L'ENVIRONNEMENT

**CODIFICATION ADMINISTRATIVE  
REGLEMENT SUR LES EXIGENCES  
EN MATIERE DE DEVERSEMENTS**

R.R.T.N.O. 1990, ch.

**AS AMENDED BY**

**MODIFIÉE PAR**

This consolidation is not an Official  
Statement of the Law. It is prepared for

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Government of the Northwest

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La présente codification administrative  
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par

le conseiller législatif

Division des affaires législatives

Ministère de la Justice

Gouvernement des Territoires du Nord-Ouest.

## ENVIRONMENTAL PROTECTION ACT

### SPILL CONTINGENCY PLANNING AND REPORTING REGULATIONS

The Commissioner, on the recommendation of the Minister, under section 34 of the *Environmental Protection Act* and every enabling power, makes the *Spill Contingency Planning and Reporting Regulations*.

**1.** In these regulations,

"above ground facility" means a facility that is stationary for a period of 30 days or more and is not an underground facility; (*installation en surface*)

"Act" means the *Environmental Protection Act*; (*Loi*)

"facility" means any thing capable of storing or containing contaminants and includes any thing used in the transfer of contaminants to and from the facility; (*installation*)

"PCB" means the chlorobiphenyls that have the molecular formula  $C_{12}H_{10-N}Cl_N$  in which N is greater than 2; (*BPC*)

"spill" means a discharge of a contaminant in contravention of the Act or regulations made under the Act or a permit or licence issued under the Act or regulations made under the Act; (*déversement*)

"storage capacity" means the aggregate capacity of all facilities placed together in one location; (*capacité d'entreposage*)

"TDGA Class" means a class of dangerous goods set out in the Schedule to the *Transportation of Dangerous Goods Act, 1992* (Canada), and any division of a class established in regulations made or continued under that Act; [*classe (LTMD)*]

"underground facility" means a facility having more than 10% of its structure beneath ground level.

## LOI SUR LA PROTECTION DE L'ENVIRONNEMENT

### RÈGLEMENT SUR LES EXIGENCES EN MATIÈRE DE DÉVERSEMENTS

Le commissaire, sur la recommandation du ministre, en vertu de l'article 34 de la *Loi sur la protection de l'environnement* et de tout pouvoir habilitant, prend le *Règlement sur les exigences en matière de déversements*.

**1.** Les définitions qui suivent s'appliquent au présent règlement.

«BPC» Désigne tout biphényle polychloré caractérisé par la structure moléculaire  $C_{12}H_{10-N}Cl_N$ , où N est supérieur à 2. (*PCB*)

«capacité d'entreposage» Capacité d'entreposage de l'ensemble des installations réunies en un lieu. (*storage capacity*)

«classe (LTMD)» Classe de marchandises dangereuses prévue à l'annexe de la *Loi de 1992 sur le transport des marchandises dangereuses* (Canada), ou toute division d'une classe établie par un règlement pris ou maintenu en vertu de cette loi. (*TDGA Class*)

«déversement» Rejet de tout contaminant en contravention de la Loi ou de ses règlements ou en contravention d'un permis ou d'une licence délivré en vertu de la Loi ou de ses règlements. (*spill*)

«installation» Désigne tout objet dans lequel il est possible d'entreposer des contaminants ou qui peut contenir des contaminants, et comprend tout objet utilisé dans le transfert de contaminants en provenance ou à destination de l'installation. (*facility*)

«installation en surface» Désigne toute installation qui demeure stationnaire pendant 30 jours ou plus et qui n'est pas une installation souterraine. (*above ground facility*)

«installation souterraine» Toute installation dont



(*installation souterraine*)

2. (1) Sections 3 to 8 of these regulations do not apply to the following:
- (a) a motor vehicle, as defined in the *Motor Vehicles Act*, unless that motor vehicle is an above ground facility;
  - (b) sewage and sewage sludge.

(2) Contaminants used solely for domestic purposes and discharged from within a dwelling-house are exempt from the requirements of these regulations.

(3) In Schedule A, the amounts set out in column 3 under the heading "STORAGE CAPACITY" refer to liquids, where the amount is expressed in litres, and to solids, where the amount is expressed in kilograms.

(4) In Schedule B, the amounts set out in column 4 under the heading "AMOUNT SPILLED" refer to liquids, where the amount is expressed in litres, and to solids, where the amount is expressed in kilograms.

#### SPILL CONTINGENCY PLAN

3. (1) No person shall store contaminants in a facility where the storage capacity of the facility equals or exceeds the storage capacity shown in Schedule A unless a spill contingency plan has been prepared and filed in accordance with these regulations.

(2) Where the storage capacity of a facility is less than the storage capacity shown in Schedule A and where, in the opinion of the Chief Environmental Protection Officer a spill contingency plan is necessary for the protection of the environment, the Chief Environmental Protection Officer may require the owner or person in charge, management or control of a facility to prepare a spill contingency plan.

plus de 10 % de la structure est située sous le niveau du sol. (*underground facility*)

«Loi» La *Loi sur la protection de l'environnement*. (*Act*)

2. (1) Les articles 3 à 8 du présent règlement ne s'appliquent pas :
- a) à un véhicule automobile au sens de la *Loi sur les véhicules automobiles*, à moins que le véhicule automobile ne soit une installation en surface;
  - b) aux eaux usées ni aux boues d'épuration.

(2) Le présent règlement ne s'applique pas aux contaminants utilisés uniquement à des fins domestiques dont le rejet provient de l'intérieur d'une maison d'habitation.

(3) Les quantités prévues à la troisième colonne de l'annexe A, sous l'intertitre «CAPACITÉ D'ENTREPOSAGE», visent les matières liquides lorsque la mesure se fait en litres, et les matières solides lorsque la mesure se fait en kilogrammes.

(4) Les quantités prévues à la quatrième colonne de l'annexe B, sous l'intertitre «QUANTITÉ DÉVERSÉE», visent les matières liquides lorsque la mesure se fait en litres, et les matières solides lorsque la mesure se fait en kilogrammes.

#### PLAN DE CONTRÔLE DES DÉVERSEMENTS

3. (1) Il est interdit d'entreposer des contaminants dans une installation dont la capacité d'entreposage est égale ou supérieure à celle indiquée à l'annexe A, à moins d'avoir établi un plan de contrôle des déversements et de l'avoir soumis en conformité avec le présent règlement.

(2) Dans le cas où la quantité de contaminants entreposés est inférieure à la capacité d'entreposage indiquée à l'annexe A, le directeur de la protection de l'environnement peut exiger du propriétaire ou du responsable d'une installation l'établissement d'un plan de contrôle des déversements, si le directeur est d'avis qu'un tel plan est nécessaire aux fins de protection de l'environnement.

(3) Where the Chief Environmental Protection Officer is satisfied, on reasonable grounds, that a person uses a means of storing contaminants and a method of dealing with the spill of contaminants, that provide a level of environmental protection at least equivalent to that which would be provided by compliance with these regulations, the Chief Environmental Protection Officer may, in writing, subject to such conditions as the Chief Environmental Protection Officer considers necessary,

- (a) exempt a person from the requirement to file a spill contingency plan under subsection (1); or
- (b) exempt a person from the requirement to include in a spill contingency plan information required in one or more of paragraphs 4(2)(a) to (j).

4. (1) The owner or person in charge, management or control of a facility shall ensure that a spill contingency plan is prepared.

(2) A spill contingency plan for a facility must contain the following information:

- (a) the name, address and job title of the owner or person in charge, management or control;
- (b) the name, job title and 24-hour telephone number for the persons responsible for activating the spill contingency plan;
- (c) a description of the facility including the location, size and storage capacity;
- (d) a description of the type and amount of contaminants normally stored at the location described in paragraph (c);
- (e) a site map of the location described in paragraph (c);
- (f) the steps to be taken to report, contain, clean up and dispose of contaminants in the case of a spill;
- (g) the means by which the spill contingency plan is activated;
- (h) a description of the training provided to employees to respond to a spill;
- (i) an inventory of and the location of response and clean-up equipment available to implement the spill contingency plan;
- (j) the date the contingency plan was prepared.

(3) S'il est convaincu, pour des motifs raisonnables, que la méthode qu'utilise une personne pour l'entreposage des contaminants et celle qu'elle utilise pour faire face au déversement de contaminants offrent un degré de protection de l'environnement qui n'est pas inférieur à celui exigé en application du présent règlement, le directeur de la protection de l'environnement peut par écrit, sous réserve des autres conditions qu'il estime nécessaires :

- a) soit soustraire cette personne de l'obligation de soumettre un plan de contrôle des déversements en vertu du paragraphe (1);
- b) soit soustraire cette personne de l'obligation d'inclure au plan de contrôle des déversements l'un ou l'autre des renseignements prévus aux alinéas 4(2)a) à j).

4. (1) Le propriétaire ou le responsable d'une installation doit faire en sorte qu'un plan de contrôle des déversements soit établi.

(2) Le plan de contrôle des déversements applicable à une installation fait état des renseignements suivants :

- a) le nom, l'adresse et le poste du propriétaire ou du responsable;
- b) le nom et le poste des responsables de la mise en oeuvre du plan de contrôle des déversements, ainsi que le numéro de téléphone où ils peuvent être rejoints 24 heures par jour;
- c) la description de l'installation, notamment le lieu, les dimensions et la capacité d'entreposage;
- d) la nature des contaminants habituellement entreposés dans l'installation mentionnée à l'alinéa c), ainsi que la quantité de contaminants qui y sont habituellement entreposés;
- e) une carte du lieu mentionné à l'alinéa c);
- f) la procédure de rapport, ainsi que les mesures de confinement, de nettoyage et d'élimination prévues en cas de déversement;
- g) la procédure de mise en oeuvre du plan de contrôle des déversements;
- h) la description de la formation donnée aux employés en matière de mesures à prendre en cas de déversement;
- i) l'inventaire et le lieu d'entreposage de l'équipement de nettoyage et de mise en

oeuvre du plan de contrôle des déversements;

j) la date d'établissement du plan de contrôle des déversements.

5. (1) Subject to subsection (2), the person responsible for preparing a spill contingency plan shall file the plan with the Chief Environmental Protection Officer before making use of a facility.

(2) Where a facility is already in use on the day these regulations come into force, the person responsible for preparing a spill contingency plan shall file the plan with the Chief Environmental Protection Officer within one year after that day.

6. (1) The Chief Environmental Protection Officer shall review each spill contingency plan after it is filed.

(2) The Chief Environmental Protection Officer may require the person who filed the spill contingency plan to make changes to it.

(3) Where the Chief Environmental Protection Officer requires changes under subsection (2), he or she may indicate a reasonable period of time within which the changes must be filed.

(4) The person who filed a spill contingency plan shall make and file any changes required under subsection (2).

7. (1) The person responsible for preparing a spill contingency plan shall review the plan annually.

(2) The person responsible for preparing a spill contingency plan shall, in writing, notify the Chief Environmental Protection Officer when a review under subsection (1) has been completed and shall immediately file with the Chief Environmental Protection Officer any changes made to the plan.

8. Once a spill contingency plan has been filed, the person responsible for preparing the plan shall implement the plan.

#### SPILLS

9. (1) The owner or person in charge, management or control of contaminants at the time a

5. (1) Sous réserve du paragraphe (2), le responsable de l'établissement d'un plan de contrôle des déversements soumet le plan au directeur de la protection de l'environnement avant de faire usage d'une installation.

(2) Dans le cas où une installation est déjà en usage à la date d'entrée en vigueur du présent règlement, le responsable de l'établissement du plan de contrôle des déversements doit soumettre le plan au directeur de la protection de l'environnement dans l'année qui suit cette entrée en vigueur.

6. (1) Le directeur de la protection de l'environnement révisé chaque plan de contrôle des déversements qui lui est soumis.

(2) Le directeur de la protection de l'environnement peut exiger que la personne qui soumet un plan de contrôle des déversements y apporte des modifications.

(3) Dans le cas où le directeur de la protection de l'environnement exige, en vertu du paragraphe (2), que des modifications soient apportées au plan de contrôle des déversements, il peut fixer un délai raisonnable pour la soumission de ces modifications.

(4) La personne qui soumet un plan de contrôle des déversements doit apporter et soumettre toute modification exigée en vertu du paragraphe (2).

7. (1) Le responsable de l'établissement d'un plan de contrôle des déversements doit le réviser annuellement.

(2) Le responsable de l'établissement d'un plan de contrôle des déversements doit aviser par écrit le directeur de la protection de l'environnement de la révision du plan en vertu du paragraphe (1), et lui soumettre immédiatement toute modification apportée au plan.

8. Après avoir soumis un plan de contrôle des déversements, le responsable de l'établissement du plan le met en oeuvre.

#### DÉVERSEMENTS

9. (1) Lorsque survient le déversement d'une quantité de contaminants au moins égale à celles

spill occurs shall immediately report the spill where the spill is of an amount equal to or greater than the amount set out in Schedule B.

(2) Where there is a reasonable likelihood of a spill in an amount equal to or greater than the amount set out in Schedule B, the owner or person in charge, management or control of the contaminants shall immediately report the potential spill.

**10.** A person reporting a spill shall contact the 24 Hour Spill Report Line by calling **(867) 920-8130**.

**11.** (1) A person reporting a spill shall give as much of the following information as possible:

- (a) date and time of spill;
- (b) location of spill;
- (c) direction spill is moving;
- (d) name and phone number of a contact person close to the location of spill;
- (e) type of contaminant spilled and quantity spilled;
- (f) cause of spill;
- (g) whether spill is continuing or has stopped;
- (h) description of existing containment;
- (i) action taken to contain, recover, clean up and dispose of spilled contaminant;
- (j) name, address and phone number of person reporting spill;
- (k) name of owner or person in charge, management or control of contaminants at time of spill.

(2) No person shall delay reporting a spill because of lack of knowledge of any of the factors listed in subsection (1).

**12.** No person shall knowingly make a false report of a spill or a potential spill.

**13.** (1) For the purposes of evaluating the effectiveness of the spill contingency plan, the Chief Environmental Protection Officer may require, in writing, the owner or person in charge, management or control of a facility at the time a spill occurred to prepare and file a written report concerning the spill.

stipulées à l'annexe B, le propriétaire ou le responsable du contaminant au moment du déversement est tenu de le signaler sur-le-champ.

(2) Le propriétaire ou le responsable de contaminants a l'obligation de signaler sur-le-champ un déversement potentiel lorsqu'il est raisonnablement possible que la quantité déversée soit au moins égale à celle stipulée à l'annexe B.

**10.** La personne qui signale un déversement le fait à toute heure en téléphonant à SOS Déversement, au **(867) 920-8130**.

**11.** (1) La personne qui signale un déversement doit indiquer, dans la mesure du possible :

- a) la date et l'heure du déversement;
- b) le lieu du déversement;
- c) la direction dans laquelle le déversement s'étend;
- d) le nom et le numéro de téléphone d'une personne vivant à proximité des lieux du déversement et qui peut être contactée;
- e) la nature des contaminants et la quantité déversée;
- f) la cause du déversement;
- g) le fait que le déversement soit terminé ou non;
- h) les moyens de confinement déjà en place;
- i) les mesures prises pour confiner, ramasser et éliminer les contaminants et nettoyer les lieux;
- j) le nom, l'adresse et le numéro de téléphone de la personne qui signale le déversement;
- k) le nom du propriétaire ou celui du responsable des contaminants au moment du déversement.

(2) Il est interdit de retarder le signalement d'un déversement en raison d'un manque de connaissance des éléments d'information indiqués au paragraphe (1).

**12.** Il est interdit de faire sciemment un faux signalement d'un déversement ou d'un déversement potentiel.

**13.** (1) Le directeur de la protection de l'environnement peut, à des fins d'évaluation de l'efficacité du plan de contrôle des déversements, exiger par écrit du propriétaire ou du responsable d'une installation au moment d'un déversement qu'il présente un rapport écrit relatif au déversement.

(2) The person required to prepare the report described in subsection (1) shall provide all information required by the Chief Environmental Protection Officer.

(2) La personne à qui le directeur de la protection de l'environnement demande de présenter un rapport sur un déversement doit fournir tous les renseignements exigés par le directeur.

Dated at Yellowknife, July , 1993.

Fait à Yellowknife, le juillet 1993.

