



Waste management Plan

Developed for South Nahanni Outfitters Ltd.

November 30, 2016

Revised October 2022

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1. Introduction

This document describes the practises undertaken by South Nahanni Outfitters Ltd. and its main camp “Root River Base Camp” in managing waste from the existing site activities and camp operations.

Root River Base Camp has been in operation since the early 2000’s with no negative effect on the surrounding environment or neighbouring communities. The operating season is a brief 3 ½ month period through July to the beginning of October each summer, where a maximum of 15 guests are accommodated and operated by staff up to 12 personnel.

All grey water and sewage wastes runs into two septic tanks where the liquid wastes are flowing into a gravel drain field. Human waste gets collected in Outhouses with 8 foot dug outs underneath and once full, covered with gravel.

All non-hazardous waste are either incinerated or transported to Whitehorse for appropriate disposal.



All hazardous wastes are removed from the camp site for appropriate disposal at the landfill site in Whitehorse. The government controlled Whitehorse Landfill is a facility authorized to accept the waste and has the appropriate capacity and can receive the waste generated from camp operations. Official information about its capacity can be found here:

<http://www.city.whitehorse.yk.ca/departments/water-and-waste-services/waste-management-facility>

2. Property location and description

Root River Base Camp is a hunting lodge located on a tributary to the Root River near the head waters of the Root River at Latitude 62° 48' and Longitude 125° 37'. The operating season is a brief 3 ½ month period through July and October each summer, where a maximum of 15 guests are accommodated on a 10 to 12 day basis. At peak capacity the lodge is managed and operated by a staff up to 12 personnel.

The camp consists of

- kitchen building with its eating area and pantry rooms
- a tool/work shop
- 5 guides/staff cabins
- 4 guest cabins
- a skinning shed and trophy storage facility
- a storage shed with a walk in cooler room
- a sauna/shower house/laundry building
- a water tower with a water storage tank
- a generator house which also houses the solar system control units and its batteries
- the solar panel arrays close to the generator house
- trophy boiling/treatment area
- a meat hanging rack
- waste incinerator area
- a road which connects the main camp the to the private 2500 foot airstrip
- a lined fuel cache for storing drummed fuel



3. Purpose of Waste Management Plan

The purpose, goal and objectives of the waste management plan is to mitigate the effect of the hunting camp and all its daily operations on the land, water, air, wildlife, fish and vegetation.

The public interest is served, in addition, by the creation of employment for people in the North and providing valuable tourism dollars to be spent in the Northwest Territories.

It goes without saying that the plan is also designed to achieve compliance with all applicable acts, regulations, authorizations and permit/license conditions.

4. Description of Waste Management

All waste streams are segregated at the source. Grey water is collected in septic tanks and human waste in dug outs with subsequent natural filtration and rejuvenation. Items suitable for burning (e.g. paper) are separated from all recycling (e.g. plastics, cans and bottles). All food waste gets burned with other burnable items, thus mitigating wildlife attractants.

All waste oils, used batteries and other materials unsuitable for incineration are stored separately and flown to Whitehorse for proper disposal.

All grey water and sewage waste flows to two septic tanks, one set up for the shower/laundry building and one for the kitchen building. The settling containers/drums which are in place since 2010, haven't been in need for a cleanout since. They are monitored by a removable lid, covered with 20 cm of gravel. The two leaching beds are made up of perforated plastic pipes for distribution and the pipes are laid in gravel trenches. The newest technology for most energy and water friendly laundry machines is used in camp, thus contributing fundamentally to minimize production of grey water.

All paper, cardboard and food waste is burned in the incinerator. At normal lodge occupancy, food waste equates to approximately one 20 liter bucket per 2 days. Under normal circumstances incineration takes place every two days. After each burning process, the ashes get removed, packed in waterproof 50 lb bags and flown out to Whitehorse to be deposited in the landfill site.



The incinerator is operated in accordance with *Canada's Technical Document for Batch Waste Incineration*. The document is printed and displayed on site and the person responsible for incineration has read and understood its procedure.

All conventional household recycling items, such as plastics and cans are bagged and flown to Whitehorse for appropriate disposal.

The hazardous waste stream is comprised largely of batteries, either consumer type solid batteries (AA, D cells etc.) or leads acid batteries. These are suitable packed for transportation by air to Whitehorse and disposed of through an authorized disposal agency (Ravens Recycling) as part of the national battery recycling program. The batteries are removed from site as space allows on aircraft. Backhauling of other wastes such as used rubber, tires or scrap metal is also done as space allows on aircraft.

In addition South Nahanni Outfitters is registered as a generator of hazardous waste with the NWT government as NTG587 as of January 2016.

Limited quantities of waste oil and antifreeze will be found on site, generated from equipment maintenance. Waste oil and antifreeze are collected in 45 gal metal drums and transported to Whitehorse for disposal.

