

Gjoa Haven, NU Sewage Disposal – Spill Contingency Plan

FINAL

May 31, 2014

Spill Contingency Plan, Sewage Disposal

Hamlet of Gjoa Haven, NU

11-5029

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Submitted by

Dillon Consulting Limited

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Treatment Facilities\Task 6 - Post Construction
Phase\Preparation of Operation and Maintenance Manual\Spill
Contingency Plan - Hamlet of Gjoa Haven.doc

TABLE OF CONTENTS

	<u>Page No.</u>
1 INTRODUCTION AND COMMUNITY DETAILS.....	1
1.1 COMMUNITY CONTACT INFORMATION	1
1.2 PURPOSE AND SCOPE	1
1.3 COMMUNITY ENVIRONMENTAL POLICY	1
1.4 PROJECT DESCRIPTION	1
1.5 SITE DESCRIPTION	1
1.6 FACILITY DESCRIPTION	1
1.7 SPILL PREVENTION MEASURES	2
1.8 ADDITIONAL COPIES.....	3
1.9 PROCESS FOR STAFF RESPONSE TO MEDIA AND PUBLIC INQUIRES	3
2 RESPONSE ORGANIZATION	4
2.1 RESPONSE PERSONNEL	4
2.2 FLOWCHART OF RESPONSE ORGANIZATION AND COMMUNICATION LINES	4
2.3 SUMMARY OF AVAILABLE COMMUNICATION EQUIPMENT	6
3 ACTION PLAN.....	7
3.1 POTENTIAL ENVIRONMENTAL IMPACTS OF SEWAGE SPILL	7
3.2 PROCEDURES.....	7
3.2.1 <i>Procedures for Initial Actions</i>	7
3.2.2 <i>Spill Reporting Procedures</i>	7
3.2.3 <i>Procedures for the Protection of Human Health and Safety</i>	8
3.2.4 <i>Public Notification Procedure</i>	8
3.2.5 <i>Procedures for Containing and Controlling Spill</i>	8
3.2.6 <i>Procedures for Transferring, Storing and Managing Spill Related Wastes</i>	9
3.2.7 <i>Procedures for Restoring Affected Areas</i>	9
4 RESOURCE INVENTORY	10
4.1 ON-SITE RESOURCES	10
4.2 OFF-SITE RESOURCES	11
5 TRAINING PROGRAM.....	12
5.1 OUTLINE OF TRAINING PROGRAM	12
5.2 TRAINING SCHEDULE AND RECORDKEEPING	12

LIST OF FIGURES

Figure 1: Gjoa Haven Sewage Lagoon - Site Plan	2
Figure 2: Flowchart of Communication Lines	5

LIST OF TABLES

Table 1. Response Personnel Contact Information	4
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LIST OF APPENDICES

Appendix A: NWT Spill Report Form	
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1 INTRODUCTION AND COMMUNITY DETAILS

1.1 Community Contact Information

Shawn Stuckey
Senior Administrative Officer
Hamlet of Gjoa Haven
Box 200
Gjoa Haven, NU, X0B 1J0
Tel: (867) 360-7141

1.2 Purpose and Scope

The purpose of this plan is to outline response actions for potential spills. The plan identifies key response personnel and their roles and responsibilities in the event of a spill, as well as the equipment and other resources available to clean up a spill. It details spill response procedures that will minimize potential health and safety hazards, environmental damage and clean-up efforts.

1.3 Community Environmental Policy

The Hamlet of Gjoa Haven is committed to operating in an environmentally sensitive manner, and complying with requirements of the Nunavut Water Board (NWB).

1.4 Project Description

This spill contingency plan will be used by the hamlet, for activities associated with hamlet operations pertaining to the operation of the sewage disposal site.

1.5 Site Description

The Hamlet of Gjoa Haven is located at 68°37' N latitude and 95°50' W longitude (according to Google Earth Pro, 2007), on the southern tip of King William Island, Kitikmeot Region, Nunavut. Topography consists mostly of sands and gravels with a continuous permafrost zone. Low lying vegetation such as mosses and lichens are predominant with hardy grasses found in some areas. Year round access to the Hamlet is limited to air travel, however, during the summer months freight may be brought in by sealift.

