NORTHWEST TERRITORIES
POWER
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An NT Hydro Company

WASTE MANAGEMENT PLAN

SNARE HYDROELECTRIC FACILITIES
PLANT #121
BIG SPRUCE LAKE, NORTHWEST TERRITORIES

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1 INTRODUCTION

1.1 INTRODUCTION

The Northwest Territories Power Corporation (NTPC) has prepared this Waste Management Plan (WMP) for their Snare Lake Hydroelectric Facility (the Facility) located on the South shore of Big Spruce Lake, Northwest Territories. The Snare Hydro system is a remote power generating facility located approximately 145 km northwest of Yellowknife on the Snare River (see Section 1.3). The system is a cascade type development comprised of four hydro plants: Snare Rapids, Snare Falls, Snare Cascades, and Snare Forks. The four plants are connected by an all-weather road. Air access to the Facility is available year round. Personnel and freight are delivered to the Facility by aircraft which land on Big Spruce Lake and at the all-weather landing strip located near Snare Falls. A winter road is constructed annually linking the Facility to Yellowknife via NWT Highway #3, allowing fuel, oversized equipment, and freight to be delivered to site.

NTPC handles several hazardous substances at its power generation facilities and has a responsibility to protect and conserve the environment. Proper management of hazardous materials is important for the protection of the health and safety of employees, the community, and the environment. The production of hazardous wastes as a result of electricity generation and other activities is a normal result of ongoing activities.

1.2 PURPOSE

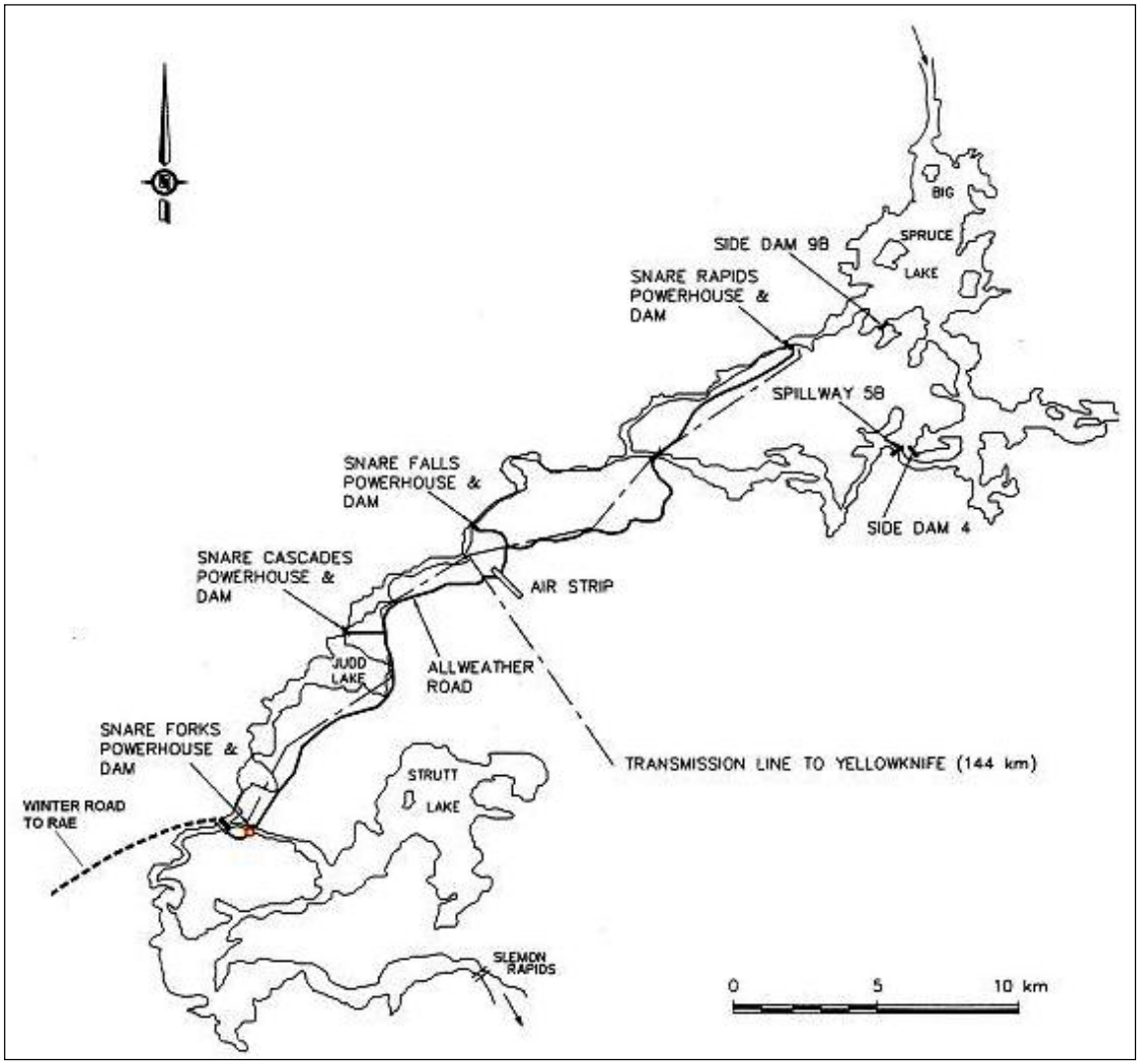
The purpose of the WMP is to provide a consolidated source of information on the safe and environmental sound transportation, storage, and handling of the major hazardous products and wastes used and generated at the Snare Hydroelectric Facility. A hazardous material is one that, as a result of its physical, chemical or other properties, poses a hazard to human health or the environment when improperly handled, used, stored, disposed of, or otherwise managed.

NTPC is committed to preventing, to the greatest extent possible, both inadvertent release of these substances to the environment and accidents resulting from a mishandling or mishap. NTPC will institute programs for employee training, facility inspection, periodic drills to test systems, and procedural review to address deficiencies, accountability, and continuous improvement objectives. NTPC will actively work towards minimizing the generation of hazardous wastes by investigating alternatives to the use of hazardous materials, by recycling products and containers whenever feasible and by treating wastes using state-of-the-art technologies before any release to the environment.

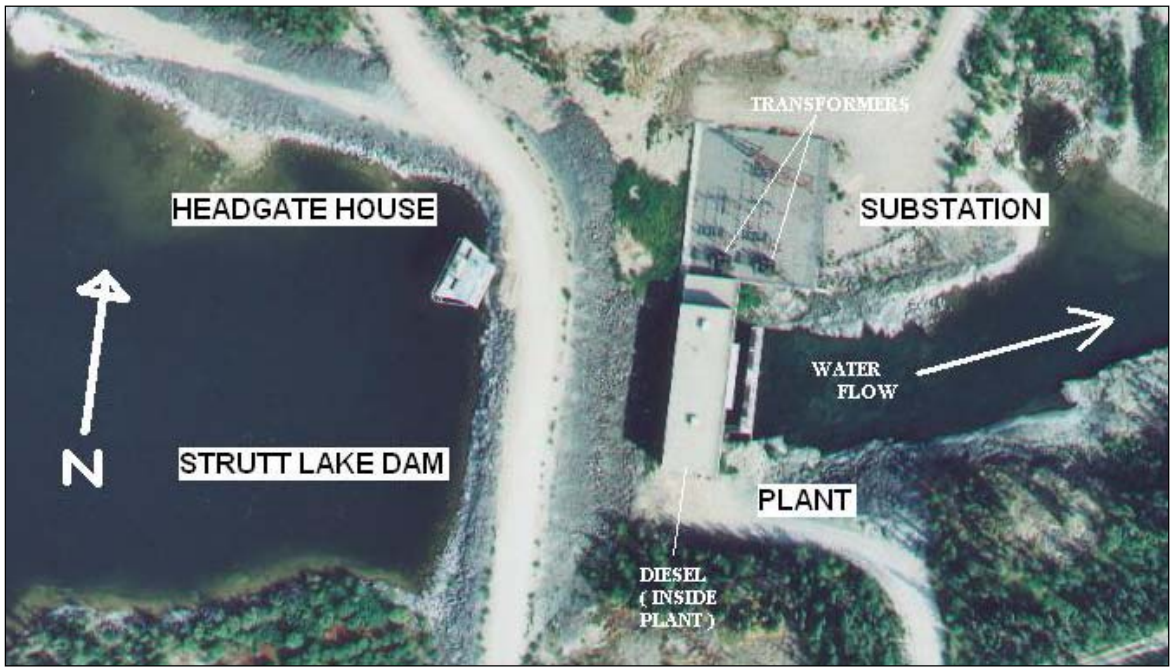
The WMP will form a component of the Environmental Management System (EMS) for the Project. As such, it is a working document that will be reviewed and updated on a regular basis.