The solar system which powers the entire camp for 98% of the time throughout the summer season, considerably contributes to minimize carbon foot print and maintenance on generators and its waste oil production.

Empty metal fuel drums which are drained of all fuel and stacked at the airport are flown out to Wrigley airport on backhauls. At each start of the season when the new fuel order gets to Wrigley, the empty drums are loaded onto the truck and hauled back to Edmonton to the proper disposal facility.

There are minor amounts of emptied cans from paint or solvents, which are disposed of appropriately by sending them to Whitehorse. Full paint buckets, antifreeze containers, oil jugs and similar hazardous materials are stored in metal containers to prevent leakage into the environment.



5. Table 1: Waste Management Plan Summary Table

Type of Waste	Estimated volume/mass generated	Storage/treatment	Disposal
Sewage and grey water	720 liter/day	All grey water and sewage wastes flow into 2 septic tanks	The liquid wastes are draining into a leach field
Waste oils, emptied cans from paint or solvents and aerosol cans	10 liters of oil and 6 one gal paint buckets are used seasonally.	Waste oil is collected in 45 gal metal drums	Transported to Whitehorse for appropriate disposal
Hazardous wastes (mainly comprised of batteries, consumer type or lead acid)	About 6 12 volt batteries are on site. Solar system uses maintenance free sealed gel batteries	Batteries are stored in the tool/work shop.	Batteries are flown to Whitehorse and disposed of through an authorized disposal agency (Ravens Recycling)
Antifreeze	Max 8 liters	Put into 45 gal metal drums	Transported to Whitehorse for appropriate disposal
Empty fuel drums	Approx. 150 drums per season	Drained and stacked at the airstrip to be flown out	Flown to Wrigley Airport for transport back to Edmonton
Burnable waste (paper, cardboard etc.)	5 kg per day	Stored in metal containers outside the kitchen and shop building prior to incineration	Incineration. Under normal circumstances every second day
Kitchen waste (all food waste)	Maximum daily kitchen waste is 10 L	Collected 3 times a day. Stored in metal containers outside the kitchen and shop building prior to incineration	Incineration. Under normal circumstances every second day
Recyclables	Approximately 100 cans, 10 bottles and 20 kg plastic per 10 days	Crushed, rinsed, bagged and stored in spill proof bags at the work/tool shop	Flown to Whitehorse for refund



These calculations are based on an average occupancy of 18 people, although the number of people on site will vary during the season from 2 to 28.

Grey water calculation is based on the frequency of pumping water into the holding tank in the water tower. Under normal occupancy once a day the tank gets filled, which holds 720 liters. This brings the consumption to 40 liters a person, which is 16% of the 251 litres per person used in Canada in 2011 (*Source Gov. of Canada, Environment Canada, residential water use in Canada*).

6. Landfill Site

There is no landfill site needed for Root River Base camp. Ashes from the incinerator and all other waste material are flown out to Whitehorse for proper disposal (see above for information on capacity on Whitehorse Landfill)

7. Septic Field (Gravel Leach Field)

Root River Base Camp is situated on an alluvial fan which has perfect characteristics for installing septic fields.

The Septic Field (gravel leach field) for the kitchen is located at least 100 meters from the high water mark and 10 meters elevated from the creek water level. The dimension of the septic field is 5 meters wide by 20 meters long by 3 meters deep. The field is seen in attachment #1.

The Septic Field (gravel leach field) for the shower/laundry house is located at least 100 meters from the high water mark and 10 meters elevated from the creek water level. The dimension of the septic field is 2.5 meters wide by 6 meters long by 3 meters deep. The field is seen in attachment #1.

Please see attachment #1 for map of waste facilities.



8. Fuel cache

Full and empty fuel drums are stored in the fuel cache located at the airstrip about 2 miles away from the high water level on the creek (SW of the camp). The full fuel drums are stored in a fuel cache of the size of 17 x 17 meters square (0.29 ha). It consists of a gravel dam around its perimeter. The gravel ground inside is covered with a heavy duty fuel cache liner. Fuel spill kits are on site with clear instructions on how and where to use them in case a spill occurs.

The lined fuel cache which is a secondary containment will hold all spilled fuel. In such case a 2" pump is used to pump the contaminated water/fuel fluids into empty 200 liter fuel drums which are on site.

When pumping fuel into an aircraft, empty drums are nearby to put the dripping fuel pump nozzle in. The empty drum also serves as a secondary containment devices in case something goes wrong with a pump.

Empty drums are hauled out on back hauls throughout the summer. In case there are contaminated fuels or absorbent pads, it is hauled out on back hauls as soon as possible.

9. Waste Management Plan Review and Update

It will be reviewed annually prior to the beginning of each summer hunting season. It will also be reviewed as and when required in between those periods either due to issues recognized by those operating the lodge, by the Land Use Inspector, or by change in regulations, permit conditions, etc.



Outfitted Big Game Hunting in the Northwest Territories, Canada

Attachment # 1