D.L. Norris  
Commissioner of the Northwest Territories  
Commissaire des Territoires du Nord-Ouest

SCHEDULE A <i>(Section 3)</i>			ANNEXE A <i>(article 3)</i>		
(1)	(2)	(3)	(1)	(2)	(3)
ITEM NO.	TYPE OF FACILITY	STORAGE CAPACITY	N°	TYPE DE DÉPÔT	CAPACITÉ D'ENTRE-POSAGE
1.	Above ground facility	20,000 Ror 20,000 kg	1.	Installation en surface	20 000 l ou 20 000 kg
2.	Under-ground facility	4,000 Ror 4,000 kg	2.	Installation souterraine	4 000 l ou 4 000 kg

SCHEDULE B

(Section 9)

(1)	(2)	(3)	(4)
ITEM NO.	TDGA CLASS	DESCRIPTION OF CONTAMINANT	AMOUNT SPILLED
1.	1	Explosives	Any amount
2.	2.1	Compressed gas (flammable)	Any amount of gas from containers with a capacity greater than 100 R
3.	2.2	Compressed gas (non-corrosive, non flammable)	Any amount of gas from containers with a capacity greater than 100 R
4.	2.3	Compressed gas (toxic)	Any amount
5.	2.4	Compressed gas (corrosive)	Any amount
6.	3.1, 3.2, 3.3	Flammable liquid	100 R
7.	4.1	Flammable solid	25 kg
8.	4.2	Spontaneously combustible solids	25 kg
9.	4.3	Water reactant solids	25 kg
10.	5.1	Oxidizing substances	50 R or 50 kg
11.	5.2	Organic Peroxides	1 R or 1 kg
12.	6.1	Poisonous substances	5 R or 5 kg

## ANNEXE B

*(article 9)*

(1)	(2)	(3)	(4)
N°	CLASSE (LTMD)	CONTAMINANT	QUANTITÉ DÉVERSÉE
1.	1	Explosif	Toute
2.	2.1	Gaz comprimé (inflammable)	Toute quantité de gaz provenant d'un conte- nant d'une capacité supérieure à 100 l
3.	2.2	Gaz comprimé (non corrosif, inflammable)	Toute quantité de gaz provenant d'un conte- nant d'une capacité supérieure à 100 l
4.	2.3	Gaz comprimé (toxique)	Toute
5.	2.4	Gaz comprimé (corrosif)	Toute
6.	3.1, 3.2, 3.3	Liquide inflammable	100 l
7.	4.1	Solide inflammable	25 kg
8.	4.2	Solide sujet à l'in- flammation spontanée	25 kg
9.	4.3	Solide réagissant au contact de l'eau	25 kg
10.	5.1	Matière comburante	50 l ou 50 kg
11.	5.2	Peroxyde organique	1 l ou 1 kg
12.	6.1	Matière toxique	5 l ou 5 kg



13.	6.2	Infectious substances	Any amount
14.	7	Radioactive	Any amount
15.	8	Corrosive substances	5 Ror 5 kg
16.	9.1 (in part)	Miscellaneous products or substances, excluding PCB mixtures	50 Ror 50 kg
17.	9.2	Environmentally hazardous	1 Ror 1 kg
18.	9.3	Dangerous wastes	5 Ror 5 kg
19.	9.1 (in part)	PCB mixtures of 5 or more parts per million	0.5 Ror 0.5 kg
20.	None	Other contaminants	100 Ror 100 kg

13.	6.2	Matière infectieuse	Toute
14.	7	Matière radioactive	Toute
15.	8	Matière corrosive	5 l ou 5 kg
16.	9.1 (en partie)	Matière diverse ou produit divers (mélanges contenant des BPC exclus)	50 l ou 50 kg
17.	9.2	Matière nocive pour l'environnement	1 l ou 1 kg
18.	9.3	Déchet toxique	5 l ou 5 kg
19.	9.1 (en partie)	Mélange contenant 5 parties ou plus de BPC par million	0,5 l ou 0,5 kg
20.	Aucune	Autre contaminant	100 l ou 100 kg

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# **Guideline for the Management of Waste Antifreeze**

## **1 INTRODUCTION**

- 1.1 Definitions**
- 1.2 Characteristics**
- 1.3 Potential Effects**

## **2 ROLES AND RESPONSIBILITIES**

- 2.1 Environmental Protection Service**
- 2.2 Generators of Waste Antifreeze**

## **3 WASTE MANAGEMENT**

- 3.1 Pollution Prevention**
- 3.2 Storage**
- 3.3 Transportation**
- 3.4 Disposal**

## **4 CONCLUSION**

**Contact list**

September 1998

# Guideline for the Management of Waste Antifreeze

## 1 Introduction

This guideline provides general information on proper management of waste antifreeze. Waste antifreeze is a contaminant under the *Environmental Protection Act* (EPA) of the NWT and must be managed as a hazardous waste.

Ethylene glycol and propylene glycol antifreeze are used to lower the freezing point of water. Ethylene glycol is used in the automotive sector. Propylene glycol is generally used in building heating systems. Both types of antifreeze have anti-foaming agents and corrosion inhibitors that are added to prevent the corrosion of metal.

This guideline is specific to the management of waste antifreeze and should be read in conjunction with the [Guideline for the General Management of Hazardous Waste In The NWT](#) (referred to as the [General Guideline](#)). Section 2.2 of the EPA gives the Minister of Resources, Wildlife and Economic Development the authority to develop, coordinate and administer these guidelines.

### 1.1 Definitions

<i>Antifreeze</i>	A chemical additive that lowers the freezing point of water in cooling or heating systems. For the purpose of this guideline, antifreeze used in fuel systems is not included.
<i>Generator</i>	The owner or person in charge, management or control of a hazardous waste at the time it was generated, or a facility that generates hazardous waste.
<i>Transport authority</i>	The regulations controlling the management of hazardous waste under that mode of transport. These include:  Road and rail - <i>Transportation of Dangerous Goods Act (TDGA) and Regulations (TDGR)</i>  Air - <i>International Civil Aviation Organization Technical Instructions (ICAO)</i>  Marine - <i>International Maritime Dangerous Goods Code (IMDG)</i> .
Waste antifreeze	Antifreeze that is no longer useable for its intended purpose due to the build up of impurities or loss of original properties and is intended for storage, recycling or disposal.

## 1.2 Characteristics

Ethylene and propylene glycol are toxic by ingestion. Many of the corrosion and antifoaming inhibitors added to antifreeze are also toxic. In addition the coolant picks up wear metals from the engine and pipes (such as lead, phosphorous and cadmium) which are also toxic.

Mishandling and mismanagement of these wastes represent a hazard to people and the environment.

## 1.3 Potential Effects

Ethylene glycol is in widespread use in the automotive industry. As a toxic product, it must be handled with care to prevent accidental poisonings. The lethal dose is 100 milliliters for adults and even less for children. It is mildly toxic by skin contact and has a "sweet" taste that children and animals may find appealing. Improper storage of antifreeze has resulted in fatal poisonings.

Propylene glycol is also toxic and combustible and can react with other chemicals. It requires proper storage and handling. Eye contact should be avoided by wearing proper eye protection whenever it is handled.

Both ethylene and propylene glycol are water soluble. Improper disposal results in the contamination of drinking water, groundwater and land surfaces. Fish, aquatic animals and people can be poisoned.

If antifreeze is poured into a sewage lagoon in sufficient concentrations it may poison the bacteria responsible for sewage treatment. Improperly disposed antifreeze can result in the melting of permafrost which could affect building foundations. Proper care should be taken with all types of antifreeze.

## 2 Roles and Responsibilities

### 2.1 Environmental Protection Service

The Environmental Protection Service (EPS) of the Department of Resources, Wildlife and Economic Development is the Government of the Northwest Territories' (GNWT) agency responsible for initiatives which control the discharge of contaminants and their impact on the environment. EPS is responsible for ensuring that environmentally acceptable management procedures, emission levels and disposal methods are maintained. EPS programs are applied primarily to Commissioner's Land, lands administered by municipal governments or GNWT undertakings. Legislative authority is provided by the EPA and *Pesticide Act*. Contact EPS for a listing of relevant regulations and guidelines.

### 2.2 Generators of Waste Antifreeze

**The responsibility for proper waste management rests with the generator and should be considered as part of the cost of doing business.**

Every person who generates waste antifreeze is responsible for the proper management of these substances. Waste antifreeze must be safely handled, packaged, stored, transported, treated and/or disposed in accordance with this guideline.

### 3 Waste Management

**Minimizing or avoiding the creation of pollutants and wastes can be more effective in protecting the environment than treating them, or cleaning them up after they have been created.**

Canadian Council of Ministers of the Environment

#### 3.1 Pollution Prevention

Pollution prevention methods reduce or eliminate the creation of waste. Pollution control options treat waste after it has been generated. Pollution prevention opportunities for antifreeze include the following:

##### **Reduce**

- ? Purchase only required amounts of antifreeze.
- ? Establish maintenance schedules that are consistent with the equipment manufacturers suggested replacement.
- ? Select antifreeze products that provide maximum life.

##### **Reuse**

- ? Collect antifreeze and return it to the cooling/heat system following maintenance or repair.
- ? Filtering and the use of additives to replenish lost antifreeze properties can extend its useful life.

##### **Recycle**

- ? Commercial companies recycle glycol on a fee for service basis. The major automobile manufacturers approve of recycled antifreeze for warranty purposes. Glycol recyclers are available by contacting the waste management associations listed in Appendix II of the General Guideline.
- ? Purchase glycol distillation or reprocessing equipment to return antifreeze back to its original specifications. Suppliers of glycol distillation equipment are available by contacting the waste management associations listed in Appendix II of the General Guideline.
- ? Make an agreement with your supplier/distributor of antifreeze to return the waste antifreeze.

#### 3.2 Storage

Store waste antifreeze according to the following:

- ? Use original containers, where possible, containers manufactured for the purpose or bulked into good quality 16 gauge or lower steel or plastic 205 Litre drums.
- ? Use containers that are sound, sealable and not damaged or leaking.
- ? Containers should be clearly labeled according to the requirements of the Work Site Hazardous Materials Information System (WHMIS) of the *Safety Act* or the relevant

- Transport Authority, if transport to a recycling or disposal facility is planned.
- ? Keep storage containers sealed or closed at all times.
  - ? Protect storage containers from the weather and physical damage.
  - ? Storage should be in a secure area with controlled access.
  - ? Train personnel in the safe use, storage and shipping procedures for waste antifreeze.  
Only trained persons should have access to the storage area.

Wastes should be stored in such a manner as to prevent spills from entering sewer systems or the environment. Waste antifreeze should **NEVER** be stored with food or in used food containers such as bottles or cans, as it is toxic if ingested.

The short term storage of waste antifreeze is only acceptable as an interim measure to permit time for the collection of sufficient volumes for cost effective transport to a recycling or disposal facility.

Storage of glycol in quantities greater than 1000 litres for a period greater than 180 days requires the site to be registered as a hazardous waste storage facility. Consult the General Guideline or contact EPS for application procedures.

### **3.3 Transportation**

The transport of waste antifreeze requires proper classification, packaging, labeling and manifesting as required by the transport authority (air, marine, rail, road). Specific requirements for waste generators and carriers are detailed in the General Guideline.

Generator numbers, waste manifests and registered hazardous waste carrier lists are available from the Environmental Protection Service. Contacts for recycling or disposal companies are available by contacting the waste management associations listed in Appendix II of the General Guideline.

For road transportation purposes, waste antifreeze can be classified in the following way, depending on the type of antifreeze.

Shipping Name: **Waste Poisonous Liquids, N.O.S.**  
**Subsidiary Name: Ethylene glycol mixture, or  
Propylene glycol mixture**  
**P.I.N.: UN2810**  
**Classification: 6.1, 9.2**  
**Packing Group II, III**  
**Special Provisions 102, 109**

Further consultation with the transport authority is recommended.

### **3.4 Disposal**

The preferred method for disposal of bulk waste antifreeze is shipping to a registered recycling or disposal facility. Containers that are suitable for transporting waste antifreeze include 205 litre steel and plastic drums that are in good condition. Contacts for these recycling or disposal companies are available by contacting the waste management associations listed in Appendix II

of the General Guideline.

Do not landfill antifreeze, especially in landfills which employ permafrost as a protective barrier. Do **NOT** dump waste antifreeze down the sewer or drain because it can destroy the bacteria responsible for sewage treatment and contaminate ground and surface waters.

Household quantities of waste antifreeze may be accepted at "Household Hazardous Waste Days" locations operated by the municipality.

Disposal of glycols in an industrial incinerator, with supplied air, adequate temperatures and retention time, may be approved by EPS if the costs and distances to a recycler are prohibitive.

Consideration will be given to proposals for alternate management methods that provide a level of environmental protection equivalent to complying with this guideline. EPS may approve the method, subject to conditions.

## 4 Conclusion

This guideline presents a brief introduction into the management of waste antifreeze. It is intended as a source of basic information and should be read in conjunction with the Guideline for the General Management of Hazardous Waste in the Northwest Territories.

For more information contact:

- 1) Environmental Protection Service  
Department of Resources, Wildlife and Economic Development  
600, 5102-50 Avenue  
Yellowknife NT X1A 3S8  
Phone: (867) 873-7654 Fax: (867) 873-0221
- 2) Motor Vehicles  
Department of Transportation  
76 Capital Drive, Suite 201  
Hay River NT X0E 1G2  
Phone: (867) 874-5000 Fax: (867) 874-6088
- 3) Prevention Services Division  
Workers' Compensation Board  
Box 8888  
Yellowknife NT X1A 2R3  
Phone: (867) 920-3888 Fax: (867) 873-4596



# **Guideline for the Management of Waste Asbestos**

## **1 Introduction**

- 1.1 Definitions**
- 1.2 Characteristics**
- 1.3 Potential Effects**

## **2 Roles and Responsibilities**

- 2.1 Environmental Protection Service**
- 2.2 Occupational Health and Safety**
- 2.3 Generators of Waste Asbestos**
- 2.4 Contractors**

## **3 Waste Management**

- 3.1 Pollution Prevention**
- 3.2 Storage**
- 3.3 Transportation**
- 3.4 Asbestos Abatement**
- 3.5 Disposal**

## **4 Conclusion**

**Contact list**

**April 2004**

# Guideline for the Management of Waste Asbestos

## 1 Introduction

This guideline provides general information on the proper management of waste asbestos. Waste asbestos is a contaminant under the *Environmental Protection Act* (EPA) of the NWT and must be managed as a hazardous waste.

Asbestos is a cancer causing substance. The public, workers, and the environment must be protected from any air-borne exposure to this material.

This guideline is specific to the management of waste asbestos and should be read in conjunction with the Guideline for the General Management of Hazardous Waste In the NWT (referred to as the General Guideline). Section 2.2 of the EPA gives the Minister of Resources, Wildlife and Economic Development the authority to develop, coordinate and administer these guidelines.

### 1.1 Definitions

<i>Asbestos</i>	Magnesium silicate minerals that occur naturally in fibrous forms. The regulated (TDGR) asbestos types include: chrysotile, actinolite, anthophyllite, tremolite (white), crocidolite (blue), amosite, mysorite (brown).
<i>Friable waste material</i>	A material which when dry can be crumbled, pulverized or reduced to powder by hand pressure.
<i>Generator</i>	The owner or person in charge, management or control of a hazardous waste at the time it is generated, or a facility that generates hazardous waste.
<i>Transport authority</i>	The regulations controlling the management of hazardous waste under that mode of transport. These include:  Road and rail - <i>Transportation of Dangerous Goods Act (TDGA) and Regulations (TDGR)</i>  Air - <i>International Civil Aviation Organization Technical Instruction (ICAO)</i>  Marine - <i>International Maritime Dangerous Goods Code (IMDG)</i> .
<i>Waste Asbestos</i>	Asbestos that is no longer useable for its intended purpose and is intended for storage, recycling or disposal. It includes any type of material with greater than 1% asbestos by weight.

## **1.2 Characteristics**

Asbestos is a silicate mineral which is strong, flexible and resistant to heat and chemicals. Asbestos was used in a variety of materials including: fireproof fabrics, gaskets, electrical and heat insulation, chemical filters, brake lining, siding and concrete reinforcement.

## **1.3 Potential Effects**

### **Respiratory exposure to asbestos particles and fibers causes cancer.**

The fibrous nature of asbestos is a health concern. Friable asbestos readily floats in air and is easily inhaled. Due to the mineral nature it is not readily dissolved and may not be excreted from the body. If enough asbestos particles are taken into the respiratory tract cancer may develop.

Environmental and occupational exposure to asbestos is primarily from air-borne sources. This includes weathered or poorly maintained asbestos materials and particles from asbestos abatement (removal) projects. Natural exposures of asbestos (rock outcrops) and dust from vehicle brake pad wear are beyond the scope of this guideline.

## **2 Roles and Responsibilities**

### **2.1 Environmental Protection Service**

The Environmental Protection Service (EPS) of the Department of Resources, Wildlife and Economic Development is the Government of the Northwest Territories' (GNWT) agency responsible for initiatives which control the discharge of contaminants and their impact on the environment. EPS is responsible for ensuring that environmentally acceptable management procedures, emission levels and disposal methods are maintained. EPS programs are applied primarily to Commissioner's Land, lands administered by municipal governments or GNWT undertakings. Legislative authority is provided by the EPA and *Pesticide Act*. Contact EPS for a listing of relevant regulations and guidelines.

### **2.2 Occupational Health and Safety**

Worker protection from air-borne asbestos particles is regulated by the Prevention Services Division, Workers' Compensation Board. The *Asbestos Safety Regulations*, under the *NWT Safety Act*, require that employee exposure to hazardous air-borne asbestos be maintained below specified levels. The exposure levels correspond to the type of asbestos and the friability of the material. Contact the Prevention Services Division of the Workers' Compensation Board for the regulations and procedures required for the containment of asbestos dusts and worker protection.