The average annual precipitation in Gjoa Haven consists of 5.1 cm of rainfall and 25.5 cm of snowfall. The mean high in July is 13.1 °C with a mean low of 7.2 °C. In January, the mean high is -23.9 °C and mean low of -35.9 °C. The permafrost is continuous, extending to depths from 20 m to over 120 m. The active layer varies between 0.55 m and 0.25 m.

1.6 Facility Description

Construction of the new sewage lagoon was completed in 2013. Sewage is collected from the community by a sewage truck and then discharged into the sewage lagoon. The new facility consists of single cell lagoon and incorporates the use of the adjacent wetland area as a means of secondary polishing of the effluent. The new lagoon has been built adjacent to the old lagoon. Please refer to **Figure 1** for the site location.

The sewage lagoon was designed to treat approximately 58,000 m³ of sewage. Collected sewage will mostly come from residential buildings in the hamlet as there are limited industrial or commercial sources. The sludge will generally be a mixture of fecal matter, organic and inorganic material. However, contaminants such as heavy metals, solvents and petroleum products may enter the lagoon due to municipal activities.

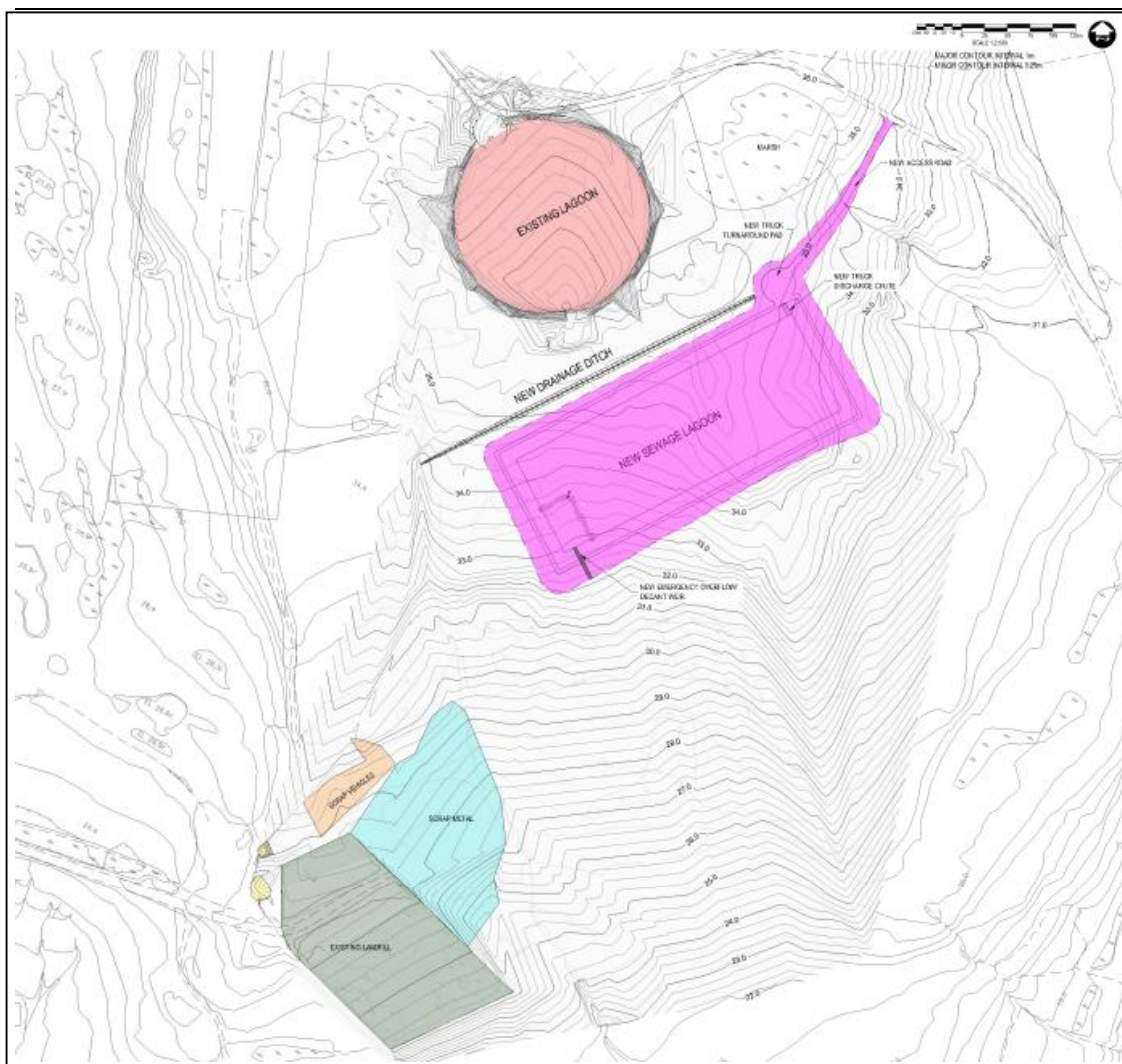


Figure 1: Gjoa Haven Sewage Lagoon - Site Plan

1.7 Spill Prevention Measures

