



Operation and Maintenance (O&M) Plan for the Landfill and Handling of Solid Wastes at FOX-3

Licensee: Department of National Defence (DND),
Government of Canada

Licence: 3BC-FOD0919 Type "B"

Location: FOX-3 North Warning System Site,
Dewar Lakes, Qikiqtani Region, Nunavut

Plan prepared by: Nasittuq Corporation

Date: 28 January 2010

Introduction

This O&M Plan for the Landfill and Handling of Solid Wastes at FOX-3 has been developed in accordance with "Guidelines for the Preparation of an Operation and Maintenance Manual for Sewage and Solid Waste Disposal Facilities in the Northwest Territories", October 1996, as required by the site's water licence.

FOX-3 (Dewar Lakes) is a Long Range Radar Site (LRR) for the North Warning System (NWS). It is located in Nunavut on Baffin Island north of Dewar Lakes at 68°40'48" N, 71°14'48" W. The site is on a hill top, about 518 m above sea level (ASL). The abandoned airstrip in the valley is approximately 152 m ASL. The McBeth River runs through the valley. Streams on the east side of the site run down to the McBeth River.

The closest source of support is the radar site FOX-M, located next to Hall Beach, to the west. Flight time from FOX-M to FOX-3 is 3 hours (including a half hour refueling stop) by helicopter under normal conditions. A helipad is located at the summit.

The hill top is in an area of glacial scouring. Surface materials include bedrock, till, and fluvial materials, with till being the most common. The summit is strewn with boulders up to 1 meter across. The airstrip area features fluvial deposits of gravels, sands, and silts. Vegetation is relatively scarce with some patches of wood rush, grass, and wildflowers. The wetter areas may consist of sedges and moss.

The most prominent topographical features of the area include rolling hills, separated by broad intervening depressions, and an interconnecting lake system running through a deep valley.



Precipitation data is:

Annual Average:	244 mm
Snowfall:	145 cm
Rainfall:	99 mm

Temperature data is:

Yearly Average Minimum:	-46°C
Yearly Average Maximum:	+19°C

See **Annex A** for the FOX-3 Topographic Site Map and the photo entitled Location of Landfill at FOX-3 with GPS Co-ordinates.

FOX-3 is an unmanned site, but it is visited by FOX-M staff on scheduled quarterly preventive and corrective maintenance trips and on an as needed basis. During the months of May to September there may be an average of 5 to 20 personnel on-site due to seasonal project activity and occasional Third Party visitors.

Background

Staff obtain water from the Water Lake which is labelled on the FOX-3 Topographic Site Map. Water is trucked to the summit to fill the raw water tanks in the main train (main building). The raw water is treated and goes into potable water tanks which is distributed by water lines to selected rooms in the train such as the kitchen and washrooms.

Solid waste is placed in garbage bags in garbage cans in the buildings. The waste is typically paper, paper products, cardboard, rags, and kitchen waste. The quantity depends on the number of people on-site. The garbage bags are collected by hand and flown back to FOX-M. The FOX-M garbage is picked up by the Municipality of Hall Beach and disposed of in the community's landfill. This is done in accordance with the current contract between the Municipality of Hall Beach and Nasittuq Corp. Since FOX-3 does not have an incinerator on-site to incinerate solid waste and since burning in a burn bin is prohibited, no solid waste is currently being disposed of in the FOX-3 landfill.

FOX-3 was one of the original DEW-Line sites (Distant Early Warning Line sites) built in the 1950's. It was modernized to be a North Warning System radar site in the late 1980's and early 1990's. The landfill dates back to the DEW-Line days. There is no as-built drawing of the landfill.

Operation and Maintenance of Solid Waste Disposal Facility

The landfill is located on the hill top, or summit, at FOX-3. As stated in the **Introduction**, the hill top is in an area of glacial scouring. Surface materials include bedrock, till, and fluvial materials, with till being the most common. The summit is strewn with boulders up to 1 meter across. Vegetation is relatively scarce with some patches of wood rush, grass, and wildflowers. **Annex A** contains a topographic map of the area and a photo that shows the location of the landfill with GPS co-ordinates. The approximate dimensions of the landfill are 15 m by 23 m. The land slopes gradually downhill to the west of the landfill with no permanent water bodies in the vicinity. The landfill is approximately 5 km west of the abandoned airstrip. The prevailing wind is from the west .

Only non-hazardous domestic waste such as paper, paper products, cardboard, rags, and kitchen waste can be landfilled. However, since there is no incinerator on-site and since use of a burn bin is prohibited, waste is currently being flown back to FOX-M and then sent to the Municipality of Hall Beach's landfill for disposal.