## 2.3 Generators of Waste Asbestos

**The responsibility for proper waste management rests with the generator and should be considered as part of the cost of doing business.**

Waste asbestos is a hazardous waste. The owner (generator) of the asbestos is responsible for ensuring the waste asbestos is properly managed from the time it is generated to final disposal. Waste asbestos must be safely removed, handled, packaged, stored, transported, treated and/or disposed in accordance with this guideline and all applicable Acts and regulations.

## 2.4 Contractors

Contractors can manage waste asbestos on behalf of a generator. However, the generator is responsible for insuring that the waste management method complies with this guideline, the General Guideline and the requirements of other legislative authorities. (Including the *Asbestos Safety Regulations* under the *Safety Act* and the *Transportation of Dangerous Goods Act and Regulations* (TDGR) or other transport authority).

# 3 Waste Management

**Minimizing or avoiding the creation of pollutants and wastes can be more effective in protecting the environment than treating them, or cleaning them up after they have been created.**

Canadian Council of Ministers of the Environment

## 3.1 Pollution Prevention

Pollution prevention methods reduce or eliminate the creation of waste. Pollution control practices treat waste after it has been created. Pollution prevention opportunities for asbestos include the following:

### Reduce

- ? Consider using less hazardous materials i.e.: fiberglass, metals, wherever possible. In some applications there is no replacement for asbestos.

### Reuse

- ? Encapsulation of the existing asbestos by sealing with paint or an epoxy product, covering with paneling or other non-asbestos materials may be considered. The Prevention Services Division, Workers' Compensation Board must be consulted prior to sealing areas that contain asbestos.
- ? Non-friable asbestos materials can be re-used ( i.e.: fire-break asbestos cementous boards), to reduce replacement costs and extend the life of the product.

## 3.2 Storage

### **Waste storage is not a long term solution.**

Store waste asbestos according to the following:

- ? Store in sealed, airtight containers and labeled "Asbestos" as directed by the *Asbestos Safety Regulations*.
- ? Use containers that are sound, sealable and not damaged or leaking.
- ? Label containers according to the requirements of the Work Site Hazardous Materials Information System (WHMIS) of the *Safety Act* or the relevant Transport Authority if transport to a disposal location is planned. (see Section 3.3 Transportation).
- ? Protect containers from the weather and physical damage.
- ? Storage should be in a secure area with controlled access.
- ? Train personnel in the safe use, storage and shipping procedures for waste asbestos. Only trained persons should have access to the storage area.

The short term storage of waste asbestos is only acceptable as an interim measure to permit time for the collection of sufficient volumes for cost effective transport to a disposal facility.

Storage of waste asbestos in quantities greater than 1000 kilograms for a period greater than 180 days requires the site to be a registered hazardous waste storage facility. Consult the General Guideline or contact EPS for application procedures.

## 3.3 Transportation

The transport of waste asbestos requires proper classification, packaging, labeling and documentation as required by the transport authority (air, marine, rail, road). Requirements for waste generators and carriers are detailed in the General Guideline.

Special Provisions 37 and 44 of TDGR are two exemptions for road transport of waste asbestos. These provisions allow for the substitution of a shipping document for the hazardous waste manifest, and, provided the shipping name and product identification number appear on the outer package or small container, labels are not required.

The shipping document must include the following information and should be mailed or sent by facsimile to EPS:

- Date of consignment
- Consignor identification, mark or signature
- Shipping name
- Product Identification Number
- Quantity

For road transportation purposes, waste asbestos can be classified in the following ways, depending on the type of asbestos.

Shipping Name:           **Waste White Asbestos**  
                                  **P. I. N.: UN 2590**  
                                  **Classification: 9.1**  
                                  **Packing Group: III**  
                                  **Special provisions: 37,44**

Shipping Name:           **Waste Blue Asbestos**  
                                  **P.I.N.: UN 2212**  
                                  **Classification: 9.1**  
                                  **Packing Group: III**  
                                  **Special provisions: 37,44**

Shipping Name:           **Waste Brown Asbestos**  
                                  **P.I.N.: UN 2212**  
                                  **Classification: 9.1**  
                                  **Packing Group: III**  
                                  **Special provisions: 37,44**

Further consultation with the transport authority is recommended.

Generator numbers, waste manifests and registered hazardous waste carrier lists are available from the Environmental Protection Service.

### **3.4 Asbestos Abatement**

**Prevention of asbestos fibre release into the air is the primary objective of all asbestos abatement projects.**

The removal of asbestos materials requires a thorough understanding of the potential hazards and knowledge of measures available to prevent worker, public and environmental exposure to asbestos fibers.

The *Asbestos Safety Regulations* require that employers conducting an asbestos removal project provide the following training to workers who are likely to come in contact with asbestos:

- (a) demonstration and instruction in the use of all protective equipment;
- (b) the safe handling and disposal of waste asbestos;
- (c) health education including information relating to pneumoconiosis, lung cancer and the effects of smoking; and,
- (d) any other information a safety officer considers necessary.

Other requirements, such as soaking the asbestos with water through its entire thickness prior to disturbing are designed for safety purposes.

Materials containing non-friable asbestos, such as asbestos cementous board (used as building siding), ceiling tiles, linoleum, tar papers, are generally non-hazardous if they remain

intact. However, if these are broken or shredded, asbestos fibers may be released into the air. Minimal safety apparel is required when proper handling procedures are exercised. Contact the Prevention Services Division, Workers` Compensation Board, for more information on worker protection or to obtain a copy of the regulations.

The names and location of asbestos training centers are available by contacting the waste management associations listed in Appendix II of the General Guideline.

### **3.5 Disposal**

Two options are available for the disposal of waste asbestos.

Burial at the local landfill. Approval for local landfill disposal must be obtained from the municipal authority. Acceptance of the asbestos materials by the local authority must be confirmed to EPS by telephone or in writing. This ensures that the municipality is registered as a receiver of waste asbestos.

At the landfill, the waste asbestos shall be immediately buried and covered with one half meter of cover material (two feet). Cover materials can be locally available soils, refuse or other materials provided the asbestos containment is not ruptured. If a landfill practices open burning, waste asbestos should be placed in a dedicated trench isolated from the burning. The excavated soils from the trench should then be used to cover the asbestos to the required depth.

In addition:

- the excavation must be isolated from future burning activities.
- the asbestos waste should be buried where it will not be disturbed.
- the location of the asbestos should be maintained on a map or diagram of the property by the municipal authority for future reference.

The second disposal option for asbestos is to contract a registered waste management company. These companies can be contacted through their associations listed in Appendix II of the General Guideline.

Consideration will be given to proposals for alternate disposal methods that provide a level of environmental protection equivalent to complying with this guideline. The Environmental Protection Service may approve the method, subject to conditions.

## 4 Conclusion

This guideline presents a brief introduction into the management of waste asbestos. It is intended as a source of basic information and should be read in conjunction with the Guideline for the General Management of Hazardous Waste in the Northwest Territories.

For more information contact:

- 1) Environmental Protection Service  
Department of Resources, Wildlife and Economic Development  
600, 5102-50 Avenue  
Yellowknife NT X1A 3S8  
Phone: (867) 873-7654 Fax: (867) 873-0221
- 2) Motor Vehicles  
Department of Transportation  
76 Capital Drive, Suite 201  
Hay River NT X0E 1G2  
Phone: (867) 874-5000 Fax: (867) 874-6088
- 3) Prevention Services Division  
Workers' Compensation Board  
Box 8888  
Yellowknife NT X1A 2R3  
Phone: (867) 920-3888 Fax: (867) 873-4596



# **Guideline for the Management of Waste Batteries**

## **1 Introduction**

- 1.1 Definitions**
- 1.2 Characteristics**
- 1.3 Potential Effects**

## **2 Roles and Responsibilities**

- 2.1 Environmental Protection Service**
- 2.2 Generators**

## **3 Waste Management**

- 3.1 Pollution Prevention**
- 3.2 Storage**
- 3.3 Transportation**
- 3.4 Disposal**

## **4 Conclusion**

**Contact list**

September 1998

# Guideline for the Management of Waste Batteries

## 1 Introduction

This guideline provides general information on the proper management of waste batteries. Waste batteries are a contaminant under the *Environmental Protection Act* (EPA) of the NWT and must be managed as a hazardous waste.

Storage batteries are a source of direct electric current produced by reaction of the chemicals in the battery. In rechargeable batteries, the chemical reaction is reversible and therefore they can be recharged many times. Eventually however, even the best rechargeable batteries reach the end of their useful life and become wastes. All batteries contain a corrosive liquid or semi-liquid electrolyte that is either a strong acid or a strong base. In addition, batteries contain metals, such as cadmium, lead, lithium and potassium, which generally are toxic and persist in the environment.

This guideline addresses lead acid batteries and rechargeable batteries. Lead batteries (i.e. car batteries) contain sulphuric acid and lead. Rechargeable batteries (i.e. industrial forklift, radio and transmitter batteries) usually contain either potassium hydroxide or nickel cadmium.

Batteries in domestic products like radios and flash lights, (examples: AAA to D cells, 6 or 9 volt consumer batteries) are not included in this guideline. Button batteries however, may contain mercury, cadmium and silver and should be dropped off at "Household Hazardous Waste Days" locations operated by the municipality.

This guideline is specific to the management of waste batteries and should be read in conjunction with the Guideline for the General Management of Hazardous Waste in the NWT (referred to as the General Guideline). Section 2.2 of the EPA gives the Minister of Resources, Wildlife and Economic Development the authority to develop, coordinate and administer these guidelines.

### 1.1 Definitions

*Generator* The owner or person in charge, management or control of a hazardous waste at the time it is generated or a facility that generates hazardous waste.

*Transport authority* The regulations controlling the management of hazardous waste under that mode of transport. These include:

Road and rail - *Transportation of Dangerous Goods Act* (TDGA) and *Regulations* (TDGR)

Air - *International Civil Aviation Organization Technical Instructions* (ICAO)

Marine - *International Maritime Dangerous Goods Code* (IMDG).

*Waste batteries* A general term used to describe spent electrical storage batteries which are no longer useful for their intended purpose and are intended for storage, recycling, treatment or disposal. Examples of waste battery types include: lead acid; potassium hydroxide; nickel cadmium. For the purpose of this guideline, waste batteries do not include dry cell size AAA to D, 6 or 9 volt domestic batteries.

## 1.2 Characteristics

Hazards from waste batteries are associated with improper handling and disposal. Improper handling can release corrosive fluids that can cause chemical burns and damage to a wide variety of materials. Metals in batteries, including lead, mercury and cadmium, are toxic and bioaccumulate in plants and animals. They also persist in the environment.

## 1.3 Potential Effects

Improper handling of waste batteries can result in the spillage of corrosive materials. The corrosive materials contain dissolved metals that are toxic to plants and animals. Improper disposal of batteries in landfill sites may result in the release of corrosive fluids and dissolved metals into groundwater and the environment.

# 2 Roles and Responsibilities

## 2.1 Environmental Protection Service

The Environmental Protection Service (EPS) of the Department of Resources, Wildlife and Economic Development is the Government of the Northwest Territories' (GNWT) agency responsible for initiatives which control the discharge of contaminants and their impact on the environment. EPS is responsible for ensuring that environmentally acceptable management procedures, emission levels and disposal methods are maintained. EPS programs are applied primarily to Commissioner's Land, lands administered by municipal governments or GNWT undertakings. Legislative authority is provided by the EPA and *Pesticide Act*. Contact EPS for a listing of relevant regulations and guidelines.

## 2.2 Generators

**The responsibility for proper waste management rests with the generator and should be considered as part of the cost of doing business.**

Every person who generates waste batteries is responsible for the proper management of these materials. Waste batteries must be safely handled, packaged, stored, transported, treated and/or disposed in accordance with this guideline and all applicable Acts and regulations.

### 3 Waste Management

**Minimizing or avoiding the creation of pollutants and wastes can be more effective in protecting the environment than treating them, or cleaning them up after they have been created.**

Canadian Council of Ministers of the Environment

#### 3.1 Pollution Prevention

Pollution prevention methods reduce or eliminate the generation of waste products. Pollution control options treat waste after it has been created. Pollution prevention strategies for batteries include the following:

##### **Reduce**

- ? Maintain and protect batteries to prevent damage and charge loss.
- ? Test batteries prior to disposal to confirm the battery is spent.
- ? Replace non-rechargeable batteries with rechargeable batteries where possible.

##### **Recycling**

- ? Service batteries to extend the life.
- ? Send spent batteries to recyclers. ( Recyclers reduce a battery into its component parts and produce new batteries or manufacture other products. The component parts include; metal, plastics and liquid components of the battery.)
- ? Make an agreement with your supplier/distributor of batteries to return the waste batteries.

#### 3.2 Storage

**Battery storage is not a long term solution.**

Store waste batteries according to the following:

- ? Use containers that are sound, sealable and not damaged or leaking.
- ? Bulk into good quality 16 gauge or lower gauge metal or plastic 205 Litre drums, or other form of containment, as appropriate.
- ? Label containers according to the requirements of the Work Site Hazardous Materials Information System (WHMIS) of the *Safety Act* or the relevant Transport Authority, if transport is planned.
- ? Keep the containers sealed or closed at all times.
- ? Protect from the weather and physical damage.
- ? Use wooden pallets to keep the containers and batteries off the ground during storage and transport.
- ? Storage should be in a secure area with controlled access.
- ? Train personnel in the safe use, storage and shipping procedures for waste batteries. Only trained persons should have access to the storage area.

Temporary storage of waste batteries is only acceptable as an interim measure to permit time for the collection of sufficient volumes for cost effective transport to a recycler or disposal facility. Storage of batteries in quantities greater than 1000 kilograms for a period greater than

180 days requires registration of the site as an hazardous waste storage facility. Consult the General Guideline or contact EPS for application procedures.

### **3.3 Transportation**

The transportation of waste batteries to a recycling, treatment, disposal or management facility requires the proper classification packaging, labeling and manifests for the specific transport authority (air, marine, rail, road). Specific requirements for waste generators and carriers are detailed in the General Guideline.

The following are examples of battery packaging requirements for road transport:

Singles - Secure batteries upright in a leak proof plastic container or a polyethylene bag and tie securely.

By the Drum - Stack batteries upright inside the drum and separate by a layer of adsorbent material, cardboard or plywood. The drums can be metal or plastic but must be maintained in an upright position and sealed during transport.

By the Pallet - Waste batteries should be fastened to the pallet by nylon straps or other secure means. Place batteries on a leak proof polyethylene containment liner which is folded over the batteries to form a sealed system. Do not stack batteries more than two high and separate the two layers with cardboard or plywood.

For road transportation purposes, waste batteries can be classified in the following ways, depending on the type of battery.

Shipping Name:           **Battery, dry, containing potassium hydroxide solid**  
**Classification 8**  
**P.I.N.: UN3028**  
**Packing Group III, or**

Shipping Name:           **Battery, wet, filled with acid**  
**Classification 8**  
**P.I.N.: UN2794**  
**Packing Group III, or**

Shipping Name:           **Battery, wet, filled with alkali**  
**Classification 8**  
**P.I.N.: UN2795**  
**Packing Group III, or**

Shipping Name:           **Battery, wet, non-spillable**  
**Classification 8**  
**P.I.N.: UN2800**  
**Packing Group III.**

Further consultation with the transport authority is recommended.

Generator, Carrier and Receiver numbers, waste manifests and registered hazardous waste carrier lists are available from the Environmental Protection Service.

### **3.4 Disposal**

**The long term goal for the management of waste batteries is 100% recycling.**

Bulk batteries for transportation and ship to a registered recycling or disposal facility. The battery industry is currently expanding its' product stewardship program and are accepting waste batteries through distributors for recycling. Contacts for recycling or disposal companies are available by contacting the waste management associations listed in Appendix II of the General Guideline.

Consideration will be given to proposals for alternate disposal methods that provide a level of environmental protection equivalent to complying with this guideline. EPS may approve the method, subject to conditions.

## 4 Conclusions

This guideline presents a brief introduction into the management of waste batteries. It is intended as a source of basic information and should be read in conjunction with the Guideline for the General Management of Hazardous Waste in the Northwest Territories.