The community is concerned about the environment and the possibility of a spill occurring and takes precautions when working with hazardous materials. In order to prevent spill occurrences, the hamlet must take the following spill preventions measures for sewage:

- Sewage truck operators must be trained in safe truck operation and sewage disposal procedures;
- Operators must take caution to ensure that the sewage trucks are not filled to capacity;

- Inspections of sewage trucks and equipment must be performed and recorded on a regular basis; and
- An effective reporting system for reporting potentially hazardous situations where spills might occur must be developed and implemented.

1.8 Additional Copies

Several copies of this plan will be kept in the community, in the Hamlet Office.

1.9 Process for Staff Response to Media and Public Inquires

All media enquiries are directed to the SAO, Shawn Stuckey.

2 RESPONSE ORGANIZATION

2.1 Response Personnel

The following table lists the personnel who will be involved in the spill response. Contact information is also provided.

Table 1. Response Personnel Contact Information

Name	Contact Information	24 hour Contact Number
Shawn Stuckey (SAO)	(867) 360-7141	Unavailable
Jacob Keanik, Public Works Foreman	(867) 360-7141	Unavailable

2.2 Flowchart of Response Organization and Communication Lines

The following flowchart outlines the chain of communication to be followed, upon discovery of a sewage spill or release by an employee of the community.