1.3 SNARE HYDROELECTRIC FACILITY LOCATION AND LAYOUT

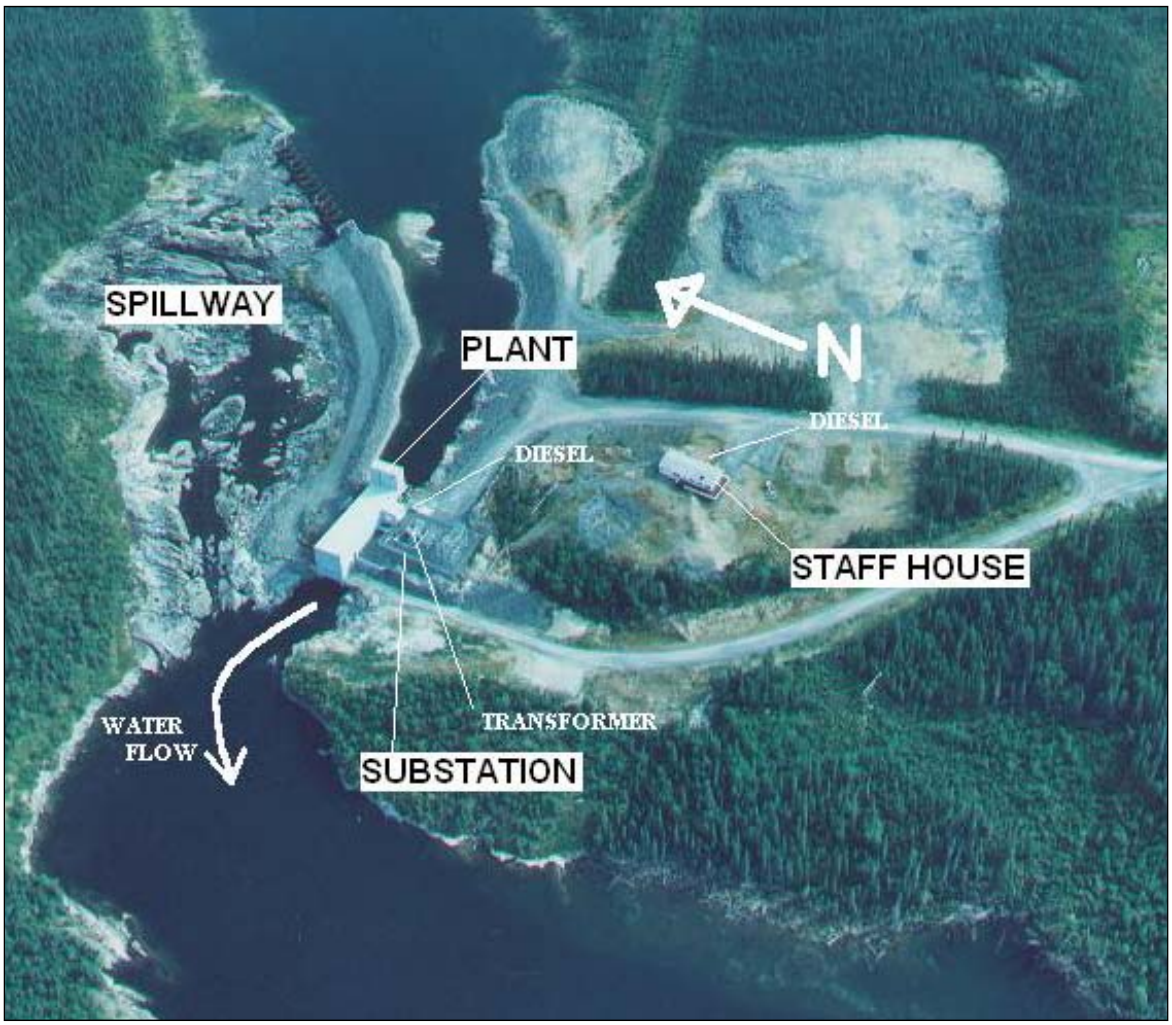
Snare Hydro System



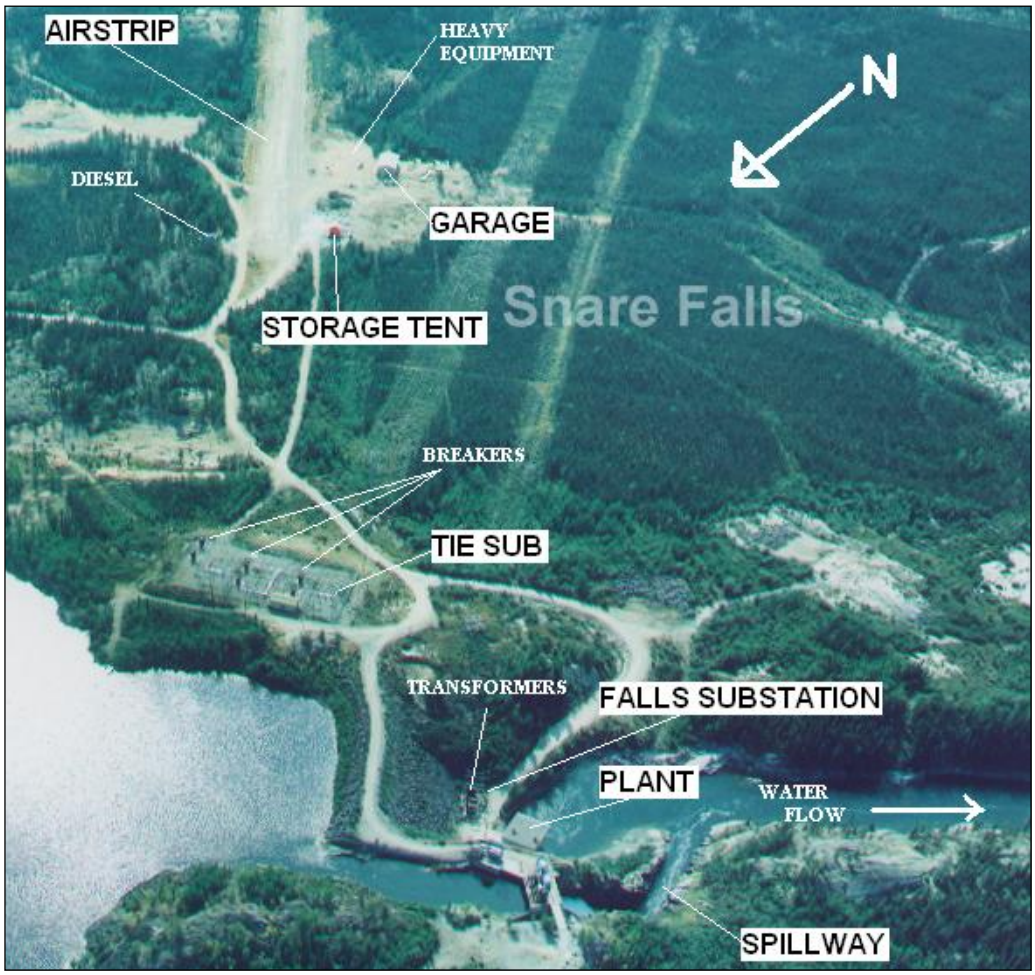
Snare Forks Facility



Snare Cascades Facility



Snare Falls Facility



NTPC Plant Site Area – Snare Rapids

The WMP is based on the following principles of best management practice for hazardous materials:

- Identify and prepare materials and waste inventories.
- Characterize potential environmental hazards posed by those materials.
- Allocate clear responsibility for management hazardous materials.
- Describe methods for transport, storage, handling and use.
- Identify means of long-term storage and disposal.
- Prepare contingency and emergency response plans.
- Ensure training for management, workers and contractors whose responsibilities include handling hazardous materials.
- Maintain and review records of hazardous material consumption and incidents in order to anticipate and avoid impacts on personal health and the environment.

1.4 SCOPE

This WMP will cover all hazardous materials used at the Snare Hydroelectric Facility to ensure they will be stored, handled and transported on-site in compliance with all applicable federal and territorial regulations. For the purpose of this WMP, hazardous wastes generated at the Facility are included in the definition of hazardous materials. The WMP is specific to the Facility and is intended to supplement the NTPC Hazardous Waste Management Plan which addresses the specific requirements around disposal of hazardous wastes at NTPC facilities.

The WMP applies to all casual, permanent, part-time, and full-time employees and contractors who conduct work or provide services at the Facility. This WMP covers activities and operations conducted at the Facility.

1.5 NTPC'S CORPORATE ENVIRONMENTAL POLICY

- Conduct operations in an environmentally sound manner which ensures compliance with all applicable national and local regulations.
- Assign accountability and responsibility for implementation of the environmental policy and make environmental performance an important factor in the management review process.
- Provide adequate resources, personnel, and training so that all employees are aware of and able to carry out their responsibilities in accordance with the environmental policy.
- Communicate openly with employees, regulatory agencies, and the public on environmental issues and address concerns pertaining to potential hazards and impacts.
- Work in cooperation with industry, the public, and government toward the development of responsible environmental policies, laws, and regulations.
- In locations where environmental regulations are absent apply the best management practices to achieve environmental protection consistent with industry standards.
- Implement operating practices which incorporate the efficient use of energy and materials, and minimizes the use and production of hazardous substances.
- Establish and maintain appropriate emergency response plans for all activities and facilities.
- Maintain a self-monitoring program at each facility to ensure compliance.
- Conduct periodic environmental assessments at all NTPC facilities and develop and implement action plans to correct potential deficiencies in a timely manner.
- Encourage all employees to report to management any known or suspected departure from this policy or related procedures.

NTPC recognizes that incorporating proper hazardous material management into other environmental management plans and systems leads to risk reduction, improved process control, and cost savings. This WMP will form a component of the Facility's Environmental Management System (EMS). As such, it is a

working document that will be reviewed and updated on a regular basis. At a minimum the WMP will be reviewed and updated annually. Training is provided on the following NTPC policies, procedures, and information sources, which are available at the Facility and/or on the NTPC Intranet Powerbox:

- Spill Response Plan
- Emergency Response Procedure
- Hazardous Waste Management Plan
- Waste Management Plan
- Fuel Transfer Procedures
- Safety Rulebook

The WMP is presented to all employees and contractors during their on-site orientation sessions.

1.6 APPLICABLE LEGISLATION

Both federal and territorial legislation regulate the management of hazardous materials and hazardous wastes in Northwest Territories. Management and safety personnel will provide an overview of the applicable regulations to all employees as part of their initiation and ongoing training. The acts, regulations and guidelines pertinent to hazardous products that will be used at the Snare Hydroelectric Facility are listed in Appendix B.

The federal Transportation of Dangerous Goods Act classifies hazardous materials into nine main classes according to an internationally recognized system, as follows:

Class 1 – Explosives

Class 2 – Compressed Gases

Class 3 – Flammable or Combustible Liquids

Class 4 – Flammable Solids

Class 5 – Oxidizing Substances

Class 6 – Poisonous and Infectious Substances

Class 7 – Nuclear Substances

Class 8 – Corrosives

Class 9 – Miscellaneous

The materials addressed in this document are also identified by class.

1.7 RESPONSIBILITIES

As with all other aspects of the Health and Safety policy at NTPC, all employees will be expected to comply with all applicable precautions and handling procedures with regard to hazardous materials. Employees are also expected to report any concerns to their supervisors, the plant operator, the Joint Health and Safety Committee, or senior site management. Contractor employees working on the construction site will be expected to report any concerns to the Construction Safety Coordinator (CSC) employed by the contractor for all construction operations. The CSC is responsible for the management of hazardous materials in all construction areas. All staff are encouraged to bring forward suggestions for improvements that can be incorporated into procedure revisions as appropriate.

Onsite NTPC Employees and Contractors

- Ensure worksite and personnel safety.
- Ensure hazardous materials are stored in their appropriate designated storage area.
- Know the location of designated storage areas, spill response materials, first aid stations, emergency and safety equipment, Material Safety Data Sheets (MSDS), emergency exits, and muster stations.
- Wear appropriate personal protective equipment (PPE).
- Know the handling, storage and spill prevention requirements.
- Comply with all NTPC and Facility policies and procedures when performing duties.

Plant Operator

- Ensure the safety of all personnel and the site.
- Ensure all new site personnel and contractors are oriented and have access to all the required documentation.
- Organize inspections of site hazardous material/waste management practices and storage areas, and ensure that appropriate records are maintained.
- Ensure all NTPC employees and contractors adhere to the requirements of the WMP.
- Participate in annual reviews of the WMP with the Manager, Health, Safety and Environment.

Engineering Project Monitors

- Ensure the safety of all Project personnel and the Project areas.
- Ensure all new construction site personnel and contractors are oriented and have access to all the required documentation.
- Organize inspections of site hazardous material/waste management practices and storage areas, and ensure that appropriate records are maintained.
- Ensure all construction employees, contractors and sub-contractors adhere to the requirements of the WMP.

Community Stores Person (Industrial Warehouseman or Customer Service Representative)

- Ensure that hazardous materials/wastes are received at the warehouse are stored, transported and disposed of according to the requirements of the WMP and WMP
- Maintain appropriate records.

Manager, Operations

- Ensure that the Plant Operator has the available resources to effectively implement the WMP.

Manager, Health, Safety & Environment

- Maintain and complete the annual review of the WMP.
- Ensure that all WMP documentation remains up-to-date and the updated versions are distributed out to the personnel on site, external agencies and organizations. A formal record is kept of all distribution and amendments.
- Periodically audit hazardous materials management at the Facility to support continuous improvement.
- In coordination with the Plant Operator, prepare and submit any formal reports to regulators and NTPC management regarding the management of hazardous materials.

Third Party Contractors and Suppliers

- Ensure worksite and personnel safety.
- Ensure hazardous materials are stored in their appropriate designated storage area.
- Know the location of the designated storage areas, spill response materials, first aid stations, emergency and safety equipment, Material Safety Data Sheets (MSDS), emergency exits, and muster stations.
- Wear appropriate personal protective equipment (PPE).
- Know the handling, storage and spill prevention requirements.
- Comply with all NTPC and Facility policies and procedures when performing duties.

1.8 MAINTENANCE OF PLAN

The Manager, Corporate Health, Safety & Environment will maintain the WMP current. The Plan will be reviewed annually, but may also be reviewed more frequently as required (e.g. due to a new or amended legislation or the addition/deletion of a hazardous material or waste to/from Snare Hydroelectric Facility use).

A record will document all significant changes that have been incorporated in the WMP subsequent to the latest annual review. The record will include the names of the persons who made and approved the change, as well as the date of the approval.

1.9 ACCESS TO ADDITIONAL COPIES

Additional copies of the plan can be obtained by contacting the Plant Operator at (867) 669-3381 or the NTPC Onsite Construction Representative at (867) 669-6878.

1.10 MATERIAL SAFETY DATA SHEETS (MSDS)

NTPC maintains Material Safety Data Sheets (MSDS) for all controlled products that are used, stored, and handled at NTPC work sites (source: Consolidation of Work Site Hazardous Materials Information System Regulations R.R.N.W.T. 1990, c.S-2).

MSDS Solutions, a web-based program, is used to maintain and update the MSDS for NTPC. All NTPC employees with computer access can view current MSDS for NTPC products by visiting the following website:

http://eservice.msds.com

In order to login to the site, the following username and password must be entered:

Username: ntpc
Password: ntpcmsds

If employees cannot locate MSDS on the website for products in use at NTPC sites, or if obsolete products are noted on the site, please advise the Manager, Logistics via phone or email. An email can be forwarded directly to the Manager from the MSDS Solutions website by clicking the “Request” button once logged onto the main screen. Otherwise, use the following contact information:

Rod Gray, Phone: (867) 874-5208, rgray@ntpc.com

Sites with reliable Internet access do not require the maintenance of an MSDS binder (paper copy) unless it is the preference of the employees working at that site. Only remote sites without Internet access require current MSDS binders to be maintained on-site. It is the responsibility of the employee or contractor to request up-to-date MSDS binders for remote sites without Internet access in their regions. To acquire an up to date MSDS binder please contact the Environmental Analyst at (867) 874-5248.

1.11 GENERAL EMERGENCY RESPONSE

NTPC maintains procedures for responding to emergency situations and accidents, including any specific procedures that are required by environmental legislation. A summary is presented below:

NTPC Incident and Emergency Response Plan

NTPC maintains an Incident and Emergency Response Plan that documents how to deal with incidents and emergency situations. The most common emergency situations or accidents that can occur at NTPC are spills and fires. For minor spills and fires that are safe to respond to, spill response materials and fire extinguishers are available in all NTPC buildings.

Spill Response Plan

Under the NWT Environmental Protection Act, the Spill Response Planning and Reporting Regulations set the standard for reporting spills of contaminants and preparing Spill Response Plans. A Spill Response Plan is required if contaminants are stored above ground in excess of 20,000 kg or 20,000 L, or below ground in excess of 4,000 kg or 4,000 L. A copy of the Spill Response Plan must be filed with the Chief Environmental Protection Officer. Although NTPC does not have below ground storage facilities, contaminants (i.e. fuel oil) are stored in excess of 20,000 L and therefore Spill Response Plans for all NTPC power plant sites have been established and registered with the Chief Environmental Protection Officer.

Emergency Response Assistance Plan

A person who offers for transport or imports a consignment of dangerous goods must have an approved emergency response assistance plan when the quantity of dangerous goods exceeds the Emergency Response Assistance Plan (ERAP) limit (Transportation of Dangerous Goods (TDG) Regulations sections 7.1, 7.4, and column 7 of Schedule 1). The ERAP is to be filed and approved by the Director General.

Requirements for the registration of a plan are specified in the Waste Data Sheets found in Section 7 of this Plan. Currently no dangerous goods offered for transport or imported by NTPC require an ERAP.

Reporting of Spills

The procedures for reporting spills at the Facility are presented in the Snare Hydroelectric Facility Spill Response Plan.

A summary of reporting and response requirements for spills of dangerous goods during transport (as defined under TDG Regulations) and spills of hazardous materials (as defined in the NWT Environmental Protection Act and associated regulations) is presented in the NTPC WMP.

NWT Spill Reporting

The minimum quantities for reporting of spills to the environment are specified in the Spill Response Planning and Reporting Regulations (refer to Table 1.1). NTPC has adopted a policy of reporting all spills of hazardous materials over 5 L, and spills of any size that reach water, to the 24-Hour Spill Report Line at (867) 920-8130 unless the minimum quantity specified in the regulation is more stringent (i.e. less than 5 L).

1.12 DISTRIBUTION LIST

The WMP and the most recent revisions are distributed internally to:

i. Environmental Health and Safety Department, Snare Hydroelectric Facility/NTPC (control copy)
ii. Operations Manager, Snare Hydroelectric Facility
iii. Plant Manager and/or Plant Operator, Snare Hydroelectric Facility
iv. Manager, System Operations and Hydro Planning, Hydro Region
v. Central Control Room, NTPC
vi. NTPC Intranet Powerbox
viii. NTPC On-Site Construction Representative

The Manager of Health, Safety, and Environment at the Snare Hydroelectric Facility/NTPC is responsible for distribution of the SRP to outside third-party stakeholders.

