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By Licence Administrator at 2:29 pm, Jun 23, 2011



MARS INSTITUTE



7 July 2008

To: Nunavut Water Board
P. O. Box 119
Gjoa Haven, NU X0B 1J0
Tel: (867) 360-6338

Re: NWB License No. 3BC-HMP0712
Annual Report for 2007 Field Season

License date of issue: *12 July 2007.*

Annual Report period: *12 July 2007 – 6 July 2008*

PART B: GENERAL CONDITIONS

1. Annual Fee \$30: *Check enclosed in mail with hardcopy of this report.*
2. Annual Report:
 - i) Summary report of water use and waste disposal

No quantitative flow metering system was in place in 2007.
Daily water usage was estimated to be at or less than 1 m³/day
for the total duration of the field campaign, i.e. 39 days.

This estimate is now confirmed by the new flow meter installed
on 1 Jul 2008. The first days of camp activity this year resulted
in a daily water usage amount of ~ 0.5 m³/day. Although camp
population was not maxed out, usage is not expected to exceed
~ 1 m³/day on most days, significantly less than the 5 m³/day
limit allowed.

All burnable waste was incinerated on site.
All non-burnable solid waste residue and all urine were backhauled
from camp for proper disposal in Resolute Bay. See details below
under Part D and appended letter and table.

- ii) List of unauthorized discharges: *None*
 - iii) Updated Spill Contingency Plan: *Appended*

iv) Reclamation work: *None*

v) Summary of information requested:

A water metering system was installed at the HMP base camp on 1 Jul 2008. Water usage currently averages 0.5 m³/day, significantly less than the 5 m³/day allowed in the license.

At the time of this report, in spite of proactive efforts to consult with INAC in the months leading up to the 2008 summer field campaign, no suitable incinerator system meeting the emission standards, mass and volume constraints of Twin Otter aircraft, reasonable cost effectiveness, and fabrication and delivery time was identified and settled upon to meet the cargo deadlines for the HMP-2008 field campaign. Moreover, base managers for the Polar Continental Shelf Project of Natural Resources Canada are currently considering an integrated approach to the incineration of waste for all the field parties that PCSP supports, including the Houghton-Mars Project. For these reasons, the Mars Institute is hereby requesting more time to allow it to meet the incineration standards required by INAC, including time to allow the promising approach considered by PCSP base managers to come to fruition. In the meantime, any waste that cannot be adequately incinerated using the HMP's existing (Salisbury) incinerator shall be flown out of camp and disposed of either in Resolute Bay c/o Narwhal Arctic Services or of NRCAN's PCSP, or flown south at the end of the field season on a Mars Institute-chartered transport aircraft for disposal in Vancouver.

Camp sump berm was raised at the start of the 2008 field season as required.

Spill Contingency Plan was updated as required.

The following specific information was also requested:

2007 volumetric water use (approx.): 39 days x 1 m³/day = 39 m³

Water source location: 75°25'46.69"N, 89° 51'26.68"W

Sump location: 75°25'59.08"N, 89° 51'49.71"W

Incinerator location: 75°26'02.47"N, 89° 51'17.85"W

In addition, the following required measures were taken:

- Fuel storage (barrels) are now stored on top of secondary containment berms at both the airstrip and at camp.
- Metering equipment is now installed at camp to measure pumped water used at camp.

- Records showing the shipping off-site of bulk unburnable and hazardous waste are provided (see appended table).
- Camp sump is now enhanced with a higher berm that eliminates any risk of greywater overflow.

vi) Other details on water use or waste disposal: *None*

3. Changes in operating plans or conditions: *None*
4. Flow meter installed: *1 July 2008.*
Daily water use measured (1-5 July 2008): 0.5 m³/day
5. Copy of License: *Kept at camp at all times, in c/o Base Camp Manager*
6. Additional reports, plans, studies: *None*
7. Acknowledgement of Annual Report by Manager of Licensing: *Pending*
8. License is never assigned.

PART C: CONDITIONS APPLYING TO WATER USE

1. All water for domestic camp use is drawn from Lowell Creek only.
Volume of water used averages ~ 1 m³/day, below the 5 m³/day limit allowed.
2. Streams never used as a water source.
3. Water use does not draw down any source water body.
4. Water intake hose is equipped with three screens. Note: There are no fish in Lowell Creek
5. No material is removed from high water mark of Lowell Creek
6. Lowell Creek bank erosion is currently prevented by restricting the banks from any vehicle access.
7. No significant amount of sediment enter the water as a result of our water use.