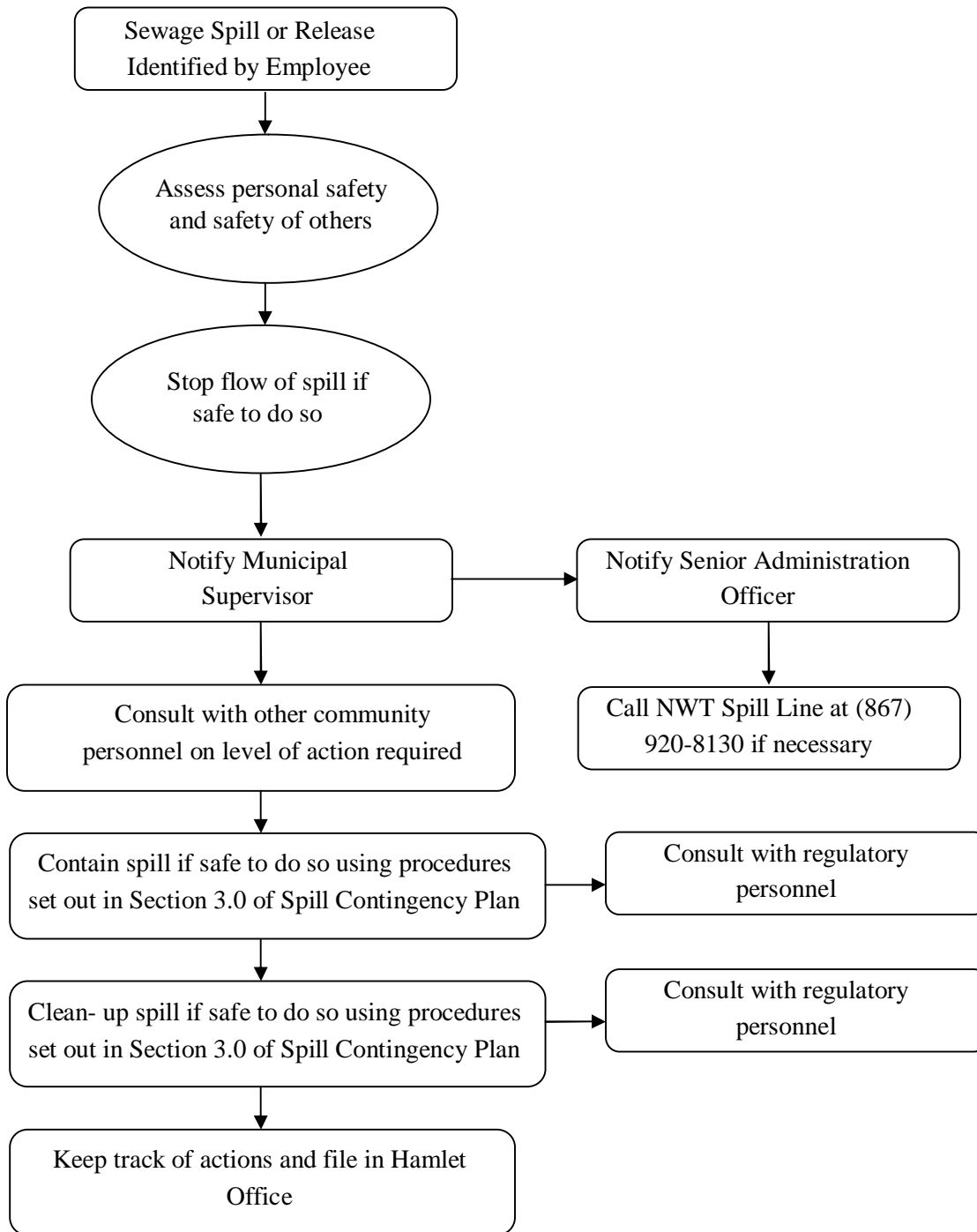


Figure 2: Flowchart of Communication Lines

2.3 Summary of Available Communication Equipment

The following equipment is available in the community for communication purposes:

- Telephone with land line;
- Computers with internet connection in Hamlet Office; and
- Fax machine.

3 ACTION PLAN

3.1 Potential Environmental Impacts of Sewage Spill

Generally, for sewage spills, environmental impacts are lower during the winter, as snow is a natural sorbent and ice forms a barrier lining for limiting soil or water contamination. Spills can be more readily recovered when identified and reported.

Sewage Spill Concerns:

- Human and wildlife health hazard, and unsightly appearance; and
- High nutrient concentrations could negatively impact water bodies and runoff into water bodies must be avoided.

Worst Case Scenario: Full sewage truck releases all of its contents onto ground or into water body and surrounding environment or substantial failure of the sewage lagoon berm that releases the entire contents of the lagoon uncontrolled into the surrounding environment.

3.2 Procedures

3.2.1 *Procedures for Initial Actions*

The following list of actions should be followed by the first person on the scene:

- Ensure safety of all personnel.
- Assess the hazards and risks to persons in the vicinity of the spill.
- If possible, without further assistance, control the danger to human life.
- If it is safe to do so, and if possible, stop the spill (i.e. shut off pump, replace cap, etc.).
- Gather information on the status of the situation, including:
 - Estimated size of spill; and
 - Estimated migration route.
- Contact Municipal Supervisor, as per flowchart in Figure 2.