2 OVERVIEW OF WASTE & HAZARDOUS MATERIALS

2.1 INTRODUCTION

Gasoline and diesel fuel are the two main hazardous materials used and stored at the Facility. However, other materials and wastes such as propane, acetylene, used oil and glycol are also stored, and used and/or generated on-site. The primary and designated storage locations for hazardous materials, hazardous wastes and fuel are as follows:

Facility fuel storage capacity is 128,000 L in Above Ground Storage Tanks as follows:

- Incinerator containing 1,700 L diesel – Snare Rapids
- 60,000 L double-walled AST, diesel – Snare Airstrip
- 60,000 L double-walled AST, gasoline – Snare Airstrip
- 4500 L double-walled skid mounted mobile tank – Snare Airstrip
- 1,100 L AST, diesel – inside plant with berm – Snare Cascades plant
- 1,100 L double walled AST, diesel – Snare Cascades plant heating

Table 2.1 presents general information on the location of the main fuel, hazardous materials and hazardous waste storage areas. Estimated minimum and maximum quantities of hazardous materials are presented in Table 2.2.

Table 2.1: Fuel, Hazardous Material and Hazardous Waste Storage Facilities at the Snare Hydroelectric Facility

Storage Area	General Description	Location
Snare Falls AirstripTank Farm	Two 60,000 L, double-walled ASTs containing diesel and gasoline.	Located at the Snare Airstrip Near the Snare Falls Plant
Oil Storage Shed	Mainly 20 L containers of new oil, lubricant and glycol.	Located at the Snare Airstrip Near the Snare Falls Plant
Drum Storage Berm (20 m x 26 m)	Mainly 205 L drums for waste oil and glycol. Drums are tracked in the Hazardous Materials Inventory and removed every year on the Winter Road	Located at the Snare Airstrip Near the Snare Falls Plant

Table 2.2: List of Main Hazardous Materials On-Site

Material	Storage Container	Normally On-Site	Maximum On-Site	Storage Location (see Figure 2) and Uses
Diesel	See Above.			
Gasoline	See Above.			
Jet Fuel	205 L drum	2050 L (10 Drums)	2050 L (Drums)	C-Can located at the Airstrip.
Lubricating Oil	205 L drum	2050 L (10 drums)	2050 L (10 drum)	New product stored in the Oil Storage Shed, waste product on the Drum Storage Platform. Used for vehicle and equipment antifreeze.
Transformer Oil	14,207 L (1 Trans-former)	28,414 L (2 Trans-formers)	28, 414 L (2 Trans-formers)	Snare Rapids Inside Berm with 110% capacity of one transformer.
	7600 (1 Trans-former)	15,200 (2 Trans-formers)	15,200 (2 Trans-formers)	Snare Falls
	180 L (1 station service transformer)	360 L (2 Transformers)	360 L (2 Transformers)	
	370 L transformer	370 L (1 transformer)	370 L (1 transformer)	Snare Cascades. The berm containing the large transformer has an 8500 L capacity
	7,600 L Station Service Transformer	7,600 L (1 Transformer)	7600 L (1 Transformer)	
	7,600 L Transformer	15,200 L (2 Transformers)	15,200 L (2 Transformers)	
Propane	100 lb Tank	500 lb (5 tanks)	500 lb (5 tanks)	Garage near Rapids Plant.
Acetylene	100 lb Tank	500 lb (5 tanks)	500 lb (5 tanks)	Garage near Rapids Plant.
Oxygen				

2.2 CAMP WASTE

NTPC maintains a camp near the Rapids hydroelectric generating facility. Camp sewage is treated in a septic field and camp garbage is incinerated using an onsite incinerator.

2.2.1 Septic Field

NTPC's Snare Rapids Camp treats waste sewage and grey water using a Septic Field. The design includes two concrete tanks in tandem to form a sludge chamber and an effluent chamber. During

operation, waste liquid spills into the effluent chamber and is them pumped into the septic field. The pump is operated by a float switch and pumps approximately 500L per cycle. The pump cycle is 3 minutes. The septic field is a network of 100mm perforated pipe backfilled with free draining granular material.

The sludge chamber is required to be emptied every 5 years and trucked to a municipal sewage treatment facility. Snare Operations empties the sludge tank once per year and truck uses the winter road to truck sludge to the Yellowknife Municipal Treatment Facility. The Rapids Camp houses 24 people at a maximum but rarely does the camp reach full capacity. On average a conservative estimate of 10 people are present at the camp on any given day.

When the septic field capacity was analyzed, it was expected that 20 people at the camp would produce a conservative estimate of approximately 1000 Imperial Gallons per day (Igpd) of waste water. The maximum infiltration capacity of the septic field built is 36,000 Igpd.

2.2.2 Onsite Incinerator

Only non-hazardous solid waste materials are to be incinerated. These materials are segregated at the source and are placed in specifically identified waste containers with transparent bags and in bins located throughout the Facility. The types of waste that will be incinerated include:

- food waste
- food packaging, kitchen waste, and other food contaminated waste
- paper
- cardboard
- wood
- oily rags

Prior to loading the incinerator, the feed material will be inspected by the incinerator operator to ensure it does not contain inappropriate waste materials. General classes of inappropriate wastes include, but are not limited to:

- Hazardous Wastes (refer to the NTPC Hazardous Waste Management Plan).
- Mercury containing materials / waste (e.g. fluorescent lamps, thermometers, thermostats, dental amalgam, batteries). Limiting the quantity of mercury placed in the incinerator is the most effective way to limit mercury emissions.
- Metal and glass. These materials absorb energy from the furnace and increase the wear and tear on various incinerator components.
- Materials / wastes containing heavy metals (e.g. mercury-containing wastes, pressure or chemically treated wood (i.e. Chromated Copper Arsenate [CCA] or creosote), lead painted materials.

- Asbestos waste.
- Liquid wastes including petroleum hydrocarbons and sewage.
- Uncontaminated plastics, including chlorinated plastics.
- Inert materials such as concrete, bricks, ceramics, ash.
- Bulky materials such as machinery parts or large metal goods such as appliances.
- Radioactive materials such as smoke detectors.
- Potentially explosive materials such as propane tanks, other pressurized vessels, unused or ineffective explosives.
- Other hazardous materials such as organic chemicals (PCBs, pesticides), other toxics (arsenic, cyanide).
- Electronics.
- Batteries.
- Drywall.
- Fluorescent light bulbs.
- Tires.

When encountered, inappropriate waste material will be removed from the incinerator feed. If the inappropriate waste is too intermixed with the desired incinerator feed, then the batch will be rejected and not incinerated. Removed inappropriate wastes and rejected batches will be stored and handled in accordance with the NTPC Hazardous Waste Management Plan.

The CY-2020-FA "D" incinerator is designed with a maximum batch capacity of 20 ft^3 and 140 lbs/hr. Do not overload the incinerator.

The incinerator should be operated according to the Operation and Maintenance Manual (see Appendix G). When the incinerator is loaded with the appropriate mix and quantity of waste, close and lock the door, and start the burn cycle. The incinerator operator should observe the burn for at least 15 minutes after ignition of the primary chamber burner to ensure the volatility of the waste charged is not creating too much gas for the secondary chamber to handle. When satisfied that the burn is proceeding in a controlled manner, the incinerator operator may leave the incinerator area while the equipment completes the burn cycle.

The burn cycle should not be interrupted by opening the charging door until after the burn is complete and the unit has cooled down. No additional waste is to be added to the primary chamber while in operation.

When the burn is complete and the unit has cooled, the incinerator operator will open the door only when wearing protective equipment (see Section 4.1, Appendix G).

The incinerator operator must remove the ash from the previous burn cycle before reloading the incinerator. Any unburned combustible materials found in the ash will be recharged to the primary chamber after the incinerator operator has cleaned the air ports, and before putting a fresh charge into the incinerator. Non-combustible materials such as residual metal pieces will be disposed of with the ash. Waste Ash will be stored and disposed of at the nearest registered disposal facility (Yellowknife Landfill) via winter road transport.

2.2.3 Other Waste

Unimpacted scrap lumber is open-burned and scrap steel is stockpiled for removal via winter road.

2.3 GENERAL HAZARDOUS MATERIAL STORAGE GUIDELINES

NTPC is committed to the safe and appropriate storage of fuels, hazardous materials and hazardous wastes. The following sections outline NTPC's general guidelines for storing hazardous materials and hazardous wastes.

2.3.1 General Precautions

General precautions for handling hazardous materials include:

- No person should handle a substance unless that person is familiar with the hazards.
- No person should use a substance unless that person is familiar with the proper use.
- Hazardous materials from different classes should never be mixed in the same container.

2.3.2 General Guidelines for Storage Drums/Containers

Hazardous materials/waste shall be stored in drums/containers according to the following guidelines:

- In the original containers, where possible or in containers manufactured for the purpose of storing the material, or use good quality 16 gauge or lower steel or plastic 205 L drums.
- Containers of hazardous materials shall be returned to their designated storage area at the end of each shift or when no longer in use.
- Reused steel or plastic drums must have an internal volume greater than or equal to 150 L to handle, offer for transport or transport dangerous goods that are liquid and are included in Class 3, 4, 5, 6.1, 8 or 9 (Section 5.12(2), TDGR 2001-286)
- Storage containers shall be in good condition, sealable and not damaged or leaking.
- Drums containing hazardous materials/wastes expected to be in storage for more than six months shall be placed on pallets or on a well-drained storage area to prevent rusting.
- Each container shall be clearly labelled to identify the substance being stored according to the requirements of the Workplace Hazardous Materials Information System (WHMIS) or the Safety Act or the relevant Transport Authority, if transport is planned.
- Containers shall be kept secure and closed except when adding or removing product.
- Containers with product shall be kept in the upright position; empty drums can be placed horizontally.
- Containers shall be arranged to prevent damage from falling or dislodging.
- Containers shall be arranged to allow for easy access and inspections.
- Dispensing a container to another shall only be carried out within an area provided with drip / spill containment.

2.3.3 General Guidelines for Storage Areas

To assist in the safe and secure storage of fuels, hazardous materials and hazardous wastes, the following general guidelines for storage areas/facilities will be considered:

- Design of storage areas shall be in compliance with the National Fire Code, where appropriate.
- Drainage into and from storage areas shall be controlled in order to prevent leaks or spills from migrating off-site and to avoid run-off from entering the storage areas.
- Storage areas shall have controlled access. Only authorized and trained personnel shall have access to storage areas.
- Leaking or deteriorated containers shall be removed and their contents transferred to a sound container.
- Storage areas shall be adequately signed indicating that there is to be no smoking, no sparks or flames and hazardous materials/wastes are stored therein.

- Storage locations shall be clearly defined and marked to prevent damage of storage drums and containers in the event they are covered by snow.
- Incompatible materials shall be segregated by chemical compatibility within the storage area to prevent contact between materials in the event of a release
- Storage areas shall be located at least 30 metres from surface water and on a low-permeability area, where possible.
- Storage areas shall be readily accessible for fire fighting and other emergency procedures.
- Storage areas shall be adequately ventilated to prevent the build up of noxious or toxic vapours.
- Secondary containment or an adequate spill collection system shall be installed to allow for the containment of at least 110% of the largest container or tank volume within the contained area, plus 10% of the aggregate capacity of all other containers or tanks.
- Secondary containment shall be kept free of debris, water accumulation and snow.
- Storage areas and associated secondary containment shall be protected from the elements, where possible. In case this is not feasible, the secondary containment's volume shall be large enough to allow for any precipitation (rain, snow, and storm water run-on) that may enter containment systems located outdoors, in addition to the required containment volume for stored materials. In addition, sufficient capacity to handle sprinkler water and other water from fire protection efforts will be provided.
- Storage areas shall be constructed, or provided with barriers, to protect containers from the environment and physical damage.
- Adequate spill and emergency response equipment shall be installed at each storage area (i.e. spill control, fire protection, etc.). A list of spill control equipment is provided in the Spill Response Plan.
- The site shall not be used for long-term storage of hazardous waste.

3 WASTE MANAGEMENT PLAN

3.1 LIFE CYCLE MANAGEMENT

"Life cycle management" implies the assessment of a particular product over its entire life – from the time a material is needed to the time the product is fully consumed or disposed of as waste. It covers product supply, transportation, storage, handling, recycling, and waste disposal. NTPC is committed to ensuring proper life cycle management of all products used including hazardous materials. It will be handled in accordance with relevant legislation (e.g. Environmental Protection Act (EPA), Transportation of Dangerous Goods Act and Regulations (TDGA)). NTPC and its contractors will deal only with reputable, certified suppliers, transporters, and expediters.

3.1.1 Delivery

Hazardous materials will be delivered to sites by commercial carriers via ice road or helicopter with the appropriate transport authority: TDGA or International Civil Aviation Organization (ICAO). Carriers will be licensed and subject to inspections as required by the NWT Department of Transportation. All required permits, licenses, training and certificates of compliance will be obtained.

All shipments must be properly identified and labelled. Shipping papers must be accessible and include information describing the substance, immediate health hazards, fire and explosion risks, immediate precautions, fire-fighting information, procedures for handling leaks or spills, first aid measures and emergency response telephone numbers.

Each commercial carrier is required to develop a spill prevention, control, and countermeasures plan to address the materials they are importing. In the event of a release during transport, the commercial transportation company is responsible for first response and cleanup. NTPC will periodically verify the qualifications of commercial carrier, their personnel and the existence of their spill prevention, control and countermeasures plan.

NTPC's registered waste generator, carrier, and receiver numbers are NTG000008, NTC000002, and NTR000007 respectively. The Snare Hydroelectric Facility is a generator of hazardous waste; however, it does not act as a carrier (transporter) or receiver of hazardous waste.