For more information contact:

- 1) Environmental Protection Service  
Department of Resources, Wildlife and Economic Development  
600, 5102-50 Avenue  
Yellowknife NT X1A 3S8  
Phone: (867) 873-7654 Fax: (867) 873-0221
- 2) Motor Vehicles  
Department of Transportation  
76 Capital Drive, Suite 201  
Hay River NT X0E 1G2  
Phone: (867) 874-5000 Fax: (867) 874-6088
- 3) Prevention Services Division  
Workers' Compensation Board  
Box 8888  
Yellowknife NT X1A 2R3  
Phone: (867) 920-3888 Fax: (867) 873-4596

# **Guideline for Industrial Waste Discharges in the NWT**

## **1 Introduction**

### **1.1 Definitions**

## **2 Roles and Responsibilities**

### **2.1 Environmental Protection Service**

### **2.2 Industry**

### **2.3 Other Regulatory Agencies**

## **3 Standards**

### **3.1 Effluent**

#### **3.1.1 Process Effluent**

#### **3.1.2 Non-point Source Discharges**

### **3.2 Process Residuals**

### **3.3 Exemptions**

## **4 Waste Management**

### **4.1 Pollution Prevention**

### **4.2 Disposal/Treatment**

#### **Figure 1: Decision Flow chart for Managing an Industrial Waste Discharge**

#### **4.2.1 Effluent Discharge**

#### **4.2.2 Process Residuals**

#### **4.2.3 Containers**

### **4.3 Alternative Methods**

## **5 Conclusion**

**Schedule (I) Standards for Process Effluent Discharged to Municipal Sewage Systems**

**Schedule (II) Standards for Non-point Source Discharges**

**Schedule (III) Standards for Solid Waste/Process Residuals Suitable for Landfill  
(Leachate Quality criteria test results not to exceed 100 mg/L)**

**Schedule (IV) Standards for Solid Waste/Process Residuals Suitable for Landfill  
(based on Leachate Quality criteria test results)**

## **6 Bibliography**

## **Appendix**

February 1998



# Guideline for Industrial Waste Discharges in the NWT

## 1 Introduction

The purpose of this guideline is to establish standards that should be followed in the discharge of waste from an industrial operation on Commissioner's Land or lands administered by municipal governments in the Northwest Territories (NWT).

This guideline has been developed by the Environmental Protection Service (EPS) of the Department of Resources, Wildlife and Economic Development (RWED). It is also intended to:

- C provide direction for the management and discharge of industrial waste,
- C protect the environment,
- C protect municipal infrastructure, such as sewage systems and solid waste modified landfills, from immediate and long term environmental problems, and
- C protect workers and the public from improper industrial waste discharge.

This guideline addresses the discharge of effluent and process residuals resulting from industrial operations. Effluent refers to a liquid material while process residuals refer to solid, semi-solid or sludge waste. The guideline is intended for the discharge of waste into municipal systems not discharges from municipal systems.

Specific guidelines have been developed for major hazardous and industrial waste. Contact the Environmental Protection Service (EPS) for a listing of these guidelines.

The guideline has been developed in conjunction with the Government of the Northwest Territories' (GNWT) Department of Municipal and Community Affairs, taking into consideration northern conditions. It provides general directions to be used for all industries except those operating under a Northwest Territories Water Board water licence. Section 2.2 of the *Environmental Protection Act* (EPA) gives the Minister of Resources, Wildlife and Economic Development the authority to develop, coordinate and administer guidelines. This guideline complements existing acts and regulations concerning waste which should be consulted for interpretation and application. Section 2.3 of this guideline provides additional information on regulatory roles and responsibilities.

### 1.1 Definitions

BOD	Biochemical oxygen demand. A measure of the amount of oxygen that bacteria consume in the process of oxidizing organic matter. This is determined by Test Method 507 in Standard Methods.
<i>Composite sample</i>	A volume of effluent made up of three or more individual samples of equal volume, equal weight, or sized proportionally to flows, that have been combined. The samples are taken at intervals during the sampling period.
<i>Contaminant</i>	Any noise, heat, vibration or substance and includes such other

substances as the Minister may prescribe that, where discharged into the environment,

- (a) endangers the health, safety or welfare of persons,
- (b) interferes or is likely to interfere with normal enjoyment of life or property,
- (c) endangers the health of animal life, or
- (d) causes or is likely to cause damage to plant life or property.

**Environmental Protection Act**

<i>Commissioner's Land</i>	Lands in the Northwest Territories that have been transferred by Order-in-Council to the Government of the Northwest Territories. This includes highways, block land transfers and most lands within municipalities.
<i>Dangerous goods</i>	Any product, substance or organism included by its nature or by the <i>Transportation of Dangerous Goods Regulations</i> (TDGR) in any of the classes listed in the schedule provided in the <i>Transportation of Dangerous Goods Act</i> (TDGA). <b>Transportation of Dangerous Goods Act (Canada)</b>
<i>Effluent</i>	Liquid material, treated or untreated, discharged from industrial sources.
<i>Empty container</i>	A container that has been emptied to the greatest extent possible, using regular handling procedures, such that its contents shall not exceed 1% of the containers's original capacity or 2 litres whichever is less. This does not include containers which previously contained mercury or class 2.3, 5.1, 6.1 materials of TDGR.
<i>Generator</i>	The owner or person in charge, management or control of a waste or a facility that generates waste.
<i>Hazardous waste</i>	A contaminant which is a dangerous good that is no longer used for its original purpose and is intended for storage, recycling, treatment or disposal:  A hazardous waste does not include a contaminant that is: <ul style="list-style-type: none"><li>(a) household in origin,</li><li>(b) included in class 1, Explosives or class 7, Radioactive materials of TDGR,</li><li>(c) exempted as a small quantity,</li><li>(d) an empty container, or</li><li>(e) intended for disposal in a sewage system or by land filling that meet the applicable standards set out in schedules I, III or IV of the <u>Guideline for Industrial Waste Discharges in the NWT</u>.</li></ul>
<i>Industrial</i>	Any enterprise involved with manufacturing, fabricating, processing including commercial or institutional operations.

<i>Landfilling</i>	The deposit of waste on land as described in the Department of Municipal and Community Affairs <u>Guidelines for the Planning, Design, Operation &amp; Maintenance of Solid Waste Modified Landfill Sites in the Northwest Territories.</u>
<i>Leachate extraction procedure</i>	A test method designed to determine both the organic and inorganic parameters present in solid and multi phased waste. It is designed to simulate the characteristics a material may exhibit if placed in a landfill. Test determined by method 1311 Toxicity Characteristic Leaching Procedure Test, US EPA or Leachate Extraction Procedure 164-GP-1-MP Canadian General Standards Board.
<i>Non-Point source discharge</i>	A non-specific or diffuse source of effluent entering the environment. This includes run off from areas such as compounds, storage sites and storage yards.
<i>Oil &amp; grease</i>	A term given to any material in the sample which can be extracted into an organic solvent after the sample has been acidified. Material can include vegetable oils, animal fats, greases ,waxes, organic dyes and petroleum hydrocarbons. This is determined by one of Test Methods 503A, 503B, 503C or 503D in Standard Methods.
<i>Process residuals</i>	Solid, semi-solid or sludge waste resulting from industrial operations.
<i>Phenolic compounds</i>	Hydroxyl derivatives of benzene and its condensed nuclei which can be determined as phenols. This is determined by one of Test methods 510B or 510C in Standard Methods.
<i>Sewage system</i>	A system for the collection, transmission, treatment or disposal of any liquid waste containing animal, vegetable, mineral, human or chemical matter in solution or in suspension.
<i>Standard methods</i>	A procedure set out in <u>Standard Methods For the Examination of Water and Wastewater</u> published jointly by the American Public Health Association, American Water Works Association and Water Pollution Control Federation, current at the date of testing.
<i>TDGA/TDGR</i>	The <i>Transportation of Dangerous Goods Act and Regulations</i> (Canada).
<i>Total suspended solids</i>	The amount of solid residue suspended in a liquid portion of sample. The test is completed by measuring the amount of solids left behind on a filter paper after the sample has been filtered. This is determined by Test Method 209C in Standard Methods.
<i>Toxic leachate</i>	A process residual that does not meet the requirements as set out in section 3.2 of this guideline.

## **2 Roles and Responsibilities**

## 2.1 Environmental Protection Service

The Environmental Protection Service (EPS) of the Department of Resources, Wildlife and Economic Development is the Government of the Northwest Territories' (GNWT) agency responsible for initiatives which control the discharge of contaminants and their impact on the natural environment. EPS is responsible for ensuring that environmentally acceptable management procedures, emission levels and disposal methods are maintained. By practise the EPS's programs are applied primarily to Commissioner's Land, lands administered by municipal governments or GNWT undertakings. Legislative authority is provided by the *Environmental Protection Act* (EPA) and *Pesticide Act*. Contact EPS for a listing of relevant regulations and guidelines.

## 2.2 Industry

**The responsibility for proper waste management rests with the generator and should be considered part of the cost of doing business.**

Industry should develop a comprehensive operating program that ensures the impacts of its operations on the natural environment and workplace are minimized. This involves developing sound waste management practices for effluent, process residuals, spent chemicals, solid waste, sludges and empty containers.

This guideline is a starting point in the proper management of a waste. Industry should determine the nature of the waste and manage it accordingly. If the waste discharge is considered a hazardous waste then the generator should refer to and follow the Guideline for the General Management of Hazardous Waste in the NWT.

## 2.3 Other Regulatory Agencies

The GNWT Department of Municipal and Community Affairs (MACA) administers Commissioner's Lands. MACA's responsibilities include the issuance and inspection of leases, licences and land use permits. MACA is also involved in the planning, funding, operation and maintenance of municipal landfill and sewage treatment systems. Under MACA's direction, some communities are developing sewage discharge guidelines which this guideline will supplement.

The Northwest Territories Water Board issues water licences under the federal *Northwest Territories Waters Act*. One criterion for an industrial process to require a water licence is if its water use and waste deposit exceeds 100 m<sup>3</sup> / day. A water license may set specific industrial effluent discharge parameters that must be complied with. A water licence supersedes the requirements of this guideline. Please consult the Department of Indian and Northern Affairs for further water licence criteria.

Environment Canada also regulates certain industrial discharges. Subsection 36(3) of the *Fisheries Act* states that,..." in the absence of regulations, effluent entering fish bearing waters must be non-deleterious to fish". The *Metal Mining Liquid Effluent Regulations* and the *Petroleum Refinery Liquid Effluent Regulations* pursuant to the *Fisheries Act* regulate effluent quality for those specific industries.

Under the NWT *Safety Act*, *Occupational Health and Safety Regulations* address the safety of

workers and the work place. The Act states that the employer shall maintain their establishment and take all reasonable precautions to ensure the safety and health of every person in the establishment. The Regulations also prescribe standards for protective clothing and equipment to be used by workers. *Work Site Hazardous Materials Information System Regulations* (WHMIS) were adopted to ensure employee training and safe storage and handling of controlled products at the employer's work site. Consultation with a Safety Officer from the Prevention Services Division of the Workers' Compensation Board is the responsibility of every waste generator or employer.

The GNWT Department of Transportation, Motor Carrier Services, is responsible for administering the *Transportation of Dangerous Goods Act and Regulations* (NWT). The Department is also responsible for driver, vehicle and load safety under additional transport legislation.

### **3 Standards**

The following sections outline requirements for the discharge of effluent to sewage systems and the disposal of process residuals to a landfill.

#### **3.1 Effluent**

Unless meeting the standards set out by the guideline, discharges could become a hazard to persons, property or the environment or interfere with the operation of municipal infrastructure. These should not be discharged. Where a sample is required for the purpose of determining effluent characteristics, the sample must be a composite sample which can be collected manually or by using an automatic sampling device. Standard Methods, or an equivalent level of testing, must be followed to determine effluent characteristics.

##### **3.1.1 Process Effluent**

Properly managing process effluent is an important aspect of maintaining water quality. The discharge limits for process effluent in this guideline are based on objectives for municipal sewage systems.

Schedule I contains standards for process effluent discharged to municipal sewage systems. Proponents desiring to discharge process effluent other than to municipal sewage systems should contact the NWT Water Board or appropriate land claim management boards.

##### **3.1.2 Non-point Source Discharges**

Non-point source discharges may be covered by a water licence from the NWT Water Board. In those cases where they are not, the standards in Schedule II apply.

These standards apply to non-point source discharges from industrial sources to storm sewers, ditches and other areas for containment, routing and disposal. For the purposes of this guideline, non-point sources are directly related to operational areas of the industry.

### 3.2 Process Residuals

The generator must ensure process residuals such as solid, semi-solid and sludge waste are suitable for disposal to a modified solid waste landfill. A leachate testing method is used to determine the acceptability of process residual for landfill and is designed to simulate the characteristics a material may exhibit if placed in a landfill. Refer to Appendix A for additional details on acceptable leachate test methods.

A process residual should not be landfilled if its leachate contains;

- (i) 100 mg/L or higher of any substance listed in Schedule III or,
- (ii) substance listed in Schedule IV in excess of the concentrations listed in that schedule or,
- (iii) any of the following substances in a concentration greater than 0.001 mg/L:

hexachloro-dibenzo-p-dioxins	pentachloro-dibenzo-p-dioxins	dichlorobenzodioxins
tetrachloro-dibenzo-p-dioxins	hexachloro-dibenzofurans	
pentachloro-dibenzofurans	tetrachloro-dibenzofurans	

With respect to (iii), proponents with benzene or halogenated derivatives other than those listed should contact EPS to discuss management options.

While these requirements may seem complicated, an understanding of the industrial process will help to determine which parameters are of concern.

A waste not meeting the requirements in paragraphs (i), (ii) and (iii) is referred to as a toxic leachate waste. A toxic leachate waste is not suitable to be landfilled and will have to be treated as a hazardous waste. Thus, the generator will need to follow the Guideline for the General Management of Hazardous Waste in the NWT.

### 3.3 Exemptions

These guidelines cover only waste for which there is not a guideline or regulation already in place. For the management of specific waste types, refer to the Guideline for the General Management of Hazardous Waste in the NWT, or consult EPS.

A proponent may request variances to the above standards. In these cases, the proponent must provide an assessment illustrating the anticipated effect on the municipal infrastructure and the environment to EPS and the municipality. The assessment must indicate that a level of environmental protection equivalent to the guideline is being provided.

## **4 Waste Management**

### **4.1 Pollution Prevention**

**Minimizing or avoiding the creation of pollutants and waste can be more effective in protecting the environment than treating them, or cleaning them up after they have been created.**

Canadian Council of Ministers of the Environment

Pollution prevention methods are designed to eliminate the creation of waste. Whereas pollution control options treat waste after they have been generated, pollution prevention measures prevent the waste from being created. Pollution prevention includes such actions as substitution and reduction in the use of a raw material, production redesign, process change, in-process recycling and improved operating and maintenance procedures.

### **4.2 Disposal/Treatment**

A flow chart illustrating the decision process for managing an industrial waste under this guideline is provided in Figure 1.

#### **4.2.1 Effluent Discharges**

Process effluent and non-point source discharges which meet the standards set in Schedules I or II, respectively, may be discharged to the appropriate system.

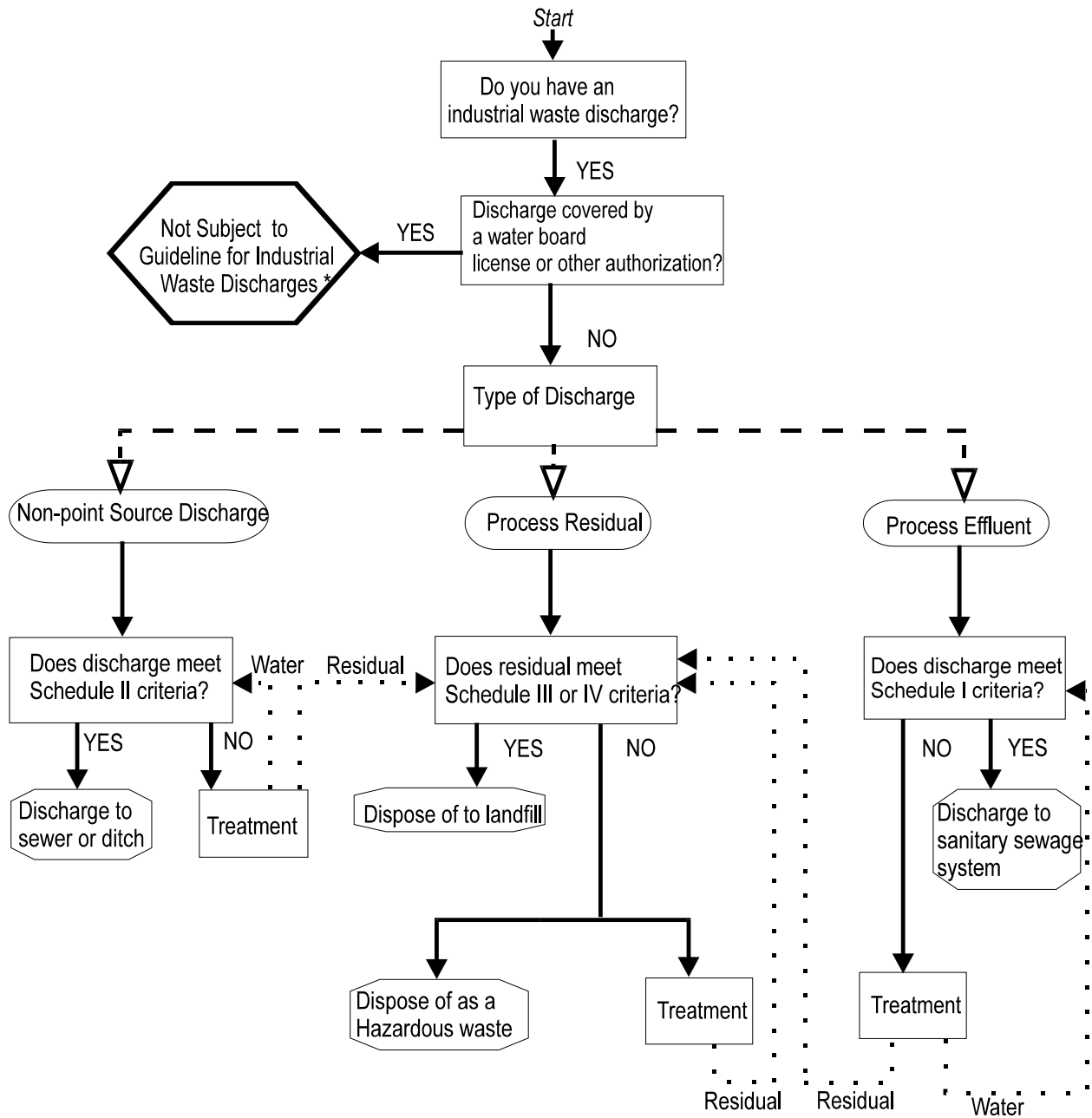
Discharges that do not meet the standards will require treatment prior to release. The selection of treatment techniques is beyond the scope of this guideline. Treated effluent that meets the Guideline standards may be discharged. Residuals or sludge from the treatment of effluent will be subjected to the standards outlined in this guideline to determine if they are suitable for landfill.