3.2.2 *Spill Reporting Procedures*

Spills should be reported immediately to the Municipal Supervisor, who will notify the SAO. Together they will determine if the spill is to be reported to the 24-Hour Spill Report Line at 867-920-8130.

Copies of the Spill Report form are available in each spill kit and in Appendix A of this manual. The form will be filled out by the Public Works Foreman (or designate), and faxed or emailed to the 24-Hour Spill Report Line. Contact information is as follows:

24-Hour Spill Report Line
Phone: (867) 920-8130
Fax: (867) 873-6924
Email: spills@gov.nt.ca

Report all spills to the 24-Hour Spill Report Line.

3.2.3 Procedures for the Protection of Human Health and Safety

Following a spill, the health and safety of workers as well as the general public is a priority.

In the event of a sewage spill: Restrict public access (including pets and animals) to the spill area. Workers involved in the clean-up of the spill must be properly trained to deal with the type of spill and must wear appropriate personal protective equipment (PPE).

3.2.4 Public Notification Procedure

The Contingency Planning and Spill Reporting Regulations for Nunavut require that Spill Contingency Plans include a public reporting procedure used to alert anyone who may be affected by a spill.

On a case-by-case basis, hamlet's Senior Operating Officer and the Hamlet Council decide on the type of public notification procedure that is to be implemented to ensure public health and safety in the case of a spill.

Typically, in the case of a large scale spill that is deemed to have a potential impact on public health and safety, the hamlet will notify local residents verbally and in person, via individual household visits.

In the case of a small spill, where a negative impact on public health and safety is unlikely, the hamlet gives public notice of the spill via the local community radio.

3.2.5 Procedures for Containing and Controlling Spill

General procedures noted below will be used to contain and control all spills. Specific procedures for spills on land, water, snow and ice follow.

- First anticipate what will be affected by the spill.
- Assess direction and speed of spill, and any factors that could affect these.
- Determine best location for containing spill.

3.2.5.1 Spills on Land:

Dykes and trenches can be constructed to contain spills on land. Soil surrounding the spill area can be dug out, and piled up, to create a barrier for the spill. A plastic tarp can be placed at the base of the dyke, so that the pooled material can be removed with sorbent materials. Conversely, trenches can be excavated to permafrost, which will provide a natural containment of the spill. Once the material is contained, it can be pumped out, or removed by using sorbent materials. If the spill is moving very slowly, such structures may not be necessary and the material can be removed before migrating away from the spill location.

3.2.5.2 Spills on Water:

Spills on water are considered the most serious types of spills, as there is often no containment of the spilled material and water quality and aquatic life are negatively impacted. Booms and weirs can be

installed to contain the spill. Booms are designed to float, and are made of absorbent material to soak up the spill. They are deployed from the shore or a boat, to create a circle around the spill. Weirs are installed across a stream, to prevent further migration. Plywood or other materials found onsite can be used. Barriers made of fence or netting can be used as well, with sorbent material placed at the base of the barrier. Once contained, the spill contents can be removed by absorbent materials, pumped out or allowed to volatilize.

3.2.5.3 Spills on Snow:

Snow acts as a natural sorbent for spills. Impacted snow is easily visible, and can be shoveled into empty drums or barrels for proper disposal. If the spill is migrating down a hill, a snow dyke can be constructed to contain the spill. A plastic tarp can be placed at the base of the dyke, where spills are expected to pool. The collected spill and impacted snow can be removed with absorbent materials, pumped out, or shoveled into barrels for disposal.

3.2.5.4 Spills on Ice:

Ice is considered impermeable to spills, so these spills are generally easy to clean up. Small spills can be cleaned up by placing absorbent materials on top of the ice. Impacted snow and slush can then be removed by shovels, and placed in barrels for disposal. For larger spills, dykes of snow and trenches can be constructed to contain the spill. The pooled spill can then be removed by adsorbent materials or pumped out. Impacted snow and slush can be shoveled into barrels for disposal.