3.1.2 On-Site Handling

Once dangerous materials are received at the workplace, additional regulations apply. The federal Workplace Hazardous Materials Information System (WHMIS) calls for the proper labelling of products, the availability of product information in the form of the Material Safety Data Sheets (MSDS), and employee education on how to identify and handle hazardous materials. NTPC will establish procedures for obtaining MSDS with new product deliveries, maintaining the MSDS current (i.e. no older than 3

years), and maintaining a system of hardcopy or electronic MSDS that are readily accessible by all employees.

All employees with computer access can view the current MSDSs for NTPC products by visiting the website:

http://eservice.msds.com

In order to login to the site, the following username and password must be entered:

Username: ntpc
Password: ntpcmsds

Hazardous materials are to be stored in secured areas to prevent access by unauthorized personnel or any tampering. Tanks used for the storage of hazardous materials are double-walled or installed in secondary containment areas sized to hold at least 110% of the volume of the largest tank, plus 10% of the aggregate capacity of all other containers or tanks. Additional guidelines for the storage of hazardous materials are provided in Section 2.

In support of pollution prevention, NTPC will establish procedures for the regular inspection of storage containers/drums, tanks and the storage areas. If deficient conditions are identified, appropriate corrective actions will be taken and documented. Additional details for inspection of storage areas are provided in Section 5.

Emergency response procedures for spilled chemical substances are provided in the Spill Response Plan. These procedures outline the response to accidental spills or releases of hazardous materials to minimize health risks and environmental effects. Included are procedures for evacuating personnel, maintaining safety, cleanup activities, emergency contacts, internal and external notifications to regulatory authorities and incident documentation.

3.1.3 Wastes

NTPC's HWMP presents detailed information with respect to the management of hazardous wastes at all NTPC facilities, including the Snare Hydroelectric Facility. The reader is directed to the HWMP for specific information relating to the management of hazardous wastes. General information with respect to the management of hazardous waste is provided below.

Hazardous wastes are typically generated through operations involving the use/clean-up of chemicals or other hazardous materials/substances (waste oils, waste fuels, batteries, solvents, etc.). On becoming wastes, hazardous materials will be stored and/or disposed of in accordance with specific government legislation, regulations and guidelines.

As a waste generator, NTPC is ultimately responsible for ensuring hazardous waste will be properly managed from the time they are generated to final disposal. Waste must be properly identified, labelled, stored, transported, treated and disposed of. Contractors are responsible for handling and disposal of the hazardous wastes they generate through their work, unless alternate arrangements have been made with NTPC in advance.

Hazardous wastes must not be mixed or diluted with any substance or divided into smaller quantities to avoid meeting the definition of a hazardous waste. Incompatible hazardous wastes should be segregated by the TDG class to ensure safety. Open burning of hazardous waste is not acceptable.

It is NTPC practice to remove hazardous waste from all sites at least once per year. No NTPC site should maintain quantities of waste for a period of time sufficient to necessitate registration as a storage facility. If hazardous waste is stored for a period of 180 days or more, and the quantities to be stored exceed the quantities set out in the Guideline for the General Management of Hazardous Waste in the NWT Schedule 1: Registered Volumes for individual waste classes or if the aggregate quantity for all classes of waste stored exceeds 5,000 kg/L, the facility must be registered with the NWT Department of Environment and Natural Resources. The storage facility can be a building, locker, compound, or area used to store hazardous waste.

In cases where hazardous wastes are to be transported off-site for treatment or disposal, NTPC will only use hazardous waste management facilities registered with the appropriate provincial or territorial authorities having jurisdiction. Prior to selecting and engaging such companies, NTPC will verify their “approved” status as a waste facility with the appropriate provincial or territorial authorities having jurisdiction. A review of their “approved” status will be conducted at least annually. NTPC will employ only registered waste carriers to transport waste to registered waste receivers.

The NWT Department of Environment, Environmental Protection Service (EPS) monitors the movement of hazardous waste, from the generator to final disposal through use of a tracking document known as a Waste Manifest. Accordingly, a completed Waste Manifest will accompany all movements of hazardous waste from the Snare Hydroelectric Facility. NTPC is registered with the EPS as a waste generator and our waste generator number is NTG000008.

4 PRIMARY HAZARDOUS MATERIAL

4.1 PRODUCT DESCRIPTION

Two particular products – gasoline and diesel fuel – will be used in relatively large quantities at the facility. Detailed procedures have been developed to ensure that these materials are handled and used with no adverse effect on people or the environment. The other hazardous materials used on site are present in relatively small quantities. Products such as combustible diesel fuels and gasoline fuels, toxic anti-freeze, compressed gases, lubricants, and cutting oils are widely used in the North. These products meet vital needs for power generation, heating and vehicle operation.

The transportation, storage and handling of these petroleum and related products are strictly regulated by both federal and territorial legislation. NTPC will ensure that all such requirements are met. Standard procedures are discussed in Section 2 of this document. NTPC will emphasize the need for regular inspections of all storage and distribution facilities on site to assure mechanical soundness and to prevent leaks or any other uncontained release of fuel products.

Material categories, site handling and storage requirements, and PPE recommended by manufacturer's in MSDS are summarized in Tables 4.1 to 4.3 (also see the SRP). The primary hazardous material and waste storages areas at the Facility are identified on Figure 2.1 and described in Table 2.1.

Table 4.1 Fuel Products – Hazard Classes & Potential Impacts

Material	TDGA Class	Potential Environmental Impact
Diesel	3	Water & soil contamination
Gasoline	3	Water & soil contamination
Jet Fuel	3	Water & soil contamination
Lube Oil / Motor Oil	Not regulated	Water & soil contamination
Glycol	Not regulated	Toxic by ingestion, could potentially be consumed by wildlife
Propane	2	Fire/explosion
Acetylene	2	Fire/explosion
Oxygen	2	Fire/explosion

Table 4.2 Fuel Products – Safe Handling Procedures

Product	Handling Procedures
Diesel	Do not get in eyes, on skin or on clothing. Avoid breathing vapours, mist, fume or dust. Do not swallow. May be aspirated into lungs. Wear PPE and/or garments if exposure conditions warrant. Wash thoroughly after handling. Launder contaminated clothing before reuse. Eliminate all ignition sources. Store in a well-ventilated area. Store in a closed container. Bond and ground during transfer.
Gasoline	See diesel procedures above.
Jet Fuel	See diesel procedures above.
Lube Oil / Motor Oil	Wear protective clothing and impervious gloves when working with used motor oils. To be handled generally consistent with other petroleum hydrocarbons.
Glycol	Ensure adequate ventilation. Wear protective gloves and chemical safety goggles. Keep in tightly closed containers.
Propane	Secure cylinders to a wall, rack or other solid structure in an upright position. Keep valves closed and protective cap in place on cylinder when not in use. Do not handle with oily hands. Protect from heat. Protect against electrostatic charges. Pressurized container: protect from sunlight, store in a cool location and do not expose to temperatures exceeding 50°C. Empty containers may have product residue. Do not pressurize, cut, heat or weld empty containers. Store in a cool, dry and well-ventilated building. Eliminate all ignition sources. Keep product out of direct sunlight and away from incompatible or combustible materials.
Acetylene	See propane procedures above.
Oxygen	See propane procedures above.

Table 4.3 Fuel Products – Personal Protective Equipment

Product	Personal Protective Equipment		
	Eyes	Skin	Respiration
Diesel	Chemical goggles	Neoprene or nitrile gloves, protective garments	Under normal handling, none usually required.
Gasoline	Chemical goggles	Neoprene or nitrile gloves, protective garments	Under normal handling, none usually required. Ensure adequate ventilation.
Jet Fuel	Chemical goggles	Neoprene or nitrile gloves, protective garments	Under normal handling, none usually required. Ensure adequate ventilation.
Lube Oil / Motor Oil	Chemical goggles	Neoprene or nitrile gloves, protective garments.	Under normal handling, none usually required.
Glycol	Chemical goggles	Neoprene or nitrile gloves, protective garments	Under normal handling, none usually required.
Propane	Chemical goggles	Neoprene or nitrile gloves, protective garments. Insulated gloves suitable for low temperatures where liquid propane is involved.	Under normal handling, none usually required.
Acetylene	Chemical goggles	Neoprene or nitrile gloves, protective garments.	Respirator – see MSDS.
Oxygen	Chemical goggles	Neoprene or nitrile gloves, protective garments.	Respirator – see MSDS.

4.2 DELIVERY TO SITE

With the exception of diesel and gasoline fuel, most petroleum fuel and lubricant products will be delivered to site and stored in the original packaging container from the manufacturer/supplier. These types of containers include a variety of sealed drums (205 L), pails, cans, tubes and boxes. Supplies of diesel and gasoline are brought primarily by ice road using tanker trucks.

Upon arriving on site, and after checking in with Facility security, the bulk fuel is delivered the camp or construction fuel tank farms for transfer to the diesel and/or gasoline aboveground storage tanks. The small quantity hazardous materials contained within their original packaging will be delivered directly by the carrier to their designated storage area by the contractor under the direct supervision of Snare Hydroelectric Facility personnel.

All fuel transfer and storage facilities will be designed and operated in accordance with the National Fire Code, the Canadian Council of Ministers for the Environment (CCME, 2003) Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum, and the (CCME, 2008) Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations.

Appropriate measures will be in place to minimize impacts to surface water, groundwater and soils from potential vehicle accidents when transporting hazardous materials across the site. Details of spill responses are presented in the SRP. The following general precautions will be taken:

- A maximum speed on the ice road and at the Facility for loaded and empty vehicles will be established based on the road design.
- Trucks will carry at least 10 m2 of polyethylene material, a spark-proof shovel and oil absorbent blankets or squares.
- Trucks will be equipped with a reliable radio and/or satellite phone.
- NTPC commits to being prepared to respond to spills resulting from vehicle accidents in a timely and efficient manner.

4.3 FUEL TRANSFER PROCEDURES

Bulk transfer of fuel, oil and glycols is to follow NTPC's Fuel and Bulk Product Transfer Policy (Appendix C). The contract supplier will fill the storage tanks in the main tank farms under the supervision of NTPC personnel. General procedures to be followed are listed below. Similar procedures will be followed for fuelling remote tanks.

Before fuel transfer, verify that:

- All employees are wearing personal protective equipment as may be necessary to protect themselves from the hazards involved.
- Emergency equipment including fire extinguishers and spill kits are available and have been inspected.
- A fuel Bulk Products Transfer Form has been completed and clearance is obtained from the Central Control Room
- All fuel transfer hoses have been connected properly and couplings are tight
- Transfer hoses are not obviously damaged
- All fuel transfer personnel are familiar with the general procedures at the site and of the product being transferred.
- Personnel are located at both the fuel delivery truck and fuel transfer tank(s) and can manually shut off the flow of fuel in the event of a system failure, fault, leak or fire.
- If a high liquid level shutoff device is installed at the delivery tank, verify that the shutoff is operating correctly each time it is used.
- Fuel transfer will then proceed per the established procedures of the contract supplier.

In the event, those personnel must leave the immediate transfer area, the transfer shall stop and the transfer point locked. If an employee leaves the site during the process of a transfer, the employee will be dismissed, except in extenuating circumstances.

Transfer points will be kept locked at all times except during the transfer process.

Any accidents or spills must be reported immediately to the Plant Operator and in writing to regulators and NTPC management. Notification and response procedures are detailed in the SRP.

4.4 CONTAMINATED SOILS AND SPILLS

Contaminated soils resulting from the storage and handling of fuels and lubricants will be salvaged at the time such impacts are identified, and put into drums, labelled and eventually shipped off-site to an approved disposal facility.

A suitable absorbent will be used to cleanup spillage on impermeable floor surfaces, and will be handled similarly to contaminated soil as described above. Internal and external notification requirements, record keeping and response procedures are detailed in the SRP. If required, the assessment and remediation of contaminated soil will be carried out in accordance with The Environmental Guideline for Contaminated Site Remediation.

4.5 USED PETROLEUM AND OTHER WASTE PRODUCTS

Used oil, solvents or glycol that are no longer suitable for its intended use is classified as a hazardous waste, and drummed and stored as appropriate. The discharge of used oil, solvents or glycol into the environment, including but not limited to landfills, sewers and water bodies is prohibited. Used oil will not be incinerated on site. Used oil will not be applied as a dust suppressant on site.

These materials will be managed in accordance with requirements of the *Used Oil and Waste Fuel Management Regulations, the Guideline for the Management of Waste Solvents and the Guideline for the Management of Waste Antifreeze.*

5 INVENTORY, INSPECTION & RECORDS

5.1 GENERAL

A contract expediting company will arrange all deliveries from Yellowknife to the Snare Lake Hydroelectric Facility. This will include the hazardous materials discussed in this plan. The Plant Operator will have ultimate responsibility for supervising the receipt, inspection and recording of all material inventories on site. The Regional Director will reconcile total amounts received against amounts ordered.

5.2 FUELS & LUBRICANTS

5.2.1 Inventory Management

Diesel and gasoline fuel represent the most significant quantities of hazardous materials delivered to site. Diesel and gasoline fuel use will be metered automatically when they are pumped from the bulk/dispensing tanks. The metered volumes will be summarized weekly and reconciled against tank product and water levels determined manually with a dipstick from the top of the tanks, or electronically if an approved method is provided on a given tank. Diesel and gasoline fuel consumption for the machinery will be recorded weekly.

Lubricants and other petroleum products in storage areas will be inventoried monthly.

Inventory and reconciliation calculations and records will be maintained on site.

5.2.2 Inspection

The Plant Operator will coordinate the inspection of all fuel and lubricant storage sites areas. The inspection schedule and procedure to be followed are summarized in Table 5.1. All inspections will be logged with the date and time of inspection, area inspected and the name of the person making the inspection.