Sewage does not go into the landfill since it is part of a separate sewage system. Hazardous waste is placed in marked and labelled containers which are retrograded south outside of Nunavut for disposal. Typical hazardous waste types are waste oil, waste batteries, waste glycol, waste fuel and water, waste paint, waste fuel filters, and waste aerosols.

FOX-3 is an unmanned site, but it is visited by FOX-M staff on scheduled quarterly preventive and corrective maintenance trips and on an as needed basis. The FMT position looks after the waste. The FMT reports to the FOX-M Manager who is responsible for the overall operation and maintenance of FOX-3. Since the radar sites are operated and maintained by Nasittuq on behalf of the Department of National Defence (DND), inquiries about FOX-3 are to be directed to Mr. Kim Kalen, Environmental Officer, North Warning System Office, DND, Ottawa, tel. 613-998-8482.

When the landfill is used, the waste is deposited on the ground and is compacted with a front end loader or similar equipment. The compacted waste is spread out into a uniform layer about 15 to 60 cm thick. It is then covered with a layer of borrow material about 15 cm thick. This prevents debris from blowing away. There is no fencing, and odour control is not necessary since odour is not a problem.

Employees who operate heavy equipment such as loaders on-site have passed a Nasittuq Special Purpose Vehicles course which includes safety practices. Backing up vehicles is done only when there is no other alternative. The landfill is on a dead-end road with no buildings, therefore the only people and vehicles at the landfill would be the FMT and any staff member assisting the FMT. There is no community nearby therefore there are no members of the public on-site.



There are no records of the solid waste deposited in the past in the landfill. No solid waste is currently being disposed of in the landfill. Records of the quantity of waste being flown from FOX-3 to FOX-M begin in 2009.

The landfill is checked during summer inspections to ensure debris is adequately covered.

Hazardous Waste Management

Hazardous waste is not disposed of in the landfill. It is kept separate from non-hazardous waste. Hazardous waste is placed in marked and labelled containers which are annually retrograded south outside of Nunavut for disposal. Nasittuq's Environmental Protection Plan, Section 5.0, XV Storage and Tracking of Waste Hazmat details how to store, mark, label, track, and inspect hazardous waste.

Emergency Response - Fire

FOX-M staff receive training in fire-fighting. When FOX-M staff go to FOX-3, each person takes on a position in the site's Fire Brigade. The "Duties of Fire Brigade" document posted at the site details what each Fire Brigade position does in event of a fire. If there is a fire at the landfill, there is a water truck on-site which could be used to pump water on the fire.

Emergency Response - Spills

The document entitled Spill Contingency Plan for FOX-3 (Dewar Lakes, Nunavut), revised for 2009, was submitted to the Nunavut Water Board (NWB) by Nasittuq Corp. The plan was approved by the NWB as stated in the NWB's letter dated 20 January 2010 from Don Carr, Technical Advisor, NWB to Louise Chawner, Nasittuq Corp.

As well, Nasittuq's Environmental Protection Plan, Section 5.0, XVI Spill Contingency Plan is a generic spill plan that states what to do if there is a spill.