3.2.5.5 Worst Case Scenarios:

Worst case scenarios include a dyke or trench overflowing and a large spill on water that cannot be contained with materials available in the community. In the first case, a trench or collection pit could be constructed downstream to collect the spill. In the second case, an emergency response team would need to be called, with appropriate equipment to deal with the spill.

3.2.6 Procedures for Transferring, Storing and Managing Spill Related Wastes

Spills are generally cleaned up starting at the outer limit of the spill, and working towards the point of the spill. Sorbent materials and hand tools such as cans and shovels are used for smaller spills. Larger spills can be contained with the use of a pump and/or heavy equipment.

Spill wastes include using absorbent materials and containers of impacted water and snow. Sorbent materials should be placed in plastic bags for proper disposal. The containers of impacted water and snow should be sealed and stored until disposal at an approved facility can be arranged.

Following a spill, all used materials need to be properly washed and/or replaced.

3.2.7 Procedures for Restoring Affected Areas

Once a spill has been contained, community personnel will consult with regulatory personnel assigned to the file to determine the level of clean-up required. Regulatory personnel may request that a site specific study be conducted, to ensure appropriate clean-up levels are met.

4 RESOURCE INVENTORY

4.1 On-site Resources

It is recommended that the Hamlet of Gjoa Haven retain one spill kit in the community, located at the Maintenance Garage. The spill kit should contain the following:

- 30 socks/booms (3" x 4');
- 30 pillows (2L);
- 24 dispersal bags;
- 4 pairs gloves;
- 2 pairs goggles;
- 6 pairs Tyvek coveralls;
- 4 shovels;
- 2 spill signs;
- 2 repair putty;
- 1 Emergency Response Guidebook;
- 1 Safety and Compliance Directory;
- 1 Spill Response Pocket Guide.

This response kit is designed to contain and collect up to 56 gallons of spilled material. Additional volumes will be accommodated with the use of absorbent products that will be maintained in inventory in sufficient quantities.

4.2 Off-site Resources

The following resources are available for assistance if needed:

NU 24-Hour Spill Line	<u>(867) 920-8130</u>
Aboriginal Affairs and Northern Development Canada - Nunavut	<u>(867) 975-4500</u>
GN – Department of Environment	<u>(867) 975-7700</u>
GN – Department of Environment - Gjoa Haven	<u>(867) 360-7605</u>
Gjoa Haven Health Centre	<u>(867) 360-7441</u>
RCMP (Gjoa Haven) Emergency	<u>(867) 360-1111</u>
Emergency Duty Officer (Environment Canada) Nunavut	<u>(867) 920-8130</u>
GNWT Environmental Health Office (Yellowknife Office)	<u>(867) 669-8979</u>
Medivac (Yellowknife)	<u>(867) 669-4115</u>
First air Cargo Call Center <u>1-800-568-7497</u> Gjoa Haven Cargo :	<u>(867) 360-6612</u>
Adlair Aviation (1983) Ltd.	<u>(867) 983-2569</u>
Kenn Borek Air Ltd. (Iqaluit office)	<u>(867) 979-0040</u>
Director, Environmental Protection - Prairie and Northern Environment Canada	<u>(708) 951-8718</u>
Gjoa Haven Department of Environment's Conservation Offices	<u>(867) 360-7605</u>
Kevin Niptanatiak, Head Kitikmeot Regional Director, CGS	<u>(867) 983-4138</u>
Fisheries Management, Department of Fisheries and Oceans - Iqaluit	<u>(867) 979-8000</u>
SAO currently Shawn Stuckey	<u>(867)-360-7141</u>
Public Works Foreman Jacob Keanik	<u>(867) 360-7141</u>

5 TRAINING PROGRAM

5.1 Outline of Training Program

The Department of Environment and Natural Resources schedules a few training sessions each year for spill contingency. Selected members from the community works department can attend these training sessions. Once key personnel have the fundamental information, training sessions will be conducted as a part of the normal operation of the community. To obtain more information on training needs, please contact the Federal Programs Division, Environment Canada.

5.2 Training Schedule and Recordkeeping

Training will be conducted on an as-needed basis. Records will be kept in the community office.