Drum / Container Storage Areas

The condition of hazardous materials storage areas will be checked on a regular basis. Observations on their condition will be logged, dated and kept near the corresponding storage area. Drums/containers will be inspected for the presence and legibility of symbols, words or other marks identifying the contents, signs of deterioration or damage such as corrosion, rust, leaks at seams or signs that the drum/container is under pressure such as bulging and swelling, spillage or discoloration on the top or sides of the drum/container. If leaks or deterioration is encountered it will be noted and addressed in a timely manner.

The hazardous materials area's secondary containment will be inspected and the condition of the secondary containment will be noted. Arrangements will be made for repairs if necessary. If precipitation (water or snow) is present within the secondary containment, it will be removed from the secondary containment area in a timely manner to prevent overflow or damage to the containment system due to large ponding.

The availability of suitable and suitable quantity of spill response materials will be verified during the inspections. Additional spill response materials will be provided as required.

Petroleum Storage Tanks and Tank Storage Facilities

Inspection of petroleum storage tanks and petroleum storage tank facilities will be in conformance with the requirements of the National Fire Code and the CCME Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum.

Visual inspection of storage tank facilities (used for dispensing fuels) to ensure that there has not been a leak or deterioration of the facility that could result in a leak will be conducted and documented each day the facility is in operation.

Visual inspection of a storage tank facility to ensure that there has not been a leak or equipment failure shall be conducted weekly and documented for the following where applicable:

- foundations, tank walls, roof, and tank attachments;
- dyke capacity, condition of the dyke wall and floor, and water removal systems;
- pumps and product-handling equipment;
- tank gauging equipment;
- mechanical and automatic electronic leak detection equipment;
- dispenser sumps and spill containment devices; and
- overfill protection devices.

Inspection and performance testing in conformance with the manufacturer's requirements and procedures to ensure satisfactory equipment performance and operation of a storage tank facility will be conducted annually and documented where applicable for:

- automatic tank gauges and monitoring systems;
- high-technology sensors;
- electronic or mechanical leak detection equipment;
- corrosion protection equipment;
- pressurized piping emergency valves;

- emergency shut-down devices;
- containment sumps including dispenser, turbine and transition containment devices; and
- overfill protection devices.

Vertical tanks will also undergo periodic testing as per API 653 / API 653-01 as required.

Table 5.1 Inspection of Petroleum and Hazardous Materials Storage Sites

60,000 L (2 tanks) Aboveground Storage Tanks	Schedule: Daily during operation by the Tank Farm Operator; Weekly as required for leak detection by the Tank Farm Operator; Quarterly by Plant Operator or designate; Annually by NTPC Environmental Health and Safety Manager Procedure: Repair leaks and report promptly. Inspections will be reported annually and filed with the Plant Operator
Drum Storage Berm	Schedule: Monthly by the Plant Operator Annually by NTPC Environmental Health and Safety Manager Procedure: Address leaks and report promptly. Inspections will be reported monthly and filed Health &Safety Manager
Spill Kits	Schedule: Weekly/Monthly as part of inspection schedule as per above by Tank Farm Operator or Plant Operator /designate; Quarterly by Plant Operator or designate; Annually by NTPC Environmental Health and Safety Manager;

Any accidental damage to containment structures will be inspected immediately and appropriate repairs undertaken. The extent of damage will be reported in writing to Plant Operator or alternate. The report will identify any remedial repairs that may be made, the date of any repairs and the need for any follow-up inspection. The Hazardous Materials Storage Area Inspection form can be found in Appendix D.

5.2.3 Records

Records pertaining to storage, use, and loss of fuels and lubricants are required by CCME and the Fire Marshal (under the National Fire Code). The following records will be prepared and maintained for fuel and hazardous materials storage areas under the supervision of the Plant Operator:

- Receiver registration number
- Carrier registration number
- Waste generator registration number
- Waste manifests
- Reconciliation of bulk inventory from resupply logs

- Waste accumulation log
- Hazardous materials / waste storage inventory log
- Weekly use summaries
- Weekly reconciliation for each storage tank
- Inspections and maintenance records
- Any alterations to the systems
- Reports of leaks or losses
- Reports of spill responses
- Records of training

Specific to storage tanks, the following records are also required, where applicable:

- Inventory control and reconciliation data;
- Inspections and maintenance records;
- Overfill alarm tests
- Cathodic protection monitoring;
- Precision leak detection tests;
- Maintenance and repairs;
- Monitoring well results;
- Construction, alterations, or upgrades;
- As-built drawings; and
- Excavation or nearby construction that could affect the integrity of the storage tank system.

The records will be maintained on-site for at least seven years.

6 TRAINING

6.1 GENERAL

As outlined in the NTPC's Occupational Health and Safety Manual, all employees and contractors at the Snare Hydroelectric Facility will receive the following training:

- WHMIS
- Emergency and spill response training (see also the SRP and ERP)
- Operations overview

Employees will receive additional training specific to their area of work and duties, including safe operation practices, safe handling and storage of chemicals, and use of PPE. This training will be the responsibility of NTPC.

Periodically, NTPC staff will carry out fire or other emergency drills. The drills will test emergency response procedures, and will be scheduled so as not to disrupt work. The results of the drills will be recorded and forwarded to the Plant Operator, JHSC and NTPC. The results may indicate that additional or refresher training is required Safety committee recommendations will be enacted expeditiously.

Medical, emergency response and spill response staff will conduct periodic drills to test their emergency response procedures (see also the ERP and SRP). Reports on the drills will be provided to the Plant Operator, JHSC and NTPC for action as required.

6.2 FUEL & LUBRICANTS HANDLERS

Personnel who handle fuel and lubricants will be expected to be conversant with relevant MSDS information. As well, these personnel will be given training in the following:

- Transportation of Dangerous Goods (TDG)
- NTPC's fuel handling procedures (outlined in Section 3)
- Spill response and cleanup procedures for petroleum hydrocarbons (see the SRP)
- Emergency response procedures (see the ERP)

The attendants and persons involved in inspections of fuel storage locations will be trained in fuel reconciliation and inspection procedures to support leak prevention and early detection.

6.3 PLANT EMPLOYEES

Plant employees may receive TDG training, if appropriate. All plant employees will be trained in spill and emergency response procedures. Emergency response procedures for spilled chemical substances are provided in the SRP.

For more information on employee training and safety guidelines, see NTPC's Occupational Health and Safety Manual, SRP and ERP.

6.4 THIRD PARTY CONTRACTORS

It is expected that third party contractors receive adequate and comprehensive training to conduct their work tasks from their employer. NTPC intends to review the general qualifications of third party contractors prior to having them work at the site. In addition, the contractor companies may also be requested to confirm the qualifications of specific individuals that they may have working at the site.

Third party contractors working on the site will be expected to participate in, and complete a site specific health and safety training session. The training session is valid for a period of one year, after which time the contractor may be required to complete the training again, or attend a refresher. The training session will outline site specific hazardous and response procedures that they should be aware of in the course of conducting their work on site. The training session will cover hazardous materials management.

7 PLAN EVALUATION, AUDIT & IMPROVEMENT

7.1 GENERAL

NTPC's goal is to audit all aspects of the WMP for effectiveness. Environmental management procedures will be modified and updated to address changes in policy, regulations and technology advances. The primary purpose will be continued compliance with legislative requirements. The WMP will be reviewed and audited every two years at a minimum, but may also be reviewed and audited more frequently as required to identify any components that need to be corrected, adjusted, upgraded, or otherwise modified. Aspects of the plan that affect the safety of employees at the facility and of the general public will be most important.

Formal evaluations of the plan will be documented, deficiencies will be noted, and progress in addressing deficiencies will be tracked in writing. Individual responsibilities and accountabilities will be assigned, and deadlines will be set for addressing the required changes. The Health, Safety and Environmental Manager will assume overall responsibility for the process.

In line with the NTPC's goal of continuous improvement in all health and safety matters, all employees will be encouraged to offer suggestions for more efficient and safer materials handling procedures.

APPENDIX A

GLOSSARY

A

- **Accredited** (accreditation):

A term used by analytical laboratories. Those that have been tested and evaluated by the Standards Council of Canada and Canadian Standards Association, and that have met certain standards, are assigned an accreditation number. Only Accredited Laboratories may be used to obtain analytical results required for legislative compliance.

B

- **None**

C

- **CAEAL**:

Canadian Association of Environmental Analytical Laboratories. In cooperation with the Standards Council of Canada (see below), this Association governs the standards for and admission to the association of laboratories that have met all CAEAL standards to become accredited (see above).

- **Carrier:**

Any person engaged in the transport of hazardous waste whether or not for hire or reward.

- **Commissioner's Lands:**

Lands in the Northwest Territories that have been transferred by Order-Land in-Council to the Government of the Northwest Territories. This includes highways, block land transfers, and most lands within municipalities.

- **Consignee (Receiver):**

A site or facility that is licensed to accept certain subject wastes for disposal.

- **Consignor (Generator):**

A person who offers a consignment of hazardous waste for transport.

- **Contaminant:**

Any noise, heat, vibration or substance including 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.

D

- **Dangerous Goods**

Any product, substance, or organism included by its nature or by the Transportation of Dangerous Goods Regulations (TDGR) in any of the classes listed in the schedule provided in the Transportation of Dangerous Goods Act (TDGA).

E

- **Empty Container**

A container that has been emptied, to the greatest extent possible, using regular handling procedures, the contents of which 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.

- **Environmental Protection Service (EPS):**

Environmental Protection Service (EPS) of the Department of Environment and Natural Resources (ENR) 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.

F

- None

G

- **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.

H

- **Hazardous Waste:**

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. A hazardous waste does not include a contaminant that is:

(a) household in origin;
(b) included in class 1, Explosives or class 7, Radioactive materials of TDGR;
(c) exempted as a small quantity;
(d) an empty container; or
(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 Guideline for Industrial Waste Discharges in the NWT.

- **Hazardous Waste Management Facility:**

A facility which is used for the collection, storage, treatment, recycling, or disposal of hazardous waste.

I

- Incompatible Waste:

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.

J

- None

K

- None

L

- Landfilling:

The deposit of waste on land, as described in the GNWT Department of Municipal and Community Affairs' document Guidelines for the Planning, Design, Operation & Maintenance of Solid Waste Modified Landfill Sites in the Northwest Territories.

- **Licensed Waste Disposal Facility:**

A facility or site that is authorized to accept and dispose of predetermined wastes.

- **Long Term Storage:**

The storage of hazardous waste for a period of 180 days or more and in excess of the minimum quantities, not including materials in transit.

M

- **Manifest (Waste Manifest):**

A six-part, colour-coded, and uniquely numbered document issued by the government to licensed waste generators/carriers that must be completed and carried with/filed for shipments of waste (certain exemptions are allowed). The Manifest consists of three Sections (Consignor, Carrier, and Consignee) each of which must be completed by the party in control of the waste at the time the Section is completed.

- **Manage:**

To handle, transport, store, recycle, treat, destroy, or dispose of hazardous waste.

N

- **None**

O

- **None**

P

- **None**

Q

- **None**

R

- **Receiver (Consignee):**

A person to whom a quantity of hazardous waste is being or is intended to be transported to.

S

- **Sewage System:**

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.

- **Small Quantity:**

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.

T

- **Toxicity Characteristic Leaching Procedure (TCLP):**

Laboratory test method developed by the USEPA for determining the leaching potential of contaminates.

- **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).

- **TDGA/TDGR:**

The Transportation of Dangerous Goods Act and Regulations (Canada).

- **Treatment or Treat:**

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 hazards of the waste; and/or
(b) the volume.

U

- **None**

V

- **None**

W

- **Waste:**

Any material that is to be disposed of by any individual/company that is not considered to be inert.

- **Waste Dangerous Goods:**

Subject wastes that are also regulated by the terms and conditions contained in the Transportation of Dangerous Goods Regulations under the Transportation of Dangerous Goods Act (federal).

- **Waste Data Sheets:**

The pages in Tab 5 of this manual that describe the legislated requirements for managing the various wastes in accordance with the Transportation of Dangerous Goods Regulations, if applicable.

X

- **None**

Y

- **None**

Z

- **None**

APPENDIX B

LEGISLATIVE REQUIREMENTS

Federal Legislation

A summary of the relevant federal legislation and applicable sections that cover the collection, handling, transportation, and disposal of hazardous wastes in Canada is presented in Table B1.

Table B1 – Summary of Federal Legislation

FEDERAL LEGISLATION		
Legislation	**Hazardous Waste**	**Relevant Details in Legislation**
Federal Transportation of Dangerous Goods Act	Waste Dangerous Goods	- Section 3 - Application of Act The Act applies to the Transportation of all dangerous goods in Canada. Dangerous goods are the following: Class 1 - Explosives Class 2 - Compressed gases Class 3 - Flammable or combustible liquids Class 4 - Flammable solids Class 5 - Oxidizing substances Class 6 - Poisonous and infectious substances Class 7 - Nuclear substances Class 8 - Corrosives Class 9 - Miscellaneous - Section 5 - Safety Requirements, Standards and Marks No person shall handle, offer for transport, transport, or import dangerous goods unless they comply with all safety requirements, have the means of containment and transport for the material, and can display the prescribed safety marks. - Section 7 - Emergency Response Assistance Plans The person offering for transport or importing certain dangerous goods must have a Minister-approved ERAP prior to transport. - Section 8 - Means of Containment Containment must display all the necessary safety marks prior to being sold, delivered, distributed, imported, or otherwise transported. - Section 15 - Monitoring Compliance An inspector can inspect any vehicle transporting dangerous goods to ensure compliance to this Act. - Section 18 - Duty to Respond If there is an accidental release of a dangerous good in excess of the prescribed amount as outlined in the TDG Regulations, the person in charge of the material at the time of discharge has the responsibility to immediately report the incident to the 24-Hour Spill Report Line at (867) 920-8130. The person responsible for making the report shall take all reasonable emergency measures to reduce or eliminate any danger to public safety that may occur as a result of the release.