#### **4.2.2 Process Residuals**

Process residuals which meet the standards in Schedule III or IV may be disposed at a solid waste modified landfill site.

Process residuals which do not meet the standards will either require treatment or be managed according to the Guideline for the General Management of Hazardous Waste in the NWT. Process residuals that are considered hazardous waste and are moved off site for treatment, storage or disposal must be accompanied by special documentation called a waste manifest. Waste manifests are supplied and administered by EPS.

Process residuals can also be treated to allow them to be landfilled. Treatment of process residuals may result in a significantly different waste. A waste material resulting from the treatment of a process residual will be subject to the standards outlined in this guideline to determine if they are suitable for landfill or sewage disposal.



\* may be subject to other licenses, guidelines or regulations

Figure 1: Decision Flow chart for Managing an Industrial Waste Discharge



### **4.2.3 Containers**

Containers containing process residuals or other waste must be properly managed. Containers should be emptied, to the greatest extent possible, using regular handling procedures, or by triple rinsing with an appropriate cleaning agent. They should be rendered unusable by puncturing or crushing prior to disposal. This is especially of concern for containers which could eventually be used for water or food storage. Rinsings must be managed according to their waste characteristics.

### **4.3 Alternative Methods**

Consideration will be given to proposals for an alternative disposal method that provides a level of environmental protection equivalent to complying with this guideline.

## **5 Conclusion**

This document is intended as a source of basic information about the issues involved in the management of industrial waste discharges. It does not replace the existing legislation which is referenced in the guideline. Please contact the appropriate agency before proceeding.

1. Environmental Protection Service  
Department of Resources, Wildlife and Economic Development  
600, 5102-50 th Avenue  
Yellowknife, NT, X1A 3S8  
Phone: (867) 873-7654; Fax: (867) 873-0221
2. Community Development Division  
Department of Municipal and Community Affairs  
Suite 400, 5201-50th Avenue  
Yellowknife, NT, X1A 2R3  
Phone: (867) 873-7644; Fax: (867) 920-6467
3. Prevention Services Division  
Workers' Compensation Board  
Box 8888  
Yellowknife, NT, X1A 2R3  
Phone: (867) 920-3888  
(867) 669-4403 (accident report)  
1-800-661-0792; Fax: (867) 873-4596  
(867) 873-0262 (accident report)
4. Motor Carrier Services  
Department of Transportation  
76 Capital Drive  
Hay River, NT, X0E 1G2  
Phone (867) 874-5000; Fax (867) 874-6088

**Schedule I: Standards for Process Effluent Discharged to Municipal Sewage Systems**

**Concentrations not to be exceeded**

<b>PARAMETER</b>	<b>EFFLUENT OBJECTIVE (mg/L)</b>
Aluminum	50
Arsenic	1
Barium	5
Biochemical oxygen demand	500
Cadmium	2
Chlorides	1500
Chromium	5
Copper	5
Cyanide	2
Fluoride	10
Lead	5
Iron	50
Mercury	0.1
Nickel	5
Oil & Grease	150
pH range	6.5-10.5
Phenolic compounds	1
Phosphorus	100
Silver	5
Sulphates	1500
Sulphides	2
Suspended solids	600
Tin	5
Zinc	5

**Schedule II: Standards for Non-point Sources Discharges**

**Concentrations not to be exceeded**

<b>PARAMETER</b>	<b>EFFLUENT OBJECTIVE (mg/L)</b>
Aluminum	1
Ammonia	10
Arsenic	1
Barium	1
Cadmium	0.1
Biochemical oxygen demand	15
Chlorine	1
Chromium	0.1
Copper	1
Cyanide	0.1
Fluoride	2
Grease, Fat, Oil	15
Iron	1
Lead	0.05
Mercury	0.0006
Nickel	1
pH range	6-10.5
Phenolic compounds	0.02
Phosphorus	1
Silver	0.1
Suspended solids	15
Tin	1
Zinc	0.5

**Schedule III: Standards for Solid Waste/Process Residuals Suitable for Landfill**

Leachate test results not to exceed 100mg/l	
<b>Parameter</b>	<b>Parameter</b>
Ammonia sulphide	Maleic anhydride
Benzidine	Methylamine
Benzyl chloride	Potassium permanganate
Diethylamine	Quinoline
Ethylamine	Strychnine
Ethylenediamine	Tetrachloroethanes

**Schedule IV: Standards for Solid Waste/Process Residuals Suitable for Landfill  
(based on Leachate quality test results)**

<b>Parameter</b>	<b>Concentration (mg/L)</b>
Arsenic	2.5
Barium	100
Cadmium	0.5
Carbon Tetrachloride	0.5
Chromium	5
Cyanide(free)	20
DDT	3
Endrin	0.02
Heptachlor + Heptachlor epoxide	0.3
Lead	5
Lindane	0.4
Mercury	0.1
Methoxychlor	10
Methyl ethyl ketone	200
Metolachlor	5
PCBs	50*
Selenium	1
Silver	5
Tetrachloroethylene	3.0
Toxaphene	0.5
Trihalomethanes	10
2,4,5-TP (Silvex)	1
Zinc	500

\*Based on Concentration by Mass

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Ontario Ministry of Environment & Energy. Deriving Receiving-Water Based, Point-Source Effluent Requirements for Ontario Waters. Toronto, Queen's Printer for Ontario, (1994).

Science Institute of the Northwest Territories. Draft Environmental Guidelines for Commercial Tanneries in the Northwest Territories, Yellowknife, (1993).

Secretary of Canadian General Standards Board (CGSB). Leachate Extraction Procedure 164-GP-1-MP, Ottawa, Ontario, CGSB, (1987).

United States Environmental Protection Agency, Toxicity Characteristic Leaching Procedure Test method 1311, Washington, DC, (1992).

## Appendix A

### Toxicity Characteristic Leaching Procedure Test and Equivalents

The Toxicity Characteristic Leaching Procedure Test (TCLP), method 1311, US EPA is the preferred method used for section 3.2 paragraphs (i), (ii) and (iii).

EPS will recognize, as an equivalent test, one of the following:

- Alberta Waste Managers Guide. TCLP extraction test
- Canadian General Standards Board Leachate Extraction Procedure, # 164-GP-1-MP
- Schedule 4 - *British Columbia Waste Management Act - Special Waste Regulation*, Government of British Columbia using Canadian General Standards Board test.
- Schedule 4 - *Regulation 347*  
Government of Ontario using Canadian General Standards Board test.
- Schedule III and IV *Environmental Quality Act- Hazardous Waste Regulation*, Gazette officielle du Quebec using Canadian General Standards Board test.

If you would like to be placed on a mailing list to receive guideline amendments or for public consultation on Environmental Protection Service legislation please fill this out and mail or fax to:

Environmental Protection Service  
Department of Resources, Wildlife and Economic Development  
Government of the Northwest Territories  
600, 5102 - 50th Avenue  
Yellowknife, NT, X1A 3S8  
Fax: (867) 873-0221

Mailing List for Environmental Protection Service Information

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Phone/Fax Number \_\_\_\_\_

# **Guideline for the Management of Waste Lead and Lead Paint**

## **1 Introduction**

- 1.1 Definitions
- 1.2 Potential Effects
- 1.3 Common Sources of Lead

## **2 Roles and Responsibilities**

- 2.1 Environmental Protection Service
- 2.2 Occupational Health and Safety
- 2.3 Public Health and Safety
- 2.4 Generators
- 2.5 Sand Blasting Contractors

## **3 Waste Management**

- 3.1 Pollution Prevention
  - Containment of Paint and Abrasive Debris
- 3.3 Recovery of Paint and Abrasive Debris
- 3.4 Storage
- 3.5 Transportation
- 3.6 Disposal

## **4 Agency Information**

- 4.1 Key to Acronyms
- 4.2 Agency Contacts

## **5 Bibliography**

April 2004



# Guideline for the Management of Waste Lead and Lead Paint

## 1 Introduction

Waste products that contain lead are considered contaminants under the Northwest Territories' *Environmental Protection Act* (EPA) and must be managed as a hazardous waste. This guideline presents a brief introduction into the management of waste lead and lead containing products. It is intended as a source of basic information and does not replace the existing legislation, which is referenced throughout.

Historically, lead was used in many commercial products including: paint, gasoline, insecticides and batteries, to name a few. We now know that products and structures painted with leaded paint are a source of health and environmental contaminants. Lead in gasoline and household paints is now restricted by federal legislation, as are lead pellet shotgun shells used for hunting migratory birds.

Lead is toxic to living organisms and if released into the environment can bioaccumulate and enter the food chain. Products that contain lead in excess of 600 parts per million (0.06% by weight) are considered hazardous waste and shall be managed in accordance with this guideline.

This document should be read in conjunction with the Guideline for the General Management of Hazardous Waste In The NWT (referred to as the General Guideline), and, the Guideline for the Management of Waste Institutional/Commercial and Industrial Chemicals. Management of lead acid batteries is addressed under the Guideline for the Management of Waste Batteries.

Section 2.2 of the EPA gives the Minister of Resources, Wildlife and Economic Development the authority to develop, coordinate and administer these guidelines. Other Acts and Regulations are also in place to protect workers and the public from the effects of lead exposure. Please contact the appropriate agency before proceeding on projects involving waste lead and lead paint.

### 1.1 Definitions

*Controlled product* Any product, material or substance specified under paragraph 15(1)(a) of *the Hazardous Products Act* (Canada) and its regulations.

<i>Fume</i>	The smoke-like vapour given off from heated metals.						
<i>Generator</i>	The owner or person in charge, management or control of a hazardous waste at the time it was generated, or a facility that generates hazardous waste.						
<i>Lead amended paint</i>	Structural coatings containing greater than 600 parts per million (0.06% by weight) lead.						
<i>Metallic lead</i>	The solid metal form of lead, bluish-white or silvery-gray in colour. By weight, it is heavy and is also soft, which makes it ductile and malleable. Other desirable properties are that it is a poor conductor of electricity, it has a low melting point and it is resistant to corrosion. Uses include: ammunition, electrical storage batteries (lead acid batteries), lead solder, pipes, sheaths for electrical cable and radiation shields.						
<i>Organic lead</i>	In general, lead combined with a chemical compound containing carbon. These chemical compounds are usually in powder, crystal, paste or liquid form, depending on the compound. Uses include tetraethyl lead (used as an anti-knock agent in gasoline), tetramethyl lead, lead naphthanate, stearate and oleate.						
<i>Inorganic lead</i>	In general, lead substances that <u>do not</u> contain compounds of carbon, hydrocarbons or derivatives. These chemical compounds are usually found in powder or crystal form, but some are liquid. Uses include: frits, glasses, insecticides, wood preservatives, specific paints, pigments, plastics and rubber compounds.						
<i>Transport authority</i>	The regulations controlling the management of hazardous waste under specified modes of transport. They include: <table> <tr> <td><u>Road and rail</u></td> <td><i>Transportation of Dangerous Goods Act (TDGA) and Regulations (TDGR)</i></td> </tr> <tr> <td><u>Air</u></td> <td><i>International Civil Aviation Organization (ICAO) Technical Instructions</i></td> </tr> <tr> <td><u>Marine</u></td> <td><i>International Maritime Dangerous Goods Code (IMDG)</i></td> </tr> </table>	<u>Road and rail</u>	<i>Transportation of Dangerous Goods Act (TDGA) and Regulations (TDGR)</i>	<u>Air</u>	<i>International Civil Aviation Organization (ICAO) Technical Instructions</i>	<u>Marine</u>	<i>International Maritime Dangerous Goods Code (IMDG)</i>
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<u>Air</u>	<i>International Civil Aviation Organization (ICAO) Technical Instructions</i>						
<u>Marine</u>	<i>International Maritime Dangerous Goods Code (IMDG)</i>						

## 1.2 Potential Effects

### Metallic lead

*Fumes* – Lead fumes inhaled during melting operations pose an acute health risk to people. They can also be an accumulative poison and if exposure continues, chronic health symptoms and disability occur. The major areas affected are the nervous system, blood system and kidneys.

*Dust* – Metallic lead can also enter the body through breathing dust from activities such as sandblasting of lead paint. If inhaled, lead particles smaller than 10 microns (one-millionth meter) can move directly into the bloodstream through the lungs.

Another source of occupational lead exposure is by accidental ingestion as workers handle cigarettes or food when their hands are contaminated with lead dust.

*Contact with Water* – Metallic lead is not water soluble between the pH range of 5 and 12. If prevented from contacting water or water vapor, it will not leach into the environment.

### Organic lead

These chemical compounds are generally toxic by inhalation, ingestion and skin absorption. With skin absorption being the primary route of exposure, it readily penetrates the skin directly or is dissolved in oils, which can penetrate the skin. Many organic lead compounds are also flammable or carcinogenic. Ingestion of leaded paint dust and chips has been shown to retard mental and physical growth in children.

### Inorganic lead

These chemical compounds are generally toxic by inhalation or ingestion. Skin absorption is generally insignificant for both metallic and inorganic lead.

### Hazardous Effect Ratings

	inhalation	ingestion	skin absorption
<b>Metallic lead</b>	High (extreme when heated)	Medium	Low
<b>Organic lead</b>	Medium	High	High
<b>Inorganic lead</b>	Low	High	Low

### 1.3 Common Sources of Lead

#### Metallic lead

Automotive industry:	wheel weights, bearings, friction additive in clutch facings and brakes, storage batteries
Construction industry:	flashing, pipe, sheeting, counterweights, paint additives
Electronic industry:	cathode-ray tubes, radiation shielding, solder
Resource industry:	fishing sinkers, rifle bullets, backstops at rifle and pistol ranges
Printing industry:	letter blocks

#### Organic lead

Miscellaneous:	paint, insecticides, fungicides, chemical reagents, gasoline additives, pigments, dyes
Automotive industry:	spent glycol solution removed from cooling systems with heat exchangers made from alloys containing lead as an adhesive

#### Inorganic lead

Oil field construction:	joining compound (pipe dope)
Automotive industry:	ceramic products, paints, rubbers, dyes, corrosion inhibiting pigment in paints and primers
Miscellaneous:	manufacture of explosives, blasting caps, matches and pyrotechnics, chemical reagents, pigments, dyes

## 2 Roles and Responsibilities

### 2.1 Environmental Protection

The **Environmental Protection Service** (EPS) is part of the Government of the Northwest Territories' (GNWT) Department of Resources, Wildlife and Economic Development. EPS is the agency responsible for control of how contaminants are discharged and their impact on the natural environment. It is responsible for ensuring environmentally acceptable management procedures, emission levels and disposal methods are maintained in the NWT.

EPS programs are applied primarily to Commissioner's Land, municipal lands or lands involving GNWT activities. Legislative authority is provided by the *Environmental Protection Act* (EPA) and *Pesticide Act*. Contact EPS for a listing of relevant regulations and guidelines or visit the web site at [www.gov.nt.ca/RWED/eps/leg.htm](http://www.gov.nt.ca/RWED/eps/leg.htm).

## 2.2 Occupational Health and Safety

The **Prevention Services Division of the Workers' Compensation Board** regulates worker protection from air-borne lead and other toxic materials. The *General Safety Regulations*, under the *Northwest Territories Safety Act*, require that employee exposure to hazardous air-borne dust be maintained below specified levels. The specified exposure levels correspond to the type of materials in use and are listed in the Schedule to the regulations.

Contact the Prevention Services Division for regulations and procedures to prevent worker exposure to toxic materials. This includes lead abatement projects (leaded paint removal), handling products containing lead or the grinding, cutting or welding of products coated in leaded paint. Also included are worker protection measures for use during clean up of backstops at rifle and pistol ranges.