PART D: CONDITIONS APPLYING

1. All waste disposal takes place beyond the minimum distance of 30 m from the high water mark of any water body.
2. No open burning or on-site land filling is practiced.
3. All acceptable food waste, paper waste and untreated wood products are disposed of in an incinerator.
4. All hazardous wastes, waste oil and non-combustible waste is backhauled and disposed of in an approved waste disposal site in Resolute Bay. *See appended letter of agreement from the Hamlet of Resolute Bay.*
5. Records of all waste backhauled and records of confirmation of proper disposal of backhauled waste were maintained by Licensee. *Records for the 2007 field season are provided in a table below.*
6. All greywater is contained in a sump located at a distance of more than 30 m from the ordinary high water mark of any water body, at a site where direct flow into a water body is not possible and where no additional impacts are created.
7. *Not applicable.*

8. The HMP base camp currently operates at ~ 1000 person-days per year. All toilet wastes (except urine) are disposed of through incineration. Any remaining residue is backhauled and disposed of in an approved waste disposal site. *Records for the 2007 field season are provided in a table below.*
9. Any hazardous materials, including waste oil, receive proper treatment and disposal at an approved treatment facility. All hazmats and waste oil are backhauled from camp and either disposed of in Resolute Bay c/o Natural Resources Canada's Polar Continental Shelf Project or flown south on Mars Institute-chartered cargo flights for proper disposal in Vancouver.

PART E: CONDITIONS FOR CAMPS, ACCESS INFRASTRUCTURES AND OPERATIONS

1. No camps are erected or materials stored on any frozen water body.
2. All activities are always conducted in such a way as to minimize any impact on surface drainage. In the instance where the camp sump was noted to spill over in 2007, the corrective measure taken was to raise the berm height around the sump to prevent any possible greywater overflow in the future.
3. *Not applicable.*
4. No debris or sediments associated with earthworks are deposited into or onto any body of water.

Haughton-Mars Project

Spill Contingency Plan

Last Updated: 23 June 2008

In case of spill, follow the 4 steps below in sequence.

If you do not feel competent or adequately equipped, please seek assistance first.

STEP 1: Immediate Danger?

Assess hazard presented by spill.

Ensure that no person is exposed to any immediate danger from spill.

Evacuate spill site immediately if immediate danger is present.

Seek medical help for any injured person.

Inform HMP management or authorities immediately as appropriate.

STEP 2: Contain Spill – Use Spill Kit

If no immediate danger is present...

Stop spill at its source.

Isolate spill: Prevent expansion of the area affected by the spill.

Continue pursuing measures of STEP 1 through STEP 2.

STEP 3: Clean Up Spill Site – Use Spill Kit

If no immediate danger is present...

Assess damage from spill.

Stop damage from expanding first, then begin site restoration.

Clean up and restore spill site using proper equipment and materials.

Continue pursuing measures of STEPS 1 through STEP 3.

STEP 4: File Report(s) ASAP

Assist HMP Management in filing a detailed Nunavut Spill Report.

Assist HMP Management in filing any additional reports as needed.

Assist HMP Management in updating this plan as appropriate.

EMERGENCY CONTACTS:

Emergencies & Enforcement Officer, Environment Canada

Nunavut Spill Report (24-Hr Report Line) – Report all spills.

Water Resources Officer, Indian & Northern Affairs Canada

Polar Shelf (Resolute Bay):

Kenn Borek (Twin Otters):

RCMP (Resolute Bay):

Mars Institute (Vancouver HQ)

Tel: (867) 975-4644

Tel: (867) 920-8130

Tel: (867) 975-4289

Tel: (867) 252-3872

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Box 60
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04 June 2007.

Pascal Lee, Ph.D.
NASA Ames Research Center, MS 245-3
Moffett Field, CA 94035-1000, USA

RE: Haughton-Mars Project Waste Disposal in Resolute/NWB Application

The Hamlet of Resolute Bay does not have an objection to the Haughton -MARS Project use and disposal of waste at our landfill site.

A few comments to be followed;

-Please ensure that all garbage is burned and only burnable material gets deposited to our landfill.

-Metal can be deposited at our current metal dump close to the Hamlet.

-Drums to be emptied into the Airport lagoon and returned to Polar shelf for recycling or crushing.

Should you or the NWB have any question or concerns you may contact myself at the above phone number or email.

Sincerely,

Josh Hunter,
SAO

Table: Record of Twin Otter flights between Resolute Bay and Houghton-Mars Project Site showing waste backhauled to Resolute Bay for proper disposal c/o Narwhal Arctic Services for urine and c/o Natural Resources Canada's Polar Continental Shelf Project for solid waste not burned at camp.

Date	No. of Flights from HMP	Waste Shipped from HMP
2-Jul	4	Urine Drums, Misc Solid Waste
3-Jul	1	Urine Drums
5-Jul	1	
8-Jul	1	
11-Jul	7	Urine Drums, Misc Solid Waste
12-Jul	2	Urine Drums, Misc Solid Waste
13-Jul	2	
14-Jul	1	Urine Drums, Misc Solid Waste
17-Jul	1	Urine Drums, Misc Solid Waste
18-Jul	1	
19-Jul	1	
20-Jul	1	
23-Jul	1	
24-Jul	1	Urine Drums, Misc Solid Waste
25-Jul	1	
27-Jul	1	
31-Jul	1	
1-Aug	1	Urine Drums, Misc Solid Waste
3-Aug	1	
6-Aug	1	
7-Aug	1	
8-Aug	1	Urine Drums, Misc Solid Waste
9-Aug	2	
10-Aug	2	Urine Drums, Misc Solid Waste