Table B1 – Summary of Federal Legislation (continued)

FEDERAL LEGISLATION		
Legislation	**Hazardous Waste**	**Relevant Details in Legislation**
Federal Transportation of Dangerous Goods Regulations SOR/DORS/2001-286	Waste Dangerous Goods	- Part 2 – Classification The consignor is responsible for determining the classification of dangerous goods. Classification includes, as applicable, the shipping name, primary class, compatibility group, subsidiary class, UN number, packing group and risk group of dangerous goods. - Part 3 – Documentation Before allowing a carrier to take possession of dangerous goods for transport, the consignor must prepare and give to that carrier a shipping document or, if the carrier agrees, an electronic copy of the shipping document. The information required on a shipping document must be easy to identify and legible. Information that must be included on a shipping document is outlined in Part 3.5 of the Regulations. - Part 4 – Dangerous Goods Safety Marks A person must not offer for transport, transport or import a means of containment that contains dangerous goods unless each dangerous goods safety mark required by this Part is displayed in accordance with this section. - Part 5 – Containment A person must not handle, offer for transport, transport or import dangerous goods in a means of containment unless the means of containment is required or permitted by this Part to be used for the transportation of the dangerous goods. - Part 6 – Training A person who handles, offers for transport or transports dangerous goods must either be adequately trained and hold a training certificate in accordance with this Part or perform those activities in the presence and under the direct supervision of a person who is adequately trained and who holds a training certificate in accordance with this Part. Adequate training is described in Part 6.2 of the Regulation. - Part 7 – Emergency Response Assistance Plan It is the responsibility of the person offering for transport or importing dangerous goods for which an emergency response assistance plan (ERAP) is required to establish such a plan and to have that plan approved by Transport Canada. - Part 8 – Accidental Release and Imminent Accidental Release Report Requirements In the event of an accidental release of dangerous goods from a means of containment, a person who has possession of the dangerous goods at the time of the accidental release must make an immediate report if the accidental release consists of a quantity of dangerous goods or an emission of radiation that is greater than a determined quantity or emission level. If an immediate report was required to be made for an accidental release, a follow-up report must be made by the employer of the

Table B1 – Summary of Federal Legislation (continued)

FEDERAL LEGISLATION		
Legislation	**Hazardous Waste**	**Relevant Details in Legislation**
		person who had possession of the dangerous goods at the time of the accidental release within 30 days of the initial report. - Schedule 1 – Classes 1 to 9 Schedule 1 is a chart of all dangerous goods indicating UN numbers, Shipping Names and descriptions and other important information that must be addressed when handling or shipping dangerous goods. - Schedule 2 – Special Provisions This schedule provides extra requirements for certain dangerous goods that are not provided in Schedule 1. - Schedule 3 – Alphabetical Index This schedule is provided to quickly determine the UN number and class of a dangerous good using an alphabetized list.
National Fire Code	Waste Oily Rags	- Waste oily rags are to be kept in non-combustible receptacles with a melting point of no less than 650oC without openings on the sides or bottom. The container must have a self-closing tightly fitting cover.

Northwest Territories Legislation/Guidelines

A summary of the relevant legislation and guidelines and applicable sections that cover the collection, handling, transportation and disposal of wastes in the Northwest Territories (NWT) enacted under the NWT Environmental Protection Act is presented in Table B2.

The Department of Environment and Natural Resources (ENR) is the NWT government agency responsible for initiatives which control the discharge of contaminants and their impact on the natural environment, including the disposal of hazardous wastes.

Table B2 – Summary of Northwest Territories Legislation/Guidelines

NORTHWEST TERRITORIES LEGISLATION/GUIDELINES		
Legislation	**Hazardous Waste**	**Relevant Details in Legislation**
Environmental Protection Act (EPA)	All hazardous wastes (i.e. contaminants that can enter the environment)	- Section 4 - Environmental Protection 4 (1) The chief Environmental Protection Officer may require that the storage facility have on hand at all times the equipment and the material necessary to alleviate the effect of any discharge of contaminants that may be specified in the order. - Section 5 - Discharge of Contaminants 5 (1) - No person shall discharge or permit the discharge of a contaminant into the natural environment without a permit. If there is a discharge to the environment, the person in charge of the contaminant prior to the discharge must: Report the discharge to the 24-Hour Spill Line (867) 920-8130; Stop the discharge if possible; and Make a reasonable effort to notify everyone who may be adversely affected by the discharge. - Section 9 - Unsightly Land If the inspector believes that the land is unsightly when compared to lands used for a similar purpose, the Chief Environmental Protection Officer may issue a written order to improve condition of the land.
Guideline for Industrial Waste Discharges in the NWT	Various Wastes	- Addresses discharge of effluent and process residuals from industrial operations. - Covers only waste for which there is not already a guideline or regulation in place. - Provides standards for discharge to municipal landfills and sewage systems.
Guideline for Ozone Depleting Substances (ODSs)	CFCs, HCFCs and Halons (used in heat pumps, air conditioning equipment, refrigeration equipment, motor vehicle air conditioners, and portable fire extinguishers)	- ODSs are found in certain air conditioners, refrigeration devices, and fire extinguishers. - A waste manifest must accompany waste ODS if moved for storage, recycling or disposal. - ODS should be removed from equipment by a certified technician prior to equipment disposal. - Any release of ODS from a compressed gas vessel (Class 2, TDG) with a capacity greater than 100 L must be reported to the 24 Hour Spill Report Line (867) 920-8130. - A release of 5 L or more of an ODS classified as a poisonous substance (Class 6, TDG) must be reported to the 24 Hour Spill Report Line (867) 920-8130. - Any ODS-containing equipment that requires disposal should be serviced by a technician to remove the CFCs or HCFCs and marked with the date of service, the certified technician and company name, and an indication that the equipment no longer contains refrigerant. After servicing the equipment can be recycled or landfilled. - If it is a remote community and a technician is not available, contact ENR for a plan to manage ODS equipment in remote areas at (867) 873-7654.

NORTHWEST TERRITORIES LEGISLATION/GUIDELINES		
Legislation	**Hazardous Waste**	**Relevant Details in Legislation**
Guideline for the General Management of Hazardous Waste in the NWT	All hazardous wastes	- Complements existing acts and regulations regarding hazardous wastes. - Should be consulted in conjunction with applicable specific hazardous waste guidelines - The generator is responsible for the identification, labelling, and storage of the hazardous waste from the time of generation to the time of disposal (from the "cradle to the grave"). - Generators, carriers, and receivers must all be registered with ENR. The office of the Fire Marshal has authority over the storage of flammable, combustible, and hazardous materials under the National Fire Code. - Storage of Hazardous Waste: a) Stored in original containers or other containers manufactured for the purpose of storing hazardous waste. Containers must be sound, sealable and not damaged or leaking. b) Clearly labelled according to WHMIS if transport is planned. c) Bulked into 16 gauge or equivalent metal or plastic drums, as appropriate. d) Containers should be sealed or closed at all times unless in use. - Requirements for storage facilities: a) Drainage into and from the site is controlled to prevent spills from leaving the site. b) Incompatible wastes are segregated by chemical compatibility to ensure safety. c) A secure area with controlled access to trained persons only. d) Regular inspections of containers are performed and recorded. e) A record is maintained of the type and amount of waste being stored. f) Emergency response equipment is available on site. g) If the site stores over 1,000 L/kg of any one waste class or a total of over 5,000 L/kg of all waste classes combined for over 180 days, the site must be registered with ENR. - The company name, address, phone number and contact person including position, the location and description of the facility, the expected types, quantities, and method of hazardous waste storage, and the required approvals to occupy the land for the purpose of hazardous waste storage must be provided to the EPA and the local fire chief for emergency planning purposes. h) Storage site must meet local zoning and by-law requirements. - A completed Waste Manifest must accompany all shipments of hazardous waste. Waste Manifests are available from ENR. - Transportation is regulated by TDGR by road, International Civil Aviation Organization (ICAO) by air, and International Maritime Dangerous Goods Code (IMDG) by water. - Treated hazardous waste may be directed to a landfill or to a municipal sewage system if it meets the Guideline for Industrial Waste Discharges in the NWT and the municipal authority and facility water license are consulted. - Hazardous waste containers must be triple rinsed and punctured so they are rendered unusable or returned to distributor for recycling.

NORTHWEST TERRITORIES LEGISLATION/GUIDELINES		
Legislation	**Hazardous Waste**	**Relevant Details in Legislation**
		* *Waste oil being transported from generator to receiver in the NWT does not require manifesting (e.g., by waste oil burners under the NTPC Waste Oil Agreement).*
Guideline for the Management of Waste Antifreeze	Antifreeze (ethylene glycol, propylene glycol)	- Waste Antifreeze is a contaminant under the NWT EPA and must be managed as a hazardous waste. - It shall not be landfilled or poured down any drain as it is toxic by ingestion and can easily contaminate the environment. - Both ethylene glycol (used in cooling systems) and propylene glycol (used in heating systems) are considered hazardous despite toxicity differences. - Waste Antifreeze has the potential to contain heavy metals, which are toxic in the natural environment. - Waste antifreeze can be recycled by registered companies or on-site using special equipment. Additives and filters can also be used to extend the life of antifreeze. - Store waste antifreeze as described in the Guideline for the General Management of Hazardous Waste in the NWT. - When transporting waste antifreeze use the following shipping information: WASTE TOXIC LIQUID, ORGANIC, N.O.S. (Waste Propylene/Ethylene Glycol) Class: 6.1 PIN: UN2810 Packing Group: I, II or III Special Provisions: 16 for I, 16 or 23 for II and III - The type of glycol must also be added to the shipping name (propylene or ethylene). - Transport the containers to a registered recycling or disposal facility. Do not landfill antifreeze, especially in landfills, which employ a permafrost protective barrier. Do not pour antifreeze into sewers or drains because it can destroy the bacteria that treat sewage.
Guideline for the Management of Waste Asbestos	Fibrous asbestos	- Waste asbestos is a contaminant under the NWT EPA and must be managed as a hazardous waste. - Store waste asbestos as described in the Guideline for the General Management of Hazardous Waste in the NWT. - When transporting waste asbestos use the following shipping information: ASBESTOS WHITE / BLUE / BROWN PIN: UN2590 / UN2212 / UN2212 Classification: 9 Packing Group: III / II / II - The removal of asbestos materials requires a thorough understanding of potential hazards and measures available to prevent worker, public and environmental exposure to asbestos fibres. - The Asbestos Safety Regulations require that employers conducting an asbestos removal project provide proper training to workers likely to come in contact with asbestos. - Asbestos can be landfilled if 0.5 m of cover is placed on the waste

NORTHWEST TERRITORIES LEGISLATION/GUIDELINES		
Legislation	**Hazardous Waste**	**Relevant Details in Legislation**
		immediately. It must be buried where it will not be disturbed and mapped for future reference. - An asbestos abatement expert can be contracted to remove the material.

Guideline for the Management of Waste Batteries	Batteries (lead acid, potassium hydroxide, nickel cadmium)
	
	*Does not include dry cell batteries
		- Waste batteries are a contaminant under the NWT EPA and must be managed as a hazardous waste.
		- Store waste batteries as described in the Guideline for the General Management of Hazardous Waste in the NWT.
		- Transport of waste batteries (ensure no leakage):
		  - in sealed, upright drums with adsorbent material, cardboard, or plywood between battery layers, or
		  - on a good, solid pallet lined with a large piece of polyethylene plastic (if pallet is rough or has protruding nails cover it with plywood first to protect the plastic); place cardboard or plywood between battery layers, fold the poly over top of the package to seal it, and secure with banding.
		- When transporting waste batteries use the applicable shipping information as follows:
		
		WASTE BATTERIES, DRY, CONTAINING POTASSIUM HYDROXIDE SOLID, electric storage
		PIN: UN3028
		Classification: 8
		Packing Group: III
		
		WASTE BATTERIES, WET, FILLED WITH ACID, electric storage
		PIN: UN2794
		Classification: 8
		Packing Group: III
		Explosive Limit: 5
		
		WASTE BATTERIES, WET, FILLED WITH ALKALI, electric storage
		PIN: UN2795
		Classification: 8
		Packing Group: III
		Explosive Limit: 5
		
		WASTE BATTERIES, WET, NON-SPILLABLE, electric storage
		PIN: UN2800
		Classification: 8
		Packing Group: III
		Special Provisions: 39
		Explosive Limit: 5
		
		- Batteries should be shipped to a registered recycler or disposal facility.