## 2.3 Public Health and Safety

The **Department of Health and Social Services** has the authority for public health and safety. The *General Sanitation Regulations*, under the authority of the *Public Health Act*, is the legislation used to protect the public from materials or activities that are injurious to public health. As an example, lead abatement projects, which use sand or abrasive blasting to remove leaded paint from steel structures, have the potential to adversely impact on public health. Responsible management of such projects means consulting with an Environmental Health Officer.

## 2.4 Generators

**The responsibility for proper waste management rests with the generator and should be considered part of the “cost of doing business”.**

Identification of lead in organic and inorganic lead-based chemicals is accomplished by review of the Material Safety Data Sheets (MSDS), which must accompany all controlled products distributed in Canada. Manufacturers or their product distributors are required to provide an MSDS with their products.

Alternate resources may be required to identify older products suspected of containing lead. Analysis by an accredited laboratory is one option. Laboratories can be contacted through their associations listed in the General Guideline, Appendix II.

Management options for lead-containing chemicals (organic or inorganic) are addressed in the Guideline for the Management of Waste Institutional - Commercial and Industrial Chemicals. The General Guideline should also be consulted for generator responsibilities.

#### Wastes Further Addressed

For the purpose of this guideline, only the following wastes containing lead and their management are further addressed:

- lead amended paint
- sand or soils used as backstops at rifle and pistol ranges
- soils containing lead at steel structure manufacturing/construction or repair yards

It is the owner's responsibility to identify the presence of lead. Common examples of where lead amended paint is found include:

- barges and ships, heavy equipment
- steel fabrication/painting facilities
- pipelines
- fuel storage tanks
- steel bridges
- steel towers
- grain storage bins
- rail cars

The owner is responsible for evaluating painted steel structures or fabrication/demolition sites for the presence of lead. Painted tanks or other steel structures should be sampled for confirmation of lead amended paint and lead concentration prior to sandblasting or other maintenance activities.

In addition to lead, industrial or steel coatings such as paint and paint primer, may contain other contaminants to be aware of such as arsenic, polychlorinated biphenyls (PCBs), cadmium, chromium, copper, magnesium and mercury. These are toxic substances if inhaled or ingested.

#### Paint Samples

A paint sample should be collected from tightly adhered paint and comprised of all layers of paint, from a one square inch area (2.5 cm). Make sure to scrape down to the metal, being careful not to include any metal in the sample. A plastic bag is an adequate container. The paint should then be analyzed, at the owner's expense, at an accredited laboratory. The analytical data should then be forwarded to EPS.

### Rifle Range Backstop Samples

Sample collection from rifle range backstops should be done by following the procedures provided by an accredited analytical laboratory to ensure representative samples are obtained. Personal protective equipment may be required, consult WCB Safety Officers.

### Soil Samples

Information on the procedures for sampling lead in soil are available from accredited analytical laboratories.

### Important Analysis Note

Due to the complex chemical relationship of lead and iron, the Toxic Characteristic Leaching Procedure (TCLP) is not acceptable for lead analysis. Iron masks TCLP detection of lead. The only accepted lead analysis is called "Total Lead".

## **2.5 Sandblasting Contractors**

Repainting of steel structures for rust protection usually involves sandblasting of the deteriorated paint, in preparation for a new coating of primer and paint. Painted tanks or other steel structures should be sampled for confirmation of lead and lead concentration prior to sandblasting or other maintenance activities. Consultation with the appropriate regulatory agencies prior to starting lead abatement projects is the responsible work strategy to prevent public, worker and environmental impairment.

### Sandblasting Media Hazards

The International Agency for Research on Cancer, established by the World Health Organization in 1995, classified crystalline (free) silica as carcinogenic to humans when inhaled in the form of quartz or cristobalite from occupational sources. Selection of a non-hazardous sandblasting medium will reduce the hazard dust levels that need to be controlled and managed as hazardous wastes.

Non-carcinogenic sand types should be specified for sandblasting. Alternately, products like nutshells, solid carbon dioxide or baking soda-based abrasives should be used to remove deteriorated paint. Ultra-high pressure water jetting of leaded paint is recommended as paint and abrasive dusts are not produced. Names of alternate blasting media suppliers are available by contacting the paint associations listed in this document under section 4 Agency Contacts.

### 3 Waste Management

**Minimizing or avoiding the creation of pollutants and wastes can be more effective in protecting the environment than treating or cleaning them up after they have been created.** -- Canadian Council of Ministers of the Environment

#### 3.1 Pollution Prevention

“Pollution prevention” methods eliminate the creation of environmental contaminants by preventing the waste from being created in the first place. “Pollution control” methods are geared towards treating the waste after it’s created.

Scientific advances in the paint and coatings industry have resulted in the development of superior paints and coatings that provide corrosion resistance on steel and other structures. Leaded paints are no longer required.

Approximately 500 protective coatings and linings are available to provide protection, without lead, for commercial and industrial structures. These coatings have been developed for five general exposure environments (categories) and special purpose materials i.e. exterior service, flooring, immersion service, buried pipe, buried structures and specialty function.

Coating subcategories that list more detailed exposure conditions; types of structures, heat resistance etc., as well as the generic coatings types (e.g. Acrylic, Epoxy, Zinc-rich, Polyurethane. etc.); and the recommended uses, are available in The Journal of Protective Coatings and Linings (ISSN 8755-1985).

Technology Publishing Company in cooperation with the Steel Structures Painting Council publishes the Journal of Protective Coatings and Linings on a monthly basis. The RWED Library has available, for viewing, all monthly issues of the journal from 1994. Coating manufacturers, coating consultants and new technologies are also listed.

Pollution prevention methods for structures with leaded paint include:

- repainting without complete paint removal
- spot painting, overcoating, zone coating, or deferring painting entirely
- alternatives to sandblasting such as cleaning with ultra-high pressure water jets, vacuum power tools, rotary power tools, vacuum head needle guns, and chemical strippers

Because of potential health and environmental hazards, sandblasting should only be considered after a thorough evaluation of the structure and the pollution prevention options.



## **Containment of Paint and Abrasive Debris**

Regardless of the leaded paint removal method, total containment of the leaded paint and abrasive debris or paint strippers is a requirement of the *Environmental Protection Act*.

A containment system must be used to enclose an entire work area or paint removal tool. It includes cover panels, screens, scaffolds, supports and shrouds. The purpose of such a system is to minimize and prevent any generated debris from entering the environment, and to facilitate the controlled collection of the debris for disposal. Containment systems may also employ the use of ground covers or water booms.

Containment devices include:

- drop sheets or tarps
- shrouding or free-hanging enclosures
- total structure enclosures
- negative pressure containment

In general, high-pressure water jetting for paint removal is fast, less expensive than other methods and generates minimal waste. Also, worker safety is increased, as lead paint dust is not created. However, the water must be filtered to remove all paint residues and it must be tested for lead prior to discharge.

Filter fabric is used to remove the paint from the water. The filter fabric and paint residues require containment and managed as hazardous waste. The remaining water requires testing to ensure no more than 5 mg/l (ppm) of total lead remain prior to discharge to the environment or sewage lagoon (Guideline for Industrial Waste Discharges in the NWT). Water analysis is required by EPS prior to receiving discharge authorization.

### **3.3 Recovery of Abrasive and Paint Debris**

Collection of paint residues must be undertaken frequently to prevent dispersal by wind or by sandblasting operations. A vacuum is recommended as a rapid on-site collection method. Sweeping and shoveling are also used for cleaning abrasives from the ground covers.

Collection containers must not allow sandblasting wastes to spill or leak into the environment. Open-top drums or strong plastic bags are examples of materials that can be used for waste collection and storage, pending disposal. Debris collection techniques include:

- capture from surface at point of cleaning (vacuum blasting)
- capture from containment enclosures (sweeping, vacuuming)



### 3.6 Disposal

#### Metallic Lead

Disposal of metallic lead, such as wheel weights or sheeting, can be done by shipping to a lead or metals foundry, or a metals recycler (metallic lead is not listed in the *Transportation of Dangerous Goods Act* or regulations).

#### Inorganic and Organic Lead Chemical Waste

Management is addressed in the Guideline for the Management of Waste Institution - Commercial and Industrial Chemicals.

#### Leaded Paint/Soils

Disposal options for leaded paint and sandblast residue, and lead contaminated soils/materials from pistol and rifle range backstops include transport to a registered hazardous waste disposal facility, or a lead or metals foundry. The receiving facility must be registered in the receiving province or territory and approved to manage that waste.

Names of recycling or disposal companies are available by contacting the waste management associations listed in Appendix II of the General Guideline. Generator registration numbers, waste manifests and registered hazardous waste carrier lists are available from the Environmental Protection Service.

Scientific advances in waste product stabilization and solidification utilizing cement, flyash, zeolites, etc., which chemically bind the lead and prevent environmental release are presently under review. EPS may approve the method, subject to conditions, if leachate test results are in accordance with the Guideline for Industrial Waste Discharges in the NWT and amendments.

If sandblast medium contains iron, the Toxic Characteristic Leaching Procedure (TCLP) cannot be used to meet requirements of the Guideline for Industrial Waste Discharges in the NWT.

Consideration will be given to proposals for alternate management methods that provide a level of environmental protection equivalent to those discussed in this guideline.

## 4 Agency Information

### 4.1 Key to Acronyms

EPA	Environmental Protection Act
EPS	Environmental Protection Service
GNWT	Government of the Northwest Territories
IATA	International Air Transportation Association
ICAO	International Civil Aviation Organization
IMDG	International Maritime Dangerous Goods Code
MSDS	Material Safety Data Sheets
SSPC	Steel Structures Painting Council
TCLP	Toxic Characteristic Leaching Procedure
TDGA	Transportation of Dangerous Goods Act
TDGR	Transportation of Dangerous Goods Regulations
General Guideline	Guideline for the General Management of Hazardous Waste in the NWT

### 4.2 Agency Contacts

Contact these agencies for further information on the proper management of waste lead and lead paint:

#### Government Departments

- Environmental Protection Service  
Department of Resources, Wildlife and Economic Development  
Government of the Northwest Territories  
600, 5102 - 50 Avenue  
Yellowknife, NT X1A 3S8

Phone: (867) 873-7654 Fax: (867) 873-0221

[www.gov.nt.ca/RWED/eps/leg.htm](http://www.gov.nt.ca/RWED/eps/leg.htm)

- Motor Vehicles  
 Department of Transportation  
 Government of the Northwest Territories  
 76 Capital Drive, Suite 201  
 Hay River, NT X0E 1G2  
  
 Phone: (867) 874-5000      Fax: (867) 874-6088
  
- Workers' Compensation Board  
 Box 8888, Yellowknife, NT, X1A 2R3  
  
 Phone: (867) 920-3888 or 1-800-661-0792  
 Fax: (867) 873-0262 or 1-866-277-3677
  
- Health Protection  
 Department of Health and Social Services  
 Government of the Northwest Territories  
 Box 1320, Yellowknife, NT, X1A 2L9  
  
 Phone: (867) 920-8646      Fax: (867) 873-0122  
[www.gov.nt.ca/HLTHSS](http://www.gov.nt.ca/HLTHSS)

#### Paint and Environmental Associations

- Canadian Paint & Coating Association  
 9900 Cavendish Blvd., Suite 103  
 St-Laurent, Quebec H4M 2V2  
  
 Phone: (514) 745-2611      Fax: (514) 745-2031
  
- Environmental Services Association of Alberta  
 10303 Jasper Ave. N.W.  
 Edmonton, Alberta T6E 3N6  
  
 Phone: (780) 429-6363      Fax: (780) 429-4249  
[www.essa.org](http://www.essa.org)
  
- Steel Structure Painting Council of Canada  
 (Northern Alberta & Northwest Territories)  
 c/o Barry Grundy, Regional Manager  
 Sil Industrial Minerals  
 P.O. Box 6100 Station C  
 Edmonton, Alberta T5B 4K5

Phone: (780) 478-7171      Fax: (780) 472-6984

- The Society for Protective Coatings  
40 - 24<sup>th</sup> Street, 6<sup>th</sup> Floor  
Pittsburgh, PA 15222-4656  
USA

Phone: (412) 281-2331      Fax: (412) 281-9992  
[www.sspc.org](http://www.sspc.org)

## 5 Bibliography

Canadian Council of Ministers of the Environment (CCME), 1997 Recommended Guidelines - Canadian Soil Quality Guidelines for Lead; (EC 1996; HC1996).

Animal Health Division of Alberta Agriculture; Lead Poisoning in Cattle; 1998 Government of Alberta.

Journal of Occupational and Environmental Medicine 1999; 41:3-10.  
Lead exposure linked to mental distress.

N. Irving Sax, Richard J. Lewis (1989), Dangerous Properties of Industrial Materials, Seventh Edition, Van Nostrand Reinhold, Publishers, New York, NY.

Kenneth A. Timber, Daniel P. Adley, (1994), Project Design Industrial Lead Paint Removal Handbook Volume II. Technology Publishing Company, Pittsburgh, PA.

Kenneth A. Timber, (1993), Industrial Lead Paint Removal Handbook 2<sup>nd</sup> Edition, Published by KTA-Tator, Inc. Pittsburgh, PA, A Steel Structures Painting Council Text.

Weast, R. C., ed., Handbook of Chemistry and Physics 70<sup>th</sup> Edition, CRC Press, Inc., Boca Raton, Florida, 1989-90.

Richard J. Lewis, Hawley's Condensed Chemical Dictionary, 13<sup>th</sup> Edition, John Wiley & Sons, Inc., New York, NY.

Canadian Council of Ministers of the Environment (CCME), 1999 Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health. ISBN 1-896997-34-1 Publication No. 1299.

# **Guideline for Ozone Depleting Substances (ODSs)**

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February 1998



# Guideline for Ozone Depleting Substances (ODSs)

## 1 Introduction

The stratospheric ozone layer helps filter the sun's harmful ultraviolet (UV) radiation from the earth. Increased UV radiation harms human health and damages animal and plant life. Evidence shows that the main causes of ozone depletion are the releases of manufactured chlorofluorocarbons (CFC's), halons and a few other chemicals into the atmosphere. Hence, these materials are known as ozone depleting substances (ODSs). As one of 134 nations ratifying the Montreal Protocol, an international agreement to protect the ozone layer, Canada is committed to eliminating releases of ODSs.

The intent of this guideline is to assist in the management of ozone depleting substances in the Northwest Territories (NWT). This guideline provides requirements and direction regarding the release, servicing, training, record keeping, labelling and disposal of equipment containing ODSs. For the purposes of this guideline, ODSs include certain air conditioning and refrigerant agents as well as substances contained in certain fire extinguishing equipment. The guideline targets commercial applications which account for 78% of the total sum of stored, leaked and consumed ODSs in the NWT. The total quantity of ODSs in the NWT amounts to over 65 tonnes.

The Guideline for Ozone Depleting Substances does not cover the production, importing or exporting of new, unused ODSs. These activities are controlled under federal regulations by Environment Canada.

This publication is a general guideline affecting the use of ODSs in the NWT. Section 2.2 of the *Environmental Protection Act* (EPA) gives the Minister of Resources, Wildlife and Economic Development the authority to develop, coordinate and administer guidelines. This guideline complements existing acts and regulations that should be consulted for interpretation and application.

### 1.1 Definitions

<i>Air conditioning or Refrigeration equipment</i>	Heat pump, air conditioning, or refrigeration equipment including any motor vehicle air conditioners which contain an ozone depleting substance.
<i>Certified service technician</i>	A technician who is otherwise qualified to service ODS containing equipment and has successfully completed an environmental awareness course for ODSs certified by Environment Canada.
<i>Code of Practice</i>	The Environment Canada publication entitled <u>Code of Practice for the Reduction of Chlorofluorocarbon Emissions from Refrigeration and Air Conditioning Systems</u> (EPS/1/RA/1 March 1991, original date) and subsequent updates.

<i>Fire extinguishing equipment</i>	A portable or fixed unit or system used to extinguish fire, that contains an ozone depleting substance.
<i>Motor vehicle air conditioner</i>	An air conditioning system on a motor vehicle which is a mechanical vapour compression refrigerant system that provides cooling for the passenger compartment of the vehicle and contains an ozone depleting substance as a refrigerant.
<i>Ozone depleting substance</i>	A chlorofluorocarbon, halon or any other substance (ODS) listed in Appendix A of this guideline that has the potential to destroy ozone in the stratosphere.
<i>Portable fire extinguisher</i>	A hand-held or wheeled fire extinguisher containing an ozone depleting substance.
<i>Recover</i>	Collecting an ozone depleting substance in a container which is not regularly a component of the system from which the ODS was removed.
<i>Recycle</i>	Restoring a recovered ozone depleting substance to acceptable purity levels by filtering, drying or distilling.
<i>Servicing</i>	The act of repairing, maintaining or adjusting a component of fire extinguishing, air conditioning, or refrigeration equipment, where the component contains an ozone depleting substance.