References

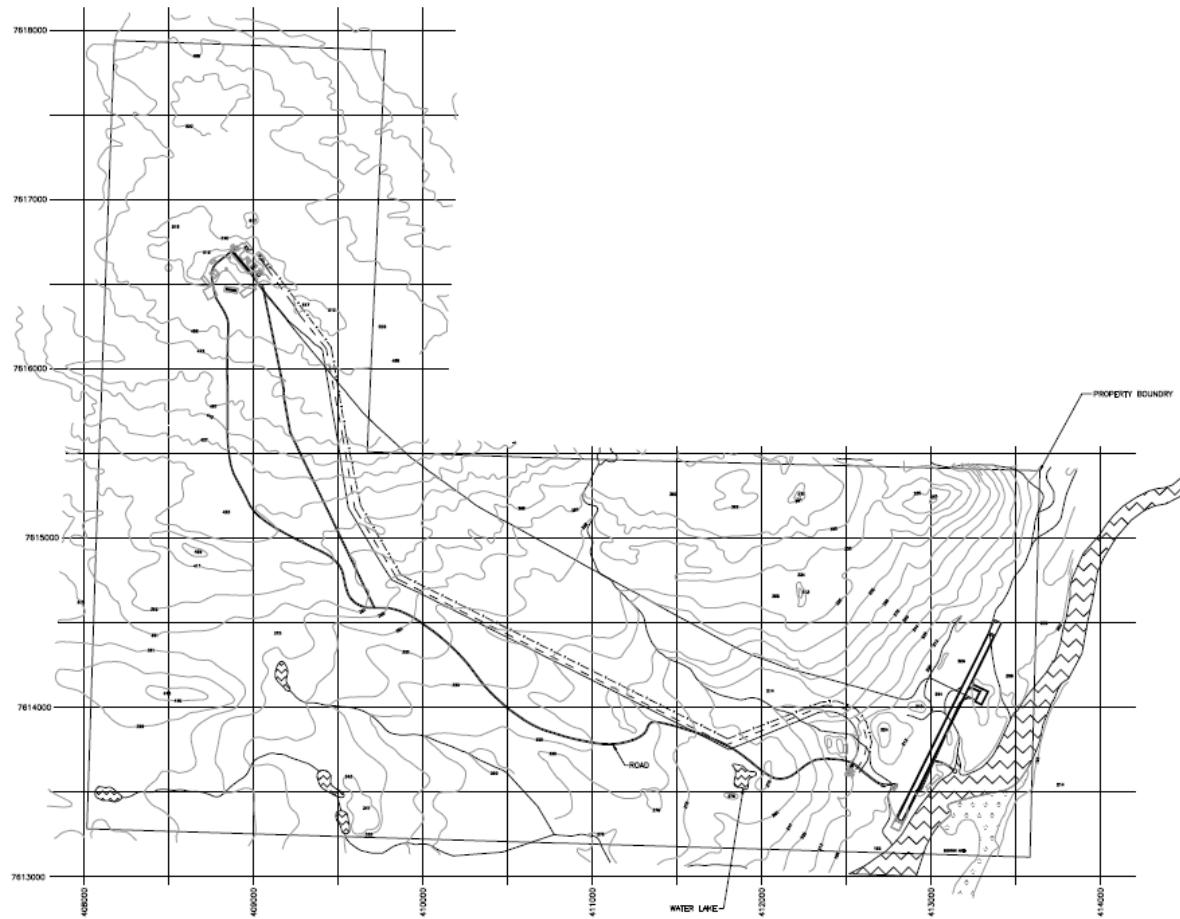
1. Guidelines for the Preparation of an Operation and Maintenance Manual for Sewage and Solid Waste Disposal Facilities in the Northwest Territories", October 1996.
2. Nasittuq's Environmental Protection Plan.
3. 2008 Annual Report to the Nunavut Water Board, for FOX-3, prepared by Nasittuq Corp.
4. Spill Contingency Plan for FOX-3 (Dewar Lakes, Nunavut), revised for 2009, prepared by Nasittuq Corp.
5. Course Training Standard for JT-18, Special Purpose Vehicles.



Annex A

- FOX-3 Topographic Site Map
- Location of Landfill at FOX-3 with GPS Co-ordinates

SK-11



REFERENCE DRAWING:
H-067/2-8400-101

FOX-3

National Defense	Défense nationale
NORTH WARNING SYSTEM OFFICE Bureau du système d'alerte du Nord	
LOCATION	
	
	
NOTES:	
1. CONTOURS ARE IN METERS. 2. NASITTUQ HAS CARE CUSTODY OF ENTIRE PARCEL.	
LEGEND:	
SWAMP	
WATER/LAKE	
P.O.L.	
TELEPHONE	
ELECTRICAL	
REDUCED DRAWING FOR INFORMATION ONLY	
SCALE IS REPRESENTATIVE OF FULL SIZE DRAWING.	
1 30 OCT 09 RELEASE FOR NUNAVUT W.B. M.J.	
DATE	REVISION
SITE RECORD DRAWING	
0 200 400 600 800 1000 meters	
SCALE - ROLLER	
1 : 10000	
PROJECT - PROJET	
LONG RANGE RADAR SITE	
FOX-3	
DEWAR LAKES	NUNAVUT
THREE-METER	SITTING
DATE 30 OCT 09	
SUBJECT - SUJET	
TOPOGRAPHIC SITE MAP	
PRODUCTION CONCURRENCE - ASSORTIMENT	
DESIGNED W.W.	PRINTED
ETHNE	MATERIAL
DESIGNED M.J.	RECORDED
DESIGNED B.T.	PRINTED
DESIGNED Y.V.	RECORDED
CONTRACTOR	RECORDED
PROJECT NUMBER	RECORDED
ENG. NO. - FICH. NO.	RECORDED
SK-11	
Canada	

Location of Landfill at FOX-3 with GPS Co-ordinates