Guideline for the Management of Waste Lead and Lead Paint	Lead paint	- Leaded paint is a contaminant under the NWT EPA and must be managed as a hazardous waste. - Products containing lead in excess of 600 ppm (0.06%) are considered hazardous waste. - Painted steel structures should be sampled for confirmation of lead amended paint and lead concentration prior to sandblasting or other maintenance activities. - Regardless of removal method, total containment of the leaded

NORTHWEST TERRITORIES LEGISLATION/GUIDELINES		
Legislation	**Hazardous Waste**	**Relevant Details in Legislation**
		paint and abrasive debris or paint strippers is required under the EPA. - Store lead compounds in leak proof containers to prevent release into the environment. - When transporting waste lead paint use the following shipping information: WASTE LEAD COMPOUND, SOLUBLE, N.O.S. (Waste Lead Paint) or (Sandblasting Residue) PIN: UN2291 Classification: 6.1 Packing Group: III Special Provisions: 24 Explosive Limit: 5 - Leaded paint and sandblast residue should be transported to a registered hazardous waste disposal facility or a lead or metals foundry.
Guideline for the Management of Waste Paint	Alkyd paint (oil based paint) Latex paint (water based paint)	- Waste paint is a contaminant under the NWT EPA and must be managed as a hazardous waste. - Paint: includes lacquer, enamel, stain, shellac, varnish, polish, liquid filler, and liquid lacquer base. - Paint related material: includes paint thinning or reducing compounds. - Latex paint wastes are not a hazardous waste and can be disposed of into most sewage systems and landfills – municipal approval may be required. - Specialty paints are a mix between a base and a hardener (e.g. epoxy coatings). Consult individual MSDS for disposal instructions. - Store waste latex and alkyd paint separately as described in the Guideline for the General Management of Hazardous Waste in the NWT. - When transporting most waste paint (flammable liquids) use the following shipping information: WASTE PAINT (or Waste Paint Related Materials) PIN: UN1263 Classification: 3 Packing Group I, II or III Special Provision 59 for I, 59 or 83 for II and III - When transporting certain specialty paints (corrosive) use the following shipping information: WASTE PAINT (or Waste Paint Related Materials) PIN: UN3066 Classification: 8 Packing Group II or III Special Provision 59 - Less than 5 L of alkyd paint can be allowed to fully dry and be taken to landfill. - Fully dried latex paint may be taken to landfill in any quantity. - Liquid paint should be shipped to a registered recycling or disposal

NORTHWEST TERRITORIES LEGISLATION/GUIDELINES		
Legislation	**Hazardous Waste**	**Relevant Details in Legislation**
		facility.
Guideline for the Management of Waste Solvents	Alcohol or petroleum based liquids capable of dissolving another substance (e.g. Varsol, paint thinner)	- Waste solvents are a contaminant under the NWT EPA and must be managed as a hazardous waste. - Store waste solvents separately as described in the Guideline for the General Management of Hazardous Waste in the NWT. - Bulk drums must be grounded to avoid sparks. - When transporting waste solvents use the following shipping information (with Varsol as an example): WASTE PETROLEUM DISTILLATES, N.O.S. (Waste Varsol) PIN: UN1268 Classification: 3 Packing Group: I, II, III Special Provisions: 16 - Bulk containers should be shipped to a registered recycling or disposal facility.
Used Oil and Waste Fuel Management Regulations	Fuel (diesel fuel, gasoline, aviation fuel, kerosene, naphtha) Oil (transmission fluid, hydraulic fluid, crankcase oil, gear lube oil, lube oil) Grease	- Used oil and waste fuel are contaminants under the NWT EPA and must be managed as hazardous waste. - Used oil has the potential to contain heavy metals that are toxic in the natural environment. - Used oil and waste fuel should be bulked in containers as described in the Guideline for the General Management of Hazardous Waste in the NWT. - Used oil and waste fuel should be shipped to a registered recycler. - Waste oil can be burned in a CSA approved oil heating furnace, and can be shipped without a waste manifest in the NWT in this special case. - When transporting waste fuel use the following shipping information: WASTE FLAMMABLE LIQUID, N.O.S. (Waste Fuel Oil) PIN: UN1993 Classification: 3 Packing Group: I, II, III Special Provisions: 16 - When transporting waste oil use the following shipping information: WASTE OIL (Waste Lube Oil) PIN: NA Classification: NA Packing Group: NA
	Used oil filters	- Used oil filters must be punctured/crushed and drained of their contents for 24 hours prior to disposal. - Used oil filters do not have to be managed as hazardous waste if properly drained. - All used oil in filters must be drained for 24-hrs into bulk used oil containers. The filters can then be recycled by a registered facility or sent to landfill. - Used oil filters can be crushed using a filter crusher, where available, and then recycled or sent to landfill. - When transporting waste oil filters use the following shipping information:

NORTHWEST TERRITORIES LEGISLATION/GUIDELINES		
Legislation	**Hazardous Waste**	**Relevant Details in Legislation**
		WASTE FILTERS (Fuel Oil or Lube Oil) PIN: NA Classification: NA Packing Group: NA
	Oily Rags	- Oily rags or sorbents must be drummed and disposed of at a registered facility. - Some landfarms accept oily rags. - When transporting waste oily rags/sorbents use the following shipping information: WASTE OILY RAGS PIN: NA Classification: NA Packing Group: NA
Environmental Guideline for Contaminated Site Remediation	Contaminated Soil	- When transporting hydrocarbon impacted soil with a flashpoint that is unknown or below 610C use the following shipping information: WASTE SOLIDS CONTAINING FLAMMABLE LIQUID, N.O.S. (Gasoline or Diesel, as appropriate) PIN: UN3175 Classification: 4.1 Packing Group: II Special Provisions: 16, 56 - When transporting glycol impacted soil or hydrocarbon impacted soil with a flashpoint higher than 610C use the following shipping information: WASTE SOIL (Gasoline, glycol, diesel or oil) PIN: NA Classification: NA Packing Group: NA Special Provisions: NA - All contaminated soil should be analyzed for flashpoint prior to transport so that it can be transported as waste soil rather than Class 4.1.
NWT Disposal Guideline for Fluorescent Lamp Tubes	Waste fluorescent tubes	- Fluorescent tubes are a contaminant under the NWT EPA and must be managed as a hazardous waste. - Fluorescent tubes contain mercury phosphor powder and traces of lead and cadmium. Compliance with the Canada Wide Standards for Mercury is necessary. - Waste fluorescent tubes should be shipped to a registered recycling/disposal service. - If tubes are not broken and are packaged in their original shipping box, transport as a hazardous waste is not necessary. It is recommended to obtain boxes from the manufacturer if not already on hand. - If tubes are broken compliance with the Guideline for the General Management of Hazardous Waste in the NWT and TDG Regulations is required. - As an alternative to shipping waste bulbs for disposal the ENR Environmental Protection Service (EPS) owns a fluorescent bulb crusher which crushes the bulbs and separates the glass from the contaminants. Contact the EPS for more information.
	Waste mercury	- Mercury vapour lights are a contaminant under the NWT EPA and

NORTHWEST TERRITORIES LEGISLATION/GUIDELINES		
Legislation	**Hazardous Waste**	**Relevant Details in Legislation**
	vapour bulbs	must be managed as a hazardous waste. - Mercury vapour bulbs contain mercury. Compliance with the Canada Wide Standards for Mercury is necessary. - Waste mercury vapour lights should be shipped to a registered recycling/disposal facility. - If bulbs are not broken and are packaged in their original shipping box, transport as a hazardous waste is not necessary. It is recommended to obtain boxes from the manufacturer if not already on hand. - If tubes are broken compliance with the Guideline for the General Management of Hazardous Waste in the NWT and TDG Regulations is required.
Spill Contingency and Reporting Regulations (under EPA)	All spills	- Section 3 - Spill Response Plan A Spill Response Plan must be implemented and filed with the Chief Environmental Protection Officer for facilities with above ground storage of 20,000 L or 20,000 kg or with a below ground storage of 4,000 L or 4,000 kg. If the facility has less than the above storage, a Spill Response Plan should be in place, but does not have to be filed with the Officer. - Section 4 The owner or operator of the facility is responsible for the Spill Response Plan. It must include: a) the name, address and job title of the person in charge of the facility b) the name, job titles and 24-hour phone number of the person in charge of activating the Spill Response Plan c) a description of the facility including location, size and storage capacity d) a description of the type and amount of contaminants stored at the facility e) a site map of the location described in (c) f) the steps to be taken to report, contain, cleanup and dispose of contaminants in case of spill g) inventory and location of available response and cleanup equipment h) the date the plan was prepared. When a review is completed the plan shall be updated and the Officer shall be alerted. - Section 9 Spills shall be reported when the amount spilled is equal to or exceeds that described in schedule B. Report spills to the 24-Hour Spill Report Line at (867) 920-8130. The following details should be provided regarding the spill: date and time of spill, spill location, direction spill is moving, name and number of contact person close to spill, type and amount of contaminant spilled, cause of spill, whether spill is continuing or has been stopped, description of existing containment, action taken to contain, recover, cleanup and dispose of spilled material, name, address and phone number of person reporting spill, and name of person in charge of contaminants at time of spill.
Consolidation of Pesticide Act Chapter P-2 Pesticide	Pesticides	- Section 4 - Consolidation of Pesticide Act 1988 No person shall dispose of a pesticide or a container that contained a pesticide in any way except at a site or in the manner that is prescribed in regulations. - Pesticide Regulations: report spills to the 24-Hour Spill Report Line

NORTHWEST TERRITORIES LEGISLATION/GUIDELINES		
Legislation	**Hazardous Waste**	**Relevant Details in Legislation**
Regulations		(867) 920-8130.

APPENDIX C

NTPC FUEL AND BULK PRODUCT TRANSFER POLICY

	Policy:	Fuel & Bulk Product Transfer		Page 1 of 2
	Monitor:	Manager, Corporate Health, Safety & Environment		No.: S-06
Rev. 02	Approval:	March 17, 2010	Supersedes:	April 22, 2008

Policy

The Northwest Territories Power Corporation (NTPC) is committed to conducting safe and environmentally sound procedures and practices for bulk product transfers at NTPC facilities.

Associated Documents

- *S-06-01, Authorization for Product Transfer Form*

Directive

1. This policy applies to all NTPC Workers, both Employees and Contractors (e.g., Petroleum Products Division and their Contractors), involved in:
    a. the transfer of fuels and bulk products within NTPC facilities;
    b. custody transfer of fuels and bulk products; and
    c. the loading or unloading of tanker trucks, barges, and ships used for the movement of these products.
2. Workers shall wear the required personal protective equipment to protect themselves from the hazards involved.
3. Workers responsible for the transfer process shall remain onsite throughout the process.
4. Workers shall immediately shut down the transfer process in the event of a system failure, fault, leak, spill, or fire.
5. In the event that the Worker responsible for the transfer process must leave the immediate transfer area, the transfer process shall be stopped and the transfer point shall be locked.
6. If the Worker responsible for the transfer process leaves the site during a transfer without stopping the transfer and locking the transfer point, the Worker shall be subject to discipline up to and including dismissal.
7. Emergency equipment including fire extinguishers and spill kits shall be available throughout the transfer process and shall be inspected prior to each transfer.
8. An *Authorization for Product Transfer Form* shall be completed and a Clearance number shall be obtained from the Central Control Room prior to starting the transfer process, as per the NTPC Work Protection Code.
9. The local transfer procedure specific to the site and product shall be followed.

10. Transfer points shall be locked at all times except during the transfer process.

APPENDIX D

WASTE ACCUMULATION LOG

NORTHWEST TERRITORIES POWER CORPORATION

Environmental Protection

Submit

EV-01-02

WASTE ACCUMULATION LOG

Page ___ of ___

Year		Plant						
		Working drum ID (plant - unique drum # - year, e.g.,120-01-10)						
Month	Day	Oil	Glycol	Varsol	Other (specify drum ID and waste type)	Litres in Drum		Initials
						Added	Total	

Please fax to Environment Department at month end (1-888-371-9433)

Last update: March 29, 2010

APPENDIX E

HAZARDOUS MATERIALS / WASTE STORAGE INVENTORY LOG

Submit

WASTE STORAGE INVENTORY

Year				Drum ID (plant - unique drum # - year, e.g.,120-01-10)	# of Drums		
Plant					Full	Empty	Initials
Month		Oil	Shipped				
			Stored				
		Glycol	Shipped				
			Stored				
		Other (Specify)	Shipped				
			Stored				
		Oil	Shipped				
			Stored				
		Glycol	Shipped				
			Stored				
		Other (Specify)	Shipped				
			Stored				
		Oil	Shipped				
			Stored				
		Glycol	Shipped				
			Stored				
		Other (Specify)	Shipped				
			Stored				
		Oil	Shipped				
			Stored				
		Glycol	Shipped				
			Stored				
		Other (Specify)	Shipped				
			Stored				

APPENDIX F

HAZARDOUS MATERIALS STORAGE AREA INSPECTION

Submit

HAZARDOUS WASTE STORAGE AREA INSPECTION

Plant	Month	Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Dec	
Year	Inspection Date																								
Checklist Items		Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N
All locks are in working order		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
All exterior warning signs are legible		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Fence is in good condition (barbwire intact, no holes, etc.)		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Sources of ignition are not kept near storage area		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Access to storage area is clear in case of emergency		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Spill response materials (booms, pads, PPE, etc.) are in stock and readily available		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
A fire extinguisher is close to the storage area, accessible, and has been inspected		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
All containers are in good condition		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
All container labels & markings are legible and accurate		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
All container lids are securely in place		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Waste Accumulation Log is up-to-date		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Waste Storage Inventory Log is up-to-date		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Wastes are properly separated to ensure no mixing of wastes		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Monthly Comments	
Jan	
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Nov	
Dec	

Please fax to Environment Department at month end (1-888-371-9433)

Last Update: March 29, 2010

APPENDIX G

OPERATOR'S MANUAL FOR THE SNARE HYDRO INCINERATOR

WESTLAND INCINERATOR CO. LTD.