## **2 Roles & Responsibilities**

### **2.1 Department of Resources, Wildlife and Economic Development, Environmental Protection Service**

The Department of Resources, Wildlife and Economic Development, Environmental Protection Service (EPS) is responsible for initiatives which control the discharge of contaminants and reduce the impact on the natural environment. EPS is responsible for ensuring that waste management procedures, emission levels and environmentally acceptable disposal methods are maintained. Contact EPS for a listing of relevant regulations and guidelines.

A waste manifest form must accompany ODSs recovered from commercial equipment if moved off site for storage, recycling or disposal. For further information on hazardous waste manifesting please refer to the [Guideline for the General Management of Hazardous Waste in the NWT](#) or contact EPS. Registration numbers and waste manifest forms are available by contacting EPS.

### **2.2 Other Regulatory Agencies**

Environment Canada under the Canadian Environmental Protection Act's *Chlorofluorocarbon Regulations* (SOR/90-127), *Ozone-depleting Substances Regulations* (SOR/94-408) and

*Ozone-depleting Substances Products Regulations* (SOR/90-584) control the import, manufacture, use, sale and export of bulk chlorofluorocarbons, hydrobromofluorocarbons, halons, carbon tetrachloride and methyl chloroform. These regulations reflect Canada's international commitments under the Montreal Protocol to eliminate production and consumption of ODSs.

The Northwest Territories' Department of Municipal and Community Affairs, through the Office of the Fire Marshal is involved with ODSs because several types of fire extinguishing equipment contain halons.

### **2.3 Owners**

Building/facility owners may be affected by phase-outs of ODSs. ODSs are most often found in air conditioning or refrigeration equipment or as halons in fire extinguishing systems. Owners have the responsibility to prevent releases of ODS from equipment.

Automobile owners must not ignore leaky air conditioning equipment containing ODS.

Owners of fire extinguishing equipment containing a halon should be aware of the presence of an ODS in the equipment. Replacement halons are no longer being manufactured or imported into Canada. As a result, these owners should consider plans to phase out the use of halon containing fire extinguishing equipment.

### **2.4 Service Technicians**

Certified service technicians should be hired to repair leaks or damages to equipment containing the ODS as quickly as possible. Service technicians should not fill leaking equipment. Technicians must use proper recovery/recycling equipment and methods to prevent the release of the ODS into the environment. Section 3.5 of this guideline provides additional information on servicing. The technician should inform the building owner when they become aware of leaking equipment.

Automobile service technicians have similar responsibilities to those described above. Only certified technicians should repair leaks to automobile air conditioning equipment.

### **2.5 Vendors of ODSs**

Vendors who sell ODSs other than as part of equipment also have a role in the management of these materials. Vendors are responsible for selling ODSs to only certified technicians. Vendors are encouraged to ensure industry stewardship of ODS refrigerants and fire extinguishing equipment.

### 3 Standards

The following sections outline the requirements for managing ODSs substances in the NWT.

#### 3.1 Release of ODS

ODS releases should not be allowed. The following are the major sources of ODSs in the NWT:

- P refrigeration equipment, including some indoor ice making equipment;
- P air conditioning equipment;
- P motor vehicle air conditioners;
- P fire extinguishing equipment;
- P equipment used in the recovery, recycling or storage of an ODS.

Careful attention should be paid when handling these pieces of equipment. Any leaks in equipment should be repaired before adding an ODS. When servicing, testing or discarding fire extinguishing, air conditioning or refrigeration equipment the certified technician should recover the ODS for reuse or recycling.

Small communities where certified service technicians are not generally available may contact EPS for assistance on developing a plan to properly handle ODS containing equipment including discarded refrigerators and freezers.

##### 3.1.1 Reported Release

The following release limits are in accordance with the *Environmental Protection Act's Spill Contingency Planning and Reporting Regulations*.

Any release of an ODS listed in Appendix A of this guideline, and classified as a class 2 (compressed gas), under *Transportation of Dangerous Goods Regulations* (TDGR) from containers with a capacity greater than 100 L, must be reported immediately to the 24 Hour Spill Report Line by calling (403) 920-8130.

Similarly, a release of 5L or greater of an ODS listed in Appendix A of this guideline, and classified as a class 6 (poisonous substance), under TDGR, must be reported immediately to the 24 Hour Spill Report Line by calling (403) 920-8130.

#### 3.2 Servicing Certification

Only certified technicians should service air conditioning, fire extinguishing, refrigeration or motor vehicle air conditioner equipment. To become certified, a service technician shall successfully complete an environmental awareness course for ODSs certified by Environment Canada<sup>1</sup>. Only a certified technician may purchase or possess an ozone depleting substance

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<sup>1</sup> For environmental awareness certification in the NWT contact Aurora College, Thebacha campus. Contact the Environmental Protection Service for a listing of courses elsewhere.

for the purpose of servicing equipment containing an ODS. Companies employing service technicians will maintain records indicating which employees are certified to service ODS containing equipment.

### **3.3 Sales Record**

If a certified technician purchases an ODS other than as a component in another product, the vendor will require the certified technician to sign an acknowledgement of receipt of the ODS. The vendor should keep a sales record indicating the type of ODS, the date of sale, as well as the name and company of the certified technician.

### **3.4 Record Keeping and Labelling**

All persons who service refrigeration, fire extinguishing or air conditioning equipment with an ozone depleting substance should keep an accurate log of the particulars of the event including quantities, date, name of business and certified technician involved. The record should be tabled chronologically and be made available for inspection by an inspector under the *Environmental Protection Act*. All information and records referred to in this guideline should be maintained for a period of two years.

All new equipment imported into, installed or sold in the NWT that contains an ODS should be clearly labelled with the quantity and type of ODS contained in the equipment.

All vendors and service companies who are required to maintain records are requested to initially provide the Environmental Protection Service (EPS) in writing, the name and mailing address of the company as well as a contact name.

### **3.5 Servicing**

Any technician who services refrigeration, fire extinguishing or air conditioning equipment should do so in accordance with the Code of Practice and this guideline. An ozone depleting substance should never be used for the purposes of leak testing refrigeration or air conditioning equipment. Technicians servicing air conditioning or refrigeration equipment should use equipment that can recover and contain an ODS. Recovery and recycling equipment should meet or exceed minimum performance standards set out in Appendix B.

### **3.6 Disposal of Refrigeration Equipment**

Any equipment that contains an ozone depleting substance should be serviced by a certified technician, and the CFCs or HCFCs removed prior to disposal. Technicians should place a notice on the piece of equipment stating; the date of the service, the certified technician and company name as well as an indication that the equipment no longer contains refrigerant.

Household refrigeration equipment delivered to a municipal solid waste landfill is exempt from requiring removal of ODSs providing the landfill has a separate area identified and prepared for storage of this equipment. Municipalities are encouraged to bring in certified technicians to remove ODSs from stored equipment when quantities warrant. Remote, isolated, small communities where certified service technicians are not generally available may contact EPS for assistance on developing a plan to properly manage ODS containing equipment including discarded refrigerators and freezers.

### **3.7 Motor Vehicle Air Conditioners**

Servicing a motor vehicle air conditioner requires the technician to follow the methods set out in the Code of Practice and the Society of Automotive Engineers (SAE) Standard J-1989. A motor vehicle can not be discarded unless the ozone depleting substance used as a refrigerant in the air conditioner is recovered. Any motor vehicle delivered to a municipal solid waste landfill is exempted from requiring removal of ODSs providing the landfill has a separate area identified and prepared for storage of this equipment. Municipalities are encouraged to bring in certified technicians to remove ODSs from stored equipment when quantities warrant.

### **3.8 Fire Extinguishing Equipment**

Fire extinguishing equipment can not be disposed of unless the ODS is recovered. Recovered halons can be used to provide recharge quantities to existing systems. The Underwriters' Laboratories of Canada (ULC) has published two standards that address halon recycling; Servicing of Halon Extinguishing Systems and Halon Recovery and Re-conditioning Equipment.

It is recommended that a person who owns fire extinguishing equipment that contains more than 40 kgs of an ODS should evaluate alternatives. They should prepare a management plan to eliminate the use of halons. Environment Canada's Environmental Code of Practice on Halons can be used as a guide in developing a halon management plan.

The Montreal Protocol required a phase-out of halon production and consumption by January 1, 1994. However, the Montreal Protocol allows the continued trade of recycled halons, i.e. those produced before January 1, 1994.

Owners of portable fire extinguishers, including marine and household systems, containing an ODS are encouraged to be taken out of service and sales stopped by December 31, 1996.

## 4 Conclusion

**This document is intended as a source of basic information about the issues involved in the management of ODSs. It does not replace the existing legislation which is referenced in the guideline. If you have any questions or concerns please contact the appropriate agency before proceeding.**

1. Environmental Protection Service  
Department of Resources, Wildlife and Economic Development  
600, 5102-50 th Avenue  
Yellowknife, NT, X1A 3S8  
Phone (867) 873-7654; Fax (867) 873-0221
2. Office of the Fire Marshal  
Department of Municipal and Community Affairs  
600, 5201 - 50th Avenue  
Yellowknife, NT, X1A 3S9  
Phone (867) 873-7469; Fax (867) 873-0260
3. Environmental Protection Branch  
Environment Canada  
5204 - 50<sup>th</sup> Ave., Suite 301  
Yellowknife, NT, X1A 1E2  
Phone (867) 669-4725; Fax (867) 873-8185
4. Commercial Chemicals Evaluation Branch  
Environment Canada  
351 St. Joseph Blvd.  
Hull, PQ, K1A 0H3  
Phone (819) 953-1675; Fax (819) 994-0007
5. The Heating, Refrigerating and Air Institute of Canada (HRAI)  
5045 Orbiter Drive, Bldg. 11, Suite 300  
Mississauga, ON, L4W 4Y4  
Phone: 1-800-267-2231
6. Manitoba Ozone Protection Industry Association Inc. (MOPIA)  
2141 - B Henderson Highway  
Winnipeg, MB, R2G 1P8  
Phone (204) 338-0804; Fax (204) 338-0810

## 5 Bibliography

B.C. Environment, Ozone Depleting Substances & You, Victoria, BC, Air Resources Branch, (1994).

Environment Canada, Code of Practice for the Reduction of Chlorofluorocarbon Emissions from Refrigeration and Air Conditioning Systems, Ottawa, ON, (1991).

Environment Canada, Environmental Code of Practice on Halons (Draft), Ottawa, ON, (1995).

New Brunswick Department of the Environment, Status Report on the Ozone Depleting Substances Regulation, Fredericton, NB, Air Quality Section, (1994).

Government of the Northwest Territories, General Guideline for the Management of Hazardous Wastes, Yellowknife, NT, Environmental Protection Service, Department of Resources, Wildlife and Economic Development, (revised 1998).

Government of the Northwest Territories, Ozone Depleting Substances in the Northwest Territories, Yellowknife, NT, Environmental Protection Service, Department of Resources, Wildlife and Economic Development, (revised 1998).

Government of Ontario, Ozone Depleting Substances - Reg.356, Refrigerants-Reg.189, Toronto, ON, Queen's Printer of Ontario, (1994).

Government of Prince Edward Island, Ozone Depleting Substances and Replacement Regulations, Charlottetown, P.E.I., Environmental Protection Division, Department of Environmental Resources, (1994).

Government of the Yukon, Ozone Depleting Substances (ODS) Regulations (Draft), Whitehorse, YT, Environmental Protection & Assessment Branch, Department of Renewable Resources, (1994).

Society of Automotive Engineers (SAE), Standard J-1989.

Underwriters Laboratories of Canada (ULC), Halon Recovery and Reconditioning Equipment, ULC/ORD-C1058.5-1993.

Underwriters Laboratories of Canada (ULC), The Servicing of Halon Extinguishing Systems, ULC/ORD-C1058.18-1993.



# Appendix A

## Ozone Depleting Substances

### 1. Chlorofluorocarbons (CFC's)

a)	CFC-11	trichlorofluoromethane	Not restricted under TDG
	CFC-12	dichlorofluoromethane	TDG class 2.2 Non-flammable gas
	CFC-113	trichlorotrifluoroethane	Not restricted under TDG
	CFC-114	dichlorotetrafluoroethane	TDG class 2.2 Non-flammable gas
	CFC-115	chloropentafluoroethane	TDG class 2.2 Non-flammable gas

b) All other CFCs . Consult TDGA for classification.

c) All isomers and mixtures containing any of the above.

### 2. Hydrochlorofluorocarbons (HCFC's)

a)	HCFC-22	chlorodifluoromethane	TDG class 2.2 Non-flammable gas
	HCFC-123	dichlorotrifluoroethane	Not restricted under TDG
	HCFC-124	chlorotetrafluoroethane	TDG class 2.2 Non-flammable gas

b) All other HCFC's not specifically listed. Consult TDGA for classification.

c) All isomers and mixtures containing any if the above.

### 3. Bromofluorocarbons (Halons)

a)	Halon-1211	bromochlorodifluoromethane	Not restricted under TDG
	Halon-1301	bromotrifluoromethane	TDG class 2.2 Non-flammable gas
	Halon-2402	dibromotetrafluoroethane	Not restricted under TDG

b) All other halons not specifically listed. Consult TDGA for classification.

c) All isomers and mixtures containing any of the above.

### 4. Chlorocarbons

a)	Trichloroethane or methyl chloroform	TDG class 6.1 Poison
	Carbon tetrachloride	TDG class 6.1 Poison

b) All isomers and mixtures containing any of the above.

## Appendix B

### Performance Standards for ODS Recycling or Recovery and Recycling Devices

1. Devices for the recovery and recycling of an ozone depleting substance designed to be used with the type of air conditioning or refrigeration equipment listed in Column I of Table 1 must, during normal operation, be capable of ensuring removal of the refrigerant from the equipment being serviced by reducing the system pressure, below atmosphere, to the level listed in Column II of Table 1 opposite the type of equipment.

**Table 1**

<b>Column I</b>		<b>Column II</b>
	<b>inches of mercury ( vacuum)</b>	<b>micrometers of mercury (absolute pressure)</b>
Very high pressure equipment	0	760000
High pressure equipment with a charge of 23 kg or less	10	506000
High pressure equipment with a charge of more than 23 kgs	20	252000
Intermediate pressure equipment	25	125000
Low pressure equipment	29	23000

2. Devices for recovery or recovery and recycling intended for use with small appliances that contain an ozone depleting substance in their cooling system such as household refrigerators, or household freezers must recover a minimum of 90% of the refrigerant in the cooling system of the appliance. Devices for recovery and recycling intended for use with small appliances that do not have an operational compressor must recover a minimum of 80% of the refrigerant in the cooling system of the appliance.

# **Guideline for the Management of Waste Paint**

## **1 Introduction**

- 1.1 Definitions**
- 1.2 Characteristics**
- 1.3 Potential Effects**

## **2 Roles and Responsibilities**

- 2.1 Environmental Protection Service**
- 2.2 Generators**

## **3 Waste Management**

- 3.1 Pollution Prevention**
- 3.2 Storage**
- 3.3 Transportation**
- 3.4 Disposal**

## **4 Conclusion**

**Contact list**

**September 1998**

# Guideline for the Management of Waste Paint

## 1 Introduction

This guideline provides general information on proper management of waste paint. Waste paint is a contaminant under the *Environmental Protection Act* (EPA) of the NWT and must be managed as a hazardous waste.

Paints are used to protect a surface from corrosion, oxidation, or other type of deterioration and to provide decorative effects. Alkyd paints and speciality coatings contain solvents and other chemicals that are corrosive, flammable, reactive and toxic. Recently the use of lead in modern household paint has been restricted by federal legislation. For the management of lead paint removed from steel or other structures, refer to the Guideline for the Management of Waste Lead.

This guideline is specific to the management of waste paint and should be read in conjunction with the Guideline for the General Management of Hazardous Waste in the NWT (referred to as the General Guideline). Section 2.2 of the Act gives the Minister of Resources, Wildlife and Economic Development the authority to develop, coordinate and administer these guidelines.

### 1.1 Definitions

<i>Alkyd paint</i>	Oil based paint.
<i>Generator</i>	The owner or person in charge, management or control of a hazardous waste at the time it was generated, or a facility that generates hazardous waste.
<i>Latex paint</i>	Water based paint.
<i>Paint</i>	A uniformly dispersed mixture having a viscosity ranging from a thin liquid to a semi-solid paste consisting of: (1) drying oil, synthetic resin or binder; (2) a solvent or thinner; (3) and organic or inorganic pigment.
<i>Speciality coatings</i>	A group of modern chemical compounds designed for protecting materials under exacting conditions such as chemical tank linings, concrete coating at sewage treatment plants and other industrial applications. Examples include: acrylic, asphaltic, epoxy, flexible ceramic, phenolic, polyester, polyurethane, vinyl ester.
<i>Transport authority</i>	The regulations controlling the management of hazardous waste under that mode of transport. These include:  Road and rail - <i>Transportation of Dangerous Goods Act</i> (TDGA) and <i>Regulations</i> (TDGR)  Air - <i>International Civil Aviation Organization Technical Instructions</i> (ICAO)

Marine - *International Maritime Dangerous Goods Code (IMDG)*.