INCINERATOR
CYCLONATOR MODEL CY-2020-FA "D"

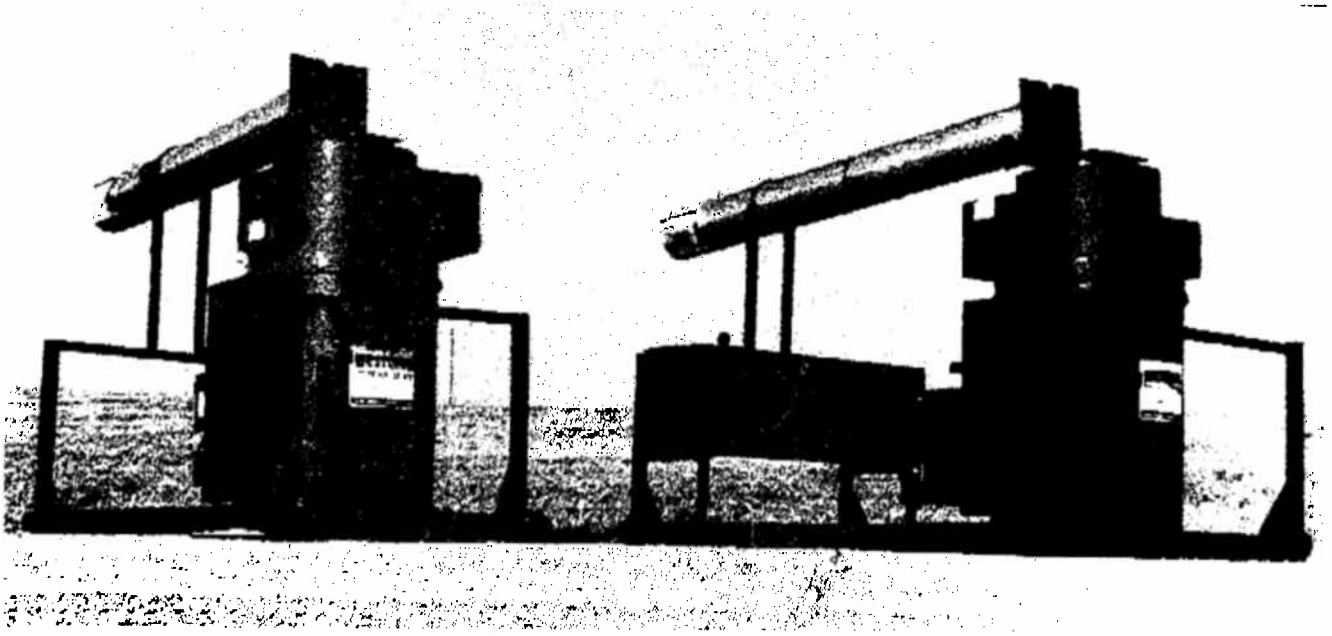
OPERATING SPECIFICATION
&
MAINTENANCE MANUAL

FOR: NORTHWEST TERRITORIES POWER CORP.
JACKFISH LAKE WAREHOUSE

WESTLAND

DOUBLE CHAMBER INCINERATOR

SERIES TMF 2000



Gas Fired — TMF MODEL 2020 — Diesel Fired

Designed for Petroleum, Mining and Lumber Industries

- **Readily Transportable**
- **Clean Burning**
- **Built-In Safety Features**
- **Economical Operation**

SPECIFICATIONS

Capacity
20 cubic feet, 140 pounds per hour - type No. 1, 2 & 3 waste.

Power Requirements
115 volts 60 cycle single phase.

Stack
Stainless Steel
- 16 gauge
- 13" diameter
- 10' high
- c/w stainless steel spark arrester
- a hinged base plate for moving

Casing
12 gauge steel.
Lining: High heat duty castable refractory over high temperature insulation.

Hearth
Refractory hearth over ¼" steel base

Doors
1/4" steel plate c/w heavy duty blade latch.
Charging: - 18" x 24" Clear Opening Refractory lined over steel plate

Ash: - 18" x 12" clear opening Refractory lined over steel plate

Air Supply
Forced air fan c/w duct to primary air jets and to secondary and over fire air jets.

Timer
Cycle timer interconnected to air supply fan and gun type burner. Enclosed in burner housing.

Burner
500,000 B.T.U. gun type oil burner. Gun burner enclosed in protective plate steel housing.

Fuel Supply
150 gal. fuel storage tank c/w filter and flexible hose type connection

Transporter
Incinerator and fuel storage mounted on skid type frame 12' long x 5' wide. Height: 8'8" tall, with stack folded. Constructed of 6" I Beam c/w bumper posts.

Weight
5000 lbs.

Options
* L.P.G. fired burner
* Natural gas fired burner
* 75' electrical power cord
* Stack winch
* 50 cubic foot model 2050
* Cold climate assembly

MANUFACTURED BY:

WESTLAND
Incinerator Co. Ltd.

20204 - 110 Avenue, Edmonton, Alberta T5S 1X8
Phone 447-5052 Fax 447-4912

DISTRIBUTED BY:

CYCLONATOR INCINERATORS

GENERAL COMMENTS

With regulations by the Federal and Local authorities placing strong emphasis on improving our environment and controlling the quality of our air, incineration seems to be the most promising, quick method of waste disposal presently available to us today. The importance of incineration lies in its ability to reduce waste to an absolute minimum ultimate residue as ash, thereby, reducing the cost of labor, handling equipment and hauling of such residue. In addition to lowering of cost, inert residue with a minimum of organic matter can be disposed over unlimited areas.

Generally, incinerators are required to perform satisfactorily over a wide range of operating conditions. They are expected to burn to refuse to ashes without the emission of smoke, bad odors, fumes, ash, charred materials, sparks and the release of toxic pollutants. Air pollution by incinerators has been a major concern to air pollution agencies. The two major causes being: (1) Poor and improperly designed incinerators. (2) Improper operation. The latter has been the primary source of most incinerator complaints.

INCINERATOR DESIGN

Westland TMF (forced air) units are designed to consume type O through type III waste and are built for heavy industrial use. These units meet limited Environmental Standards.

Westland C.A. (controlled air) units are designed to consume type O through type III waste and are developed with more complex control capability in order to meet the more demanding Environmental Standards of the nineteen nineties.

These units are constructed of material that has been tested and proven satisfactory before they are shipped from the factory. They are simple to operate and require very little maintenance. If a reasonable amount of care is taken in the operation of these units, repair costs should be minimal.

TYPES OF WASTE

Type O - Trash - A mixture of highly combustible waste such as paper, cardboard, cartons, wood boxes and combustible floor sweepings from commercial and industrial activities. The mixtures contain up to 10% by weight of plastic bags, coated paper, laminated paper, treated corrigated cardboard, oily rags and plastic or rubber scraps. This type of waste contains 10% moisture, 5% incombustible solids and has a heating value of 8500 btu/lb. of refuse as fired.

Type I Rubbish - A mixture of combustible wastes such as paper, cartons, rags wood scraps, floor sweepings from commercial and industrial sources. The mixture contains up to 20% by weight of garbage. This type of waste contains 25% moisture, 10% incombustible solids and has a heating value of 6500 btu/lb. of refuse as fired.

Type II - Refuse - A mixture of rubbish and garbage, mostly residential sources. This mixture has 35 - 80% in composition by weight of rubbish and 65 - 20% of garbage. This type of waste contains 50% moisture, 7% incombustible solids and a heating value of 4300 btu/lb. of refuse as fired.

Type III - Garbage - A mixture of animal and vegetable wastes, restaurants, hotels markets and wastes from institutional, commercial and club sources. This mixture has a compositional by weight of 100% garbage and rubbish of up to 35%. This type of waste contains 70% moisture, 5% of incombustible solids and a heating value of 2500 btu/lb. of refuse as fired.

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CYCLONATOR

MODEL CY-2020-FA "D" (Diesel Fired)

PRIMARY BURNER - 455,000 Btu/Hr.
SECONDARY BURNER - 325,000 Btu/Hr.

1. **Fuel Consumption** for type # 2 and # 3 Waste
   29.5 Litres per Hour

   Capacity of Fuel Tank for Dual Burner is 682 Litres
   Total running Time - 20 Hours of Operation per tank maximum

2. **Capacity of Incinerator**
   #2 Waste - 68 kg.
   #3 Waste - 45 kg.

3. **Emission Standards**: Each unit has to be individually approved for every type of waste to be incinerated and has to be tested to meet the environmental standards of each province. The model CY-2020-FA "D" has been designed to meet the Air Pollution Guidelines of Alberta Environment.

4. **Maintenance & Operational Cost**: The interior lining of the incinerator is made to stand rugged use. Although it deteriorates over a period of time, we supply material to reline the inside compartment of the incinerator. As far as the exterior is concerned, the only regular maintenance required is the painting of the exterior steel casing.

   Operating Cost: Fuel Consumption - Varies With Usage Per Day.

5. **Recommended Spare Parts**

QUANTITY	DESCRIPTION	PART NO.
1	HF AFC OIL GUN BURNER - 6" BLAST	1058
1	FUEL CONTROL TIMER SWITCH F60M	1046
1	BLOWER CONTROL TIMER 120M	1046A
1	DELHI D530 BLOWER	1053

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CYCLONATOR TMF FORCED AIR INCINERATOR OPERATING INSTRUCTIONS
DIESEL FIRED - HF AFC

Initial Start Up for TMF Incinerators

* Set-up smoke stack and bolt in place
* Load fuel in tank.
* Bleed burner
* Plug in 110 volt power supply to receptacle below the timer
* Set the Air Timer for 20 Minutes
* Set the Timer 10 minutes and allow burner to operate for full 10 minutes without any refuse in the combustion chamber. Check if air induction fan is operating, timers functioning and burner operating properly.

Operation

* Set the timer in off position
* Open the charging door and load incinerator with refuse up to 60% of full capacity. **DO NOT OVERLOAD.**
* Close charging door.
* Set Air Timer for 120 minutes
* Set Timer for 30 minutes - 1 hour, depending on the amount of refuse left after each burn
* Clean out ash with a shovel or rake taking care not to damage the refractory. (Note: The ash must be removed after each burn to prevent clogging of the air jets.)
* Allow the incinerator to cool down for 10 minutes before reloading

Note: Under No Circumstances should the burner be wired direct to the power supply as the air induction system will not function, thus causing the incinerator to overheat.

Failure to comply with the above instructions could result in loss of warranty.

Maintenance

The incinerator requires less maintenance as long as care is taken in its operation. But once in a while, one of its two major components can burn out or overheat. They are the forced air fan and the oil gun burner.

The Forced Air Fan

The blower is manufactured as one complete unit and the only thing that can go wrong with it is the motor. If the motor overheats the whole fan has to be replaced. To replace a blower first disconnect the power supply. Open the burner-blower casing, detach the electrical connections from the blower to the timer, unbolt the blower base, pull the whole fan out and install a new one.

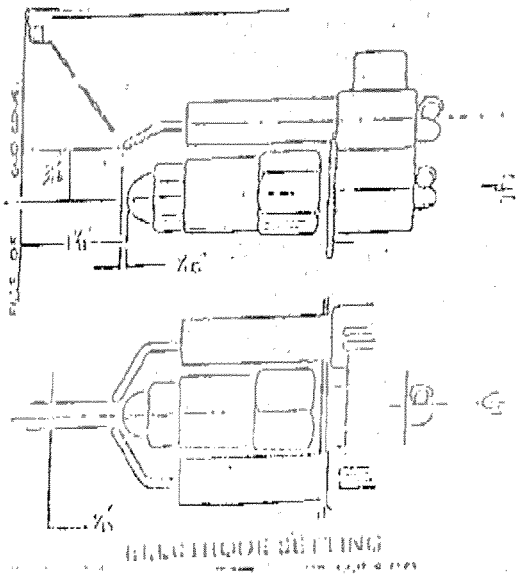
The Burner

The burner has a few components that a malfunction on either one can result to a non operational burner. Introduction to these different components is essential. To avoid costly repairs, the following are instructions for removal and replacing burner parts:

1./ ELECTRODE ASSEMBLY - Remove screw B, Fig. 3 and rotate transformer on its hinge. After opening the tubing connection at the side of the blower housing, remove clamp nut, E, and disengage the oil line. Remove the firing assembly by rotating it 1/4 turn in a clockwise direction and then pulling it outward and upward. Refer to Figure 11 for firing assembly adjustments. To reinstall the firing assembly, insert it with the bend of the tubing in the vertical plane and rotate it 1/4 turn counter clockwise so the bend coincides with the outlet in the housing. Make sure the bus bars are positioned so that they will contact the transformer terminal nuts when the transformer is in its normal position.

2./ NOZZLE - For removal and installation of the nozzle follow the steps for removal of the electrode assembly, change nozzle. Check to see that the electrode gap is 1/8" and that the tips of the electrode are 1/16" in front of the nozzle and 7/16" above the center of the nozzle (See Figure II). Reinstall the electrode assembly. Tighten the clamp nut and also the flare nut.

* Look at blast tube from front end and check nozzle for being in center on end cone opening. If it is not, adjust knurled nut and inside nut on oil pipe.



ELECTRODE SETTING

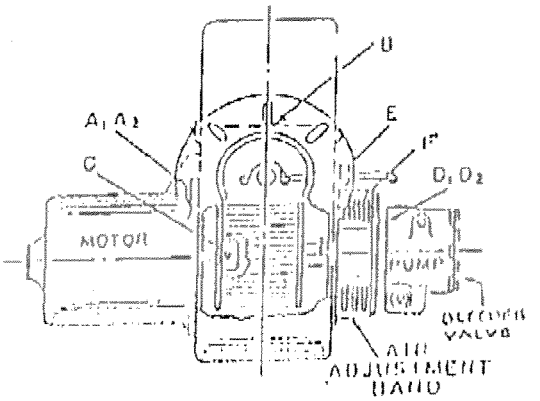


FIG. III

3./ BLEEDING THE FUEL LINE - To purge the air from the fuel line and oil pump, loosen the bleeder valve on side of the pump. Close the burner switch and allow the burner to run until there is no air bubbles in the oil issuing from the valve. Then tighten the bleeder valve.

4./ AIR BAND - If the burner is firing with a lot of smoke, the air band might have moved in transit or altitude has changed. To ensure proper combustion air into the burner , the air band has to be adjusted by loosening the air band locking screw and turning the band to the direction desired for proper combustion. Then retighten the screw.

5./ MOTOR, FAN, FLEXIBLE COUPLING - Loosen set screw F. Remove the two screws A1 and A2. The motor may now be removed from the housing with the fan and coupling attached to its shaft. To remove the coupling, loosen the set screw and pull rubber coupling away from shaft. To remove the fan from the motor shaft, loosen set screw C. For installation reverse the above procedure.

6./ PUMP - Loosen screws D1 & D2. Open pipe and tubing connections, loosen set screw F and remove pump.

7./ TRANSFORMER - Remove Screw B and rotate transformer on its hinge.

Emil

For Parts and Service call 447 - 5052.

When Ordering Parts Always Give the Following:

1./ Model CY 2020 FA Diesel
2./ Part Name
3./ Part Number
4/ Size
5/ Quantity

S/N 98143
115V 60HZ 1Ø