*Waste paint*

Alkyd, latex or speciality coatings which are no longer used for its original purpose and is intended for storage, recycling or disposal but does not include dried paint or dried paint chips.

## **1.2 Characteristics**

Alkyd paints contain oil and solvents which are toxic and flammable. Cleaning of painting equipment requires the use of solvents which have the same hazardous properties as alkyd paint. Solvent management procedures are provided in the Guideline for the Management of Waste Solvents.

Latex paints are nonflammable and offer ease of application. They generally do not have a disagreeable odor and can be used on both interior and exterior surfaces. Paint brushes and other tools are easily cleaned up with soap and water. Latex paint wastes are not hazardous wastes and can be disposed into most sewage treatment systems or landfills. Depending on the location, municipal approvals may be required.

Speciality paints and coatings are gaining greater acceptance and becoming common place in the paint industry. These new generation paints are derived from chemical compositions that can withstand extreme environment and temperature conditions. Many speciality coatings are a two-component mix; a base and a hardener. Epoxy coatings are one example. The hazard characteristics (TDGR Classification) of speciality coatings are identified on the Material Safety Data Sheets (MSDS) provided by the manufacturer. These should be reviewed prior to use of the product.

## **1.3 Potential Effects**

The oils and solvents in alkyd paints and speciality coatings are toxic. If released into the environment they have the potential to contaminate drinking water supplies, groundwater and can be toxic to plants and aquatic animals. Water contaminated by paints and the solvents used to clean painting tools can also contaminate drinking water supplies and other areas of the environment.

Vapors released from alkyd paint are toxic to humans if inhaled over a long period of time in high enough concentrations. These vapours have the potential to start a fire if exposed to a spark or flame and support a fire once started because they are flammable.

Speciality coatings, especially two-component systems, may also be toxic, flammable, reactive or corrosive. Handling and safety procedures should be in accordance with the MSDS.

## 2 Roles and Responsibilities

### 2.1 Environmental Protection Service

The Environmental Protection Service (EPS) of the Department of Resources, Wildlife and Economic Development is the Government of the Northwest Territories' (GNWT) agency responsible for initiatives which control the discharge of contaminants and their impact on the environment. EPS is responsible for ensuring that environmentally acceptable management procedures, emission levels and disposal methods are maintained. EPS programs are applied primarily to Commissioner's Land, lands administered by municipal governments or GNWT undertakings. Legislative authority is provided by the EPA and *Pesticide Act*. Contact EPS for a listing of relevant regulations and guidelines.

### 2.2 Generators

**The responsibility for proper waste management rests with the generator and should be considered as part of the cost of doing business.**

Every person who generates waste paint is responsible for the proper management of these substances. Waste paint must be safely handled, packaged, stored, transported, treated and/or disposed in accordance with this guideline and all applicable Acts and regulations.

## 3 Waste Management

**Minimizing or avoiding the creation of pollutants and wastes can be more effective in protecting the environment than treating them, or cleaning them up after they have been created.**

Canadian Council of Ministers of the Environment

### 3.1 Pollution Prevention

Pollution prevention methods reduce or eliminate the generation of waste. Pollution control practices treat waste after it has been generated. Pollution prevention strategies for paint include the following:

#### Reduce

- ? Purchase the correct amount of paint for the size of the job to minimize leftover excess paint.
- ? Train staff in proper painting techniques to improve painting efficiencies.
- ? Use water-based or latex paints instead of more toxic alkyd paints.
- ? Use powder coats instead of liquid paints where applicable.

## Recycle

- ? Mix compatible paint leftovers as a utility blend.
- ? Make excess paints available for use by others.
- ? Bulk compatible paints in appropriate containers and transport to approved paint recyclers.
- ? Make an agreement with your supplier/distributor of paint to return the unused paint.

## 3.2 Storage

### **Waste storage is not a long term solution.**

Store waste paint according to the following:

- ? Use original containers where possible, containers manufactured for the purpose or bulk paint into 16 gauge or lower steel or plastic drums.
- ? Use containers that are sound, sealable and not damaged or leaking.
- ? Label containers according to the requirements of the Work Site Hazardous Materials Information System (WHMIS) of the *Safety Act*, or the relevant Transport Authority if transport to a recycling or disposal facility is planned. (see Section 3.3 Transportation)
- ? Keep the containers sealed or closed at all times.
- ? Containers must be protected from the weather and physical damage.
- ? Train personnel in the safe use, storage and shipping procedures for waste paint. Only trained persons should have access to the storage area.

The storage of waste paint is only acceptable as an interim measure to permit time for the collection of sufficient volumes for cost effective transport to a recycling or disposal facility.

Storage of waste paint in quantities greater than 1000 kilograms for a period greater than 180 days requires the site to be registered as a hazardous waste storage facility. Consult the General Guideline or contact EPS for application procedures.

## 3.3 Transportation

This section applies to all paints and coatings classified as a dangerous goods under TDGR, specifically alkyd paints and speciality coatings. Latex paints are not included in this section.

The transportation of waste paint to an approved recycling, treatment, disposal or management facility requires proper classification, packaging, labeling and manifesting as required by the transport authority (air, road, rail, marine). Specific requirements for waste generators and carriers are detailed in the General Guideline.

For road transportation purposes, waste paint can be classified in the following ways, depending on the type of paint.

Shipping Name:                    **Waste Paint (or Waste Paint Related Materials)**  
**Classification: Class 3**  
**P.I.N.: UN1263**  
**Packaging Group: II or III**  
**Special Provision 108**

Shipping Name:                    **Waste Paint (or Waste Paint Related Materials)**

**Classification: Class 8**  
**P.I.N.: UN3066**  
**Packaging Group: II or III**  
**Special Provision 108**

Further consultation with the transport authority is recommended.

Generator numbers, waste manifests and registered hazardous waste carrier lists are available from the Environmental Protection Service.

### **3.4 Disposal**

**Regardless of the type of paint, using it for the intended purpose is the preferred management method.**

Domestic waste paint and speciality coatings may be accepted for exchange at community "Household Hazardous Waste Day" locations operated by the municipality. The paint industry is currently expanding its product stewardship program and is accepting waste paints for recycling into new paint products. Approved paint recyclers are available by contacting the Canadian Paint and Coatings Association listed at the end of this guideline.

The best disposal option for waste alkyd and speciality paint is to bulk it in good quality 205 litre steel or plastic drums, in a condition suitable for shipping. List it with a waste exchange or send it to a registered recycling or disposal facility. Contacts for recycling and disposal companies are available by contacting the waste management associations listed in Appendix II of the General Guideline.

Less than 5 litres of alkyd paint can be allowed to dry fully and taken to the landfill. Fully dried-out quantities of latex paints may be disposed of at a landfill or placed in the garbage for collection.

Paint can be air dried by spreading it out on a board, plastic sheet or other flat surface until all the liquid has evaporated. Dry paint outdoors in a well ventilated area. For safety purposes open flames must not be present. Prevent children, pets or wildlife from coming into contact with the paint.

Management of speciality coatings is determined by the hazard characteristics of each product as identified in the MSDS. For two-component products, special neutralizing agents or procedures may be required. Due to the chemical nature of speciality coatings, the manufacturer or a waste management company should be consulted for the disposal options. EPS may approve the method, subject to conditions.

Consideration will be given to proposals for alternate management methods that provide a level of environmental protection equivalent to complying with this guideline. The EPS may approve the method, subject to conditions.



## 4 Conclusion

This guideline presents a brief introduction into the management of waste paint. It is intended as a source of basic information and should be read in conjunction with the Guideline for the General Management of Hazardous Waste in the Northwest Territories.

For more information contact:

- 1) Canadian Paint & Coatings Association  
9900 Kavendish Blvd. Suite 103  
St.Laurent PQ H4M 2V2  
Phone: (514) 745-2611 Fax: (514) 745-2031
  
- 2) Environmental Protection Service  
Department of Resources, Wildlife and Economic Development  
600, 5102-50 Avenue  
Yellowknife NT X1A 3S8  
Phone: (867) 873-7654 Fax: (867) 873-0221
  
- 3) Motor Vehicles  
Department of Transportation  
76 Capital Drive, Suite 201  
Hay River NT X0E 1G2  
Phone: (867) 874-5000 Fax: (867) 874-6088
  
- 4) Prevention Services Division  
Workers' Compensation Board  
Box 8888  
Yellowknife NT X1A 2L9  
Phone: (867) 920-3888 Fax: (867) 873-0262
  
- 5) Steel Structures Painting Council  
40 - 24th Street, Suite 600  
Pittsburgh, PA 15213  
United States of America  
Phone: (412) 281-2331 Fax: (412) 281-9992

# **Guideline for the Management of Waste Solvents**

## **1 Introduction**

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Contact list

September 1998

# Guideline for the Management of Waste Solvents

## 1 Introduction

This guideline provides general information on proper management of waste solvents. Waste solvents are a contaminant under the *Environmental Protection Act* (EPA) of the NWT and must be managed as a hazardous waste.

Solvents can dissolve other substances (solute) and form a uniformly dispersed mixture (solution). The major uses include paint and coatings (paints, varnishes, and lacquers), industrial cleaners, printing inks, extractive processes and pharmaceuticals. Solvents are generally produced from petroleum or alcohol feedstock. Many solvents are flammable and toxic; substances that can contribute to fire hazards and the contamination of air and water.

This guideline is specific to the management of waste solvents and should be read in conjunction with the Guideline for the General Management of Hazardous Waste in the NWT (referred to as the General Guideline). Section 2.2 of the EPA gives the Minister of Resources, Wildlife and Economic Development the authority to develop, coordinate and administer these guidelines.

### 1.1 Definitions

<i>Flash Point</i>	The lowest temperature at which a flammable liquid produces a sufficient amount of vapor to ignite with a spark.
<i>Fumes</i>	Vapors of organic liquids.
<i>Generator</i>	The owner or person in charge, management or control of a hazardous waste at the time it is generated, or a facility that generates hazardous waste.
<i>Solvent</i>	Alcohol or petroleum based liquids capable of dissolving another substance (solute) to form a uniformly dispersed mixture (solution) at the molecular level.
<i>Transport authority</i>	The regulations controlling the management of hazardous waste under that mode of transport. These include:  Road and rail - <i>Transportation of Dangerous Goods Act</i> (TDGA) and <i>Regulations</i> (TDGR)  Air - <i>International Civil Aviation Organization Technical Instructions</i> (ICAO)  Marine - <i>International Maritime Dangerous Goods Code</i> (IMDG).

<i>Vapor</i>	An air dispersion of molecules of a substance that is liquid or solid in its normal state (at standard temperature and pressure).
<i>Vapor pressure</i>	The pressure characteristic at any given temperature of a vapor in equilibrium with its liquid or solid form. (Usually expressed in millimeters of mercury, mm Hg)

## **1.2 Characteristics**

Solvents are flammable and toxic chemical liquids. Most solvents are derived from petroleum or alcohol based feedstock. Some are more flammable than others because of differences in vapor pressure. Solvents are toxic by ingestion, skin contact, and vapor inhalation. Solvent vapors can also deprive the lungs of oxygen.

Solvent vapors, if they originate from flammable solvents, can explode. If the vapor is present in air at concentrations higher than the lower explosive limit (LEL) and lower than the upper explosive limit (UEL), there is the potential for an explosion if a spark or static charge is present. Depending on the type of solvent the vapour may be explosive in air at concentrations as low as one percent.

## **1.3 Potential Effects**

Numerous human health disorders are attributed to solvent exposures. Long term or chronic exposure to specific types of solvents can damage vital organs and affect the human immune system.

Improperly managed solvents can harm or kill plants, wildlife and aquatic life. Water contaminated by solvents can adversely affect a community water supply system and the health of the community.

Chlorinated solvents bioaccumulate and are difficult to destroy. Chlorinated solvents are commonly found in cleaning and degreasing operations and the refrigeration industry. Over-use and improper management of chlorinated solvents has resulted in damage to the global ozone layer. Waste solvents require responsible management.

## **2 Roles and Responsibilities**

### **2.1 Environmental Protection Service**

The Environmental Protection Service (EPS) of the Department of Resources, Wildlife and Economic Development is the Government of the Northwest Territories' (GNWT) agency responsible for initiatives which control the discharge of contaminants and their impact on the environment. EPS is responsible for ensuring that environmentally acceptable management procedures, emission levels and disposal methods are maintained. EPS programs are applied primarily to Commissioner's Land, lands administered by municipal governments or GNWT undertakings. Legislative authority is provided by the EPA and *Pesticide Act*. Contact EPS for a listing of relevant regulations and guidelines.

### **2.2 Generators**

**The responsibility for proper waste management rests with the generator and should be considered as part of the cost of doing business.**

Any person who generates waste solvents is responsible for the proper management of these substances. Waste solvents must be safely handled, packaged, stored, transported, treated and/or disposed in accordance with this guideline.

## 3 Waste Management

**Minimizing or avoiding the creation of pollutants and wastes can be more effective in protecting the environment than treating them, or cleaning them up after they have been created.**

Canadian Council of Ministers of the Environment

### 3.1 Pollution Prevention

Pollution prevention methods reduce or eliminate the generation of waste. Pollution control procedures treat waste after it has been generated. Pollution prevention strategies for solvents include the following:

#### Reduce

- ? Develop inventory control methods and ensure quantities of materials are completely utilized.
- ? Substitute less hazardous chemicals.

#### Reuse

- ? Participate in national, provincial or territorial waste exchange programs.
- ? Establish exchange accounts with approved solvent recyclers.
- ? Develop small scale recycling options (ie: filtering, decanting, solvent distillation).

#### Recycling

- ? Make an agreement with your supplier/distributor of solvent to return the waste solvent.

### 3.2 Storage

**Storage is not a long term solution.**

Store waste solvents according to the following:

- ? In the original containers, where possible, or in containers manufactured for this purpose of storing hazardous waste. Use containers that are sound, sealable and not damaged.
- ? Bulk into good quality 16 gauge or lower steel or plastic drums.
- ? The containers should be sealed or closed at all times.
- ? Label containers according to the requirements of the Work Site Hazardous Materials Information System (WHMIS) of the *Safety Act* or the relevant Transport Authority if transport to a disposal location is planned. (see Section 3.3 Transportation).
- ? Protect containers from the weather and physical damage.
- ? Storage should be in a secure area with controlled access.
- ? Train personnel in the safe use, storage and shipping procedures for solvents. Only trained persons should have access to the storage area.

Wastes should be stored to prevent spills from entering sewer systems or the environment. Waste solvents should **NEVER** be stored in used food containers such as bottles or cans.

The storage of waste solvents is only acceptable as an interim measure to permit time for the collection of sufficient volumes for cost effective transport to a recycler or disposal facility.

Storage of waste solvents in quantities greater than 1000 litres, for a period greater than 180 days requires registration as a hazardous waste storage facility. Consult the [General Guideline](#) or contact EPS for application procedures.

### **3.3 Transportation**

Waste solvents transported to a recycling, treatment, storage or disposal facility must be properly classified, packaged, labeled and manifested as required by the transport authority (air, road, rail, marine). Specific requirements for waste generators are detailed in the [General Guideline](#).

For road transportation purposes, waste solvents can be classified in the following ways, depending on the type of solvent.

Shipping Name:                    **Waste Naphtha, Petroleum**  
**Classification: 3**  
**P.I.N.: UN1256**  
**Packaging Group: I, II, III**

Shipping Name:                    **Waste Flammable Liquids, N.O.S.**  
**Classification: 3**  
**P.I.N.: UN1993**  
**Packaging Group: I, II, III**

Chlorinated, brominated and other halogenated solvents require shipping names specific to the solvent. Consultation with the transport authority is recommended.

Generator numbers, waste manifests and registered hazardous waste carrier lists are available from the Environmental Protection Service.

### **3.4 Disposal**

Compatible solvents should be bulked for transportation and shipped to a registered recycling or disposal facility. Contacts for recycling or disposal companies are available by contacting the waste management associations listed in Appendix II of the [General Guideline](#).

Consideration will be given to proposals for alternate management methods that provide a level of environmental protection equivalent to complying with this guideline. EPS may approve the method, subject to conditions.

## 4 Conclusion

This guideline presents a brief introduction into the management of waste solvent. It is intended as a source of basic information and should be read in conjunction with the Guideline for the General Management of Hazardous Waste in the Northwest Territories. Please contact the appropriate agency before proceeding.

For more information contact:

- 1) Environmental Protection Service  
Department of Resources, Wildlife and Economic Development  
600, 5102-50 Avenue  
Yellowknife NT X1A 3S8  
Phone: (867) 873-7654 Fax: (867) 873-0221
  
- 2) Motor Vehicles  
Department of Transportation  
76 Capital Drive, Suite 201  
Hay River NT X0E 1G2  
Phone: (867) 874-5000 Fax: (867) 874-6088
  
- 3) Prevention Services Division  
Workers' Compensation Board  
Box 8888  
Yellowknife NT X1A 2R3  
Phone: (867) 920-3888 Fax: (867) 873